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Marine Stores Guide

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Marine Stores Guide

Seventh Edition

IMPA's Authorized 7th Guide Book

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Preface

Dear Colleagues

Welcome to the 7th edition of the Marine Stores Guide, the industry standard for maritime procurement. The International Marine Purchasing Association (IMPA) is proud to introduce this edition in its 40th Anniversary year.

This edition builds on the MSG legacy, which for more than four decades has seen the unique six-digit code offer a neutral platform for those in the maritime industry communicate easily and efficiently. Now this fully updated new edition cements its position as the world's leading reference guide.

More than 6,000 codes have been added since the 6th edition, reflecting new regulations, changed industry demands and environmentally friendly items. The MSG contains in excess of 50,000 products and in order to accommodate all content the composition in this edition has been changed.

MSG has previously listed each product title in 5 different languages, however, in this edition, we list the English product title only and have created a Multi Language Index in a booklet, which shows each product name in 6 different languages, English/Spanish/Portuguese/Russian/Chinese/Japanese, and their corresponding pages. We trust you will find this revision of great use.

The ever-growing MSG contents is linked to the Marine Stores Guide Data License, that allows users to specify products quickly and effectively using the unique data that can be imported into a procurement or planned maintenance system.

With illustrations, specifications, product information and comparison tables for major manufacturers the Marine Stores Guide 7th edition provides an invaluable reference for those involved in the maritime industry and we trust you will enjoy this new and improved edition. You will find a separate list with Sections where changes, amendments and new additions have been made.

Recently we found that MSG counterfeit copies are being circulated in the industry, this is naturally illegal and breaks international copyright law. As an attempt of eradicating the illegal copy books, this edition has been made with copy protection on some pages, we hope this will not affect your day to day use of the book.

We are confident you will find this 7th edition to be of great use and value to your business whether you are a ship operator or ship supplier. If you have any comments or recommendations for further improvement or if you find any misprint etc, please visit www.marinestoresguide.com where you will find a customer feedback form and contact details for the MSG team.

Finally, I would like to thank the MSG team at Fuji Trading Co., Ltd. who work relentless- and tirelessly on creating a common industry standard, thus making life easier for people involved in procurement both at sea and at shore.

Susan W. Koefoed

IMPA Chairman and Chief Executive Officer

Summary of New Updates

Section 15 **Cloth & Linen Products:** Flame Retardant Linen products (Bed sheets, Mattresses, Blankets, Pillows & Pillow Cases etc.) are newly included, 9 items, 31 codes.	**Section 17** **Tableware & Galley Utensils:** Ecologo Mark Paper Towels & Dispensers, Contamination Prevention Sponges and 3M (worldwide) products updated.	**Section 19** **Clothing:** Boots & Shoes: New Codes for each UK/European/US/CM standard sizes.
Section 23 **Rigging Equipment & General Deck Items:** Crosby products (from USA) updated.	**Section 27** **Painting Equipment:** Graco products (from Netherlands) updated.	**Section 31** **Safety Protective Gear:** MSA products (from Netherlands) updated. Protective Boilersuits (from Scandia, the Netherlands) - 16 items, 363 codes.
Section 33 **Safety Equipment:** Draeger products (from Singapore) updated. Safety Signs (listing both IMO/ISO symbol) updated. Fire Hoses with prefitted Couplings included - 226 codes. Disposable Gas/Chemical Protection Suits. Marine Fire Stop Systems - 8 items, 59 codes. Water Mist Lance & Mobile Water Monitor (New SOLAS Requirement).	**Section 37** **Nautical Equipment:** Intrinsically Safe Marine Transceivers for Fire Fighters (New SOLAS requirement). Intrinsically Safe Auto Telephones / Marine Battery Less Telephones - 28 codes.	**Section 45** **Petroleum Products:** Biodegradable Grease and Oil as Compliance of US EPA Vessel General Permit 2013.
Section 55 **Cleaning Material & Chemicals:** Biodegradable Products (Cleaning Liquid/Descaler etc.). HOCNF & CEFAS Offshore Cleaning Chemicals. Neutralizer for Ballast Water Chemical Treatment Systems.	**Section 59** **Pneumatic and Electrical Tools:** Various pneumatic and electrical tools updated suggested by worldwide manufacturers from Dalseide Shipping Services AS (Norway), Holger Clasen (Germany), Trelawny (U.K.), Nilfisk-Densin (Singapore), etc.	**Section 65** **Measuring Tools:** Various measuring tools updated suggested by worldwide manufacturers from SIKA (Germany), Coltraco Ultrasonics Limited (UK), Atlas Marine Services (Singapore) etc.
Section 67 **Metal Sheets, Bars, etc.:** Metal bars: New Codes for various standard lengths available in Europe, U.S., Singapore and Japan.	**Section 81** **Packing & Jointing:** Various general repair products updated suggested by worldwide manufacturers from Henkel (worldwide), Wencon (Denmark), Weicon GmbH (Germany), Indumar Products (U.S.A.).	**Section 85** **Welding Equipment:** New gas equipment added: Gas welding & cutting torches, TIG Welder, Plasma Cutting Machines etc.

Using the Guide

1. This is a reference guide for ordering items which are used on board ships. The guide is designed to be easily understood by people of different cultures and languages, as well as to promote the business between them. The items are coded and illustrated to ease identification between the shipowner or shipboard personnel and the ship supplier. In order to avoid costly misunderstandings when ordering products, please specify the appropriate code number, description, unit and quantity.

2. The guide is not listing to promote the products or particular manufacturers and for this reason brand names have been excluded wherever possible except where their inclusion is absolutely necessary for the identification of the item. In certain cases there are a number of manufacturers for one product and the availability for each manufacturers' products vary in different parts of the world. In such cases, several manufacturers' names and products types are listed to serve as a reference for the types of products available internationally, one of which may be chosen based upon the country where the product will be purchased.

3. **Names:**
The most common name possible is used for each product with any additional names listed in parenthesis under the product title. Spelling has not been unified: English and U.S. spellings are used in accordance with each particular case. Spanish, Russian, Chinese and Japanese products' titles are appended in a separate booklet for easy reference.

4. **Code Numbers:**
One code number has been allocated to each item, even when that item belongs to more than one product group. Each code number has the following structure:

Six digits	xx	xx	xx	a. Section Index (group)
	(a)	(b)	(c)	b. Category within the section index
				c. Specification (size)

5. **Indexes:**
   a. Sectional Index: At the beginning of the guide we have provided a sectional index which indicates each product section with an illustration and the number of that section. The section numbers are also located on page tabs so that you can open the guide to the section you require as quickly as possible.

   b. Alphabetical Index: The quickest way to locate products. The name of products consisting of two words can be found under the first letter of either of the two words.

   c. Category Index: At the beginning of all sections we have provided category indexes which list the products' category names with pictures of typical product in the order in which they appear in the section, each with the page number in which they are located.

   d. Code Index: At the following page to the category index which contain a wide variety of products and contain some code numbers located not in order, we have provided code index which lists all code numbers in the order in which they appear within the section, each with the page number in which they are located.

Sec 17: Tableware & Galley Utensils	Sec 21: Rope & Hawsers
Sec 23: Rigging Equipment & General Deck Items	Sec 33: Safety Equipment
Sec 37: Nautical Equipment	Sec 39: Medicine
Sec 47: Stationery	Sec 59: Pneumatic & Electrical Tools
Sec 65: Measuring Tools	Sec 75 Valves and Cocks
Sec 79: Electrical Equipment	Sec 81: Packing & Jointing

6. **Comparison Tables:**
Comparison tables have been provided to show the appropriate specifications and model types or similar goods which are produced by different manufacturers. The contents are to serve only as a reference when choosing the product of certain manufacturer. In some cases code numbers are not provided for each of the manufactures' products. A representative code is provided based upon the size or specifications necessary for ordering the appropriate item. When ordering an item from a specific manufacturer, the representative code, as well as the manufacturers' name and the model number of the product should be specified clearly on your order form.

7. **Measurements:**
The metric system has been used for lengths and weights with a few exceptions. For pressure, the weight metric system kgf/cm² has been used, sometimes in combination with SI (MPa). An SI conversion table can be found in the measurement conversion section at he back of the guide.

8. **Standards:**
Standards from all major industrial standard institutes have been included wherever possible. ANSI, DIN and JIS standards are most commonly listed for items like valves, flanges, etc.

9. **Liability:**
IMPA in co-operation with Fuji Trading, has striven to fashion The IMPA Marine Stores Guide into a highly professional tool. However, it does not guarantee the exhaustiveness of the listings nor the veracity of the information and advertising inserts contained in The IMPA Marine Stores Guide. Therefore IMPA and Fuji Trading declines all responsibility due to errors or omissions found in the Guide. Reproduction of the contents, translation of all or part of the publication, use of names, addresses, or details of the index of products and services for any purpose other than the normal and accepted use of a publication are prohibited and may subject the offender to prosecution.

ORDER BY CODED NUMBER - IT WILL SAVE YOU TRANSACTION TIME.

SEND A PHOTOCOPY OF AN ILLUSTRATION - IT WILL AVOID MISTAKES.

USE THE IMPA CODED GUIDE

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15
CLOTH & LINEN PRODUCTS

Bed Accessories

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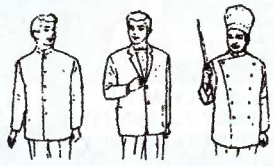
Cook & Steward Wear



P. 15-3 ~ 4

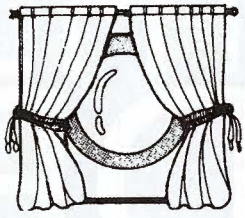
Laundry Accessories

P. 15-4

Towel & Table Linen

P. 15-4 ~ 5

Curtains



P. 15--5 ~ 6

Bed Sheets

Made of 100% cotton, woven 24 denier 131 (65 x 66) threads per square inch. Sanforized, machine wash, hot tumbler dry, usually furnished white or blue colour. Standard sizes are listed below.

Unit Per Sht.

White Sheets			Blue Sheets		
CODE	Size mm		CODE	Size mm	
	Width	Length		Width	Length
15 01 01	1,370	2,300	15 01 41	1,370	2,300
02		2,500	42		2,500
03		2,600	43		2,600
15 01 06	1,500	2,300	15 01 46	1,500	2,400
07		2,400	15 01 51	1,600	2,820
15 01 11	1,600	2,500	15 01 56	1,828	2,300
12		2,600	57		2,500
13		2,820	58		2,600
15 01 16	1,828	2,300	15 01 61	2,030	2,400
17		2,500	62		2,500
18		2,600	63		2,600
15 01 21	2,030	2,400			
22		2,500			
23		2,600			
15 01 26	2,286	2,400			
27		2,500			
28		2,600			

Non-ironing Bed Sheets

Non-iron blend of 50% polyester, 50% cotton, 32 denier, 165 threads per square inch. This fabric blend is smoother and softer than cotton, machine washable and tumbler dry.

Unit Per Sht.

CODE	15 01 81	15 01 82
Size mm	1,370 x 2,300	1,828 x 2,500

Mattresses

Foam Rubber

Spring

There are two types of mattress filling constructions available: foam rubber type and spring type. All materials, regardless of construction, are covered with a blue and white striped, rigid cotton cloth.

Standard sizes are listed below. If the size you require is not listed, please measure the inside length and width of the bedframe you are using.

Unit Per Pc.

CODE	Type	Size mm		
		Width	Length	Height
15 02 01	Foam Rubber	900	2,000	150
02		1,350	2,000	150
15 02 06	Spring	900	2,000	150
07		1,350	2,000	150

Mattresses and Foundations

Individual Spring Type

Mattresses :

Quality, longlife mattress made with individually wrapped coils providing even support and comfort to all parts of the body. A double sized mattress consists of more than 890 coils. The cover is a heavily padded, prebuilt, boarder taped box lining. The surface is button tuffed with ventilators and chord handles at each side.

Unit Per Pc.

CODE	Type	Size mm			Numbers of Pocket coils
		Width	Length	Height	
15 02 31	Single	970	1,980	170	594
32	Semi Double	1,200	1,980	170	759
33	Double	1,370	1,980	170	891
34	Queen	1,520	1,980	170	1,023

Foundations (Box Spring)

Box frame composed of specially shaped, heavy gauge tempered cone coils which are wire tied and mounted on a strong seasoned timber base. The frame is insulated with a firm 100% cotton pad and can be fitted with legs, castors, or special angle iron frames.

Unit Per Pc.

CODE	Type	Size mm			Height with Leg	Nos. of Coils
		Width	Length	Height		
15 02 41	Single	960	1,970	195	332 mm	55
42	Semi Double	1,190	1,970	195	332 mm	77
43	Double	1,360	1,970	195	332 mm	88
44	Queen	1,510	1,970	195	332 mm	99

Mattress Covers

White or blue covers tightly woven of 100% cotton fabric, 20 denier, 120 threads per square inch with seamed edges for more durable wear. The length and width of the covers are usually 50 mm larger than the mattress to be covered. When ordering, please specify the size of mattress to be covered.

When ordering, please specify the following:

How to order: 15 - 02 - 51

Name —— Mattress Cover
×
Material —— Cotton
×
Colour —— White or Blue
×
Size —— Size of Mattress to be covered

Beddings
Duvet = Continental quilt
Duvet Cover = Cover for Duvet or Quilt
Counterpane = Bed spread

Pillows

Filled with kapok, shredded polyurethane foam or chicken or duck feather and covered in linen like striped cotton tick. Standard sizes are listed below.

15 02 81	Pillow, polyurethan foam,	600 x 400 mm	Pc.
82	Pillow, kapok,	600 x 400 mm	"
83	Pillow, feather,	690 x 460 mm	"

Pillow Cases

Available in blue or white 100% cotton woven fabric. The stitch is 131 threads per square inch. The sizes below fit all standard pillows.

15 02 86	Pillow case white, 750 x 500 x 200 mm	Pc.
87	Pillow case blue, 750 x 500 x 200 mm	"

Blankets

Wool 100% Blankets

Loom woven blanket of 100% wool. Shedding, matting, and piling resistant.

Unit Per Sht.

CODE	Size mm	Colour
15 03 01 02 03	1,400 × 2,000	White Camel Blue
15 03 06	1,500 × 2,000	Blue
15 03 11 12 13	1,800 × 2,300	White Camel Blue
15 03 16	1,800 × 2,400	Camel

Rayon-Acryl Blankets

Durable blend of 70% Rayon and 30% Acryl. Machine wash at warm temperatures and tumble dry.

Unit Per Sht.

CODE	Size mm	Colour
15 03 26 27	1,400 × 2,000	Camel Blue
15 03 28 29	1,800 × 2,300	Camel Blue

100% Acrylic Blankets

100% acrylic blanket. Loom woven for softness and shape retention. Machine wash at warm temperatures and tumble dry.

Unit Per Sht.

CODE	Size mm	Colour
15 03 41 42 43	1,400 × 2,000	Camel Blue Grey
15 03 46 47	1,500 × 2,000	Camel Blue
15 03 51 52	1,800 × 2,300	Camel Blue

Blanket Covers

When ordering, please specify the following :

How to order: 15 - 03 - 55

Name — Blanket Cover
x
Material — Cotton
x
Colour — White or blue
x
Size — Size of Blanket to be covered

CODE	Actural Size mm	For Blanket Size mm
15 02 88	1,800 × 2,400	1,800 × 2,300
89	1,500 × 2,100	1,400 × 2,000

Bed Spreads

(Counterpanes)

Cotton woven bed spreads designed as day covers. A wide range of materials, colours, designs and sizes are available, but most are listed as follows. Please provide the size of the bed in use when ordering.

White sheet with cross stitched design

Tartan Check, Light blue and red crossed stripes on white cloth.

Unit Per Sht.

CODE	Size mm	Colour & Design
15 03 71	1,500 × 2,400	White
72	1,500 × 2,400	Tartan Check
73	1,800 × 2,600	White
74	1,800 × 2,600	Tartan Check

Beddings

Duvets

A thermal insulator bag filled with down, feather, or a synthetic alternative, and protected with a removable cover. Please specify kind of inner filling, and size (width x length in cm), when ordering.

15 03 81	Duvet, SIZE (Width x Length in cm)	Pc
82	Cover for duvet, SIZE (Actual size : Width x Length in cm)	"

Comforters

Comforter is filled with either an artificial material, such as polyester batting, or a natural material, usually thinner than the duvet. Please specify kind of inner filling, and size (width x length in cm), when ordering.

15 03 84	Comfort, SIZE (Width x Length in cm)	Pc.
85	Cover for comfort, SIZE (Actual size : Width x Length in cm)	"

Quilts

A bed covering composed of a quilt top with a decorative design.

15 03 87	Quilt, SIZE (Actual size :Width x Length in cm)	Pc.

Flame Retardant Beddings

Made of 30% flame retardant modacryl (Protex) and 70% polyester & cotton. Enhanced tearing resistance, and minimum shrinkage. Each product has Labels approved as flame retardant products.

Bedding Sheets - Flame Retardant

Unit Per Sht.

CODE	Size mm	CODE	Size mm
White		Light Blue	
15 01 65	1,370 × 2,600	15 01 69	1,370 × 2,600
66	1,600 × 2,800	70	1,600 × 2,800
67	1,830 × 3,000	71	1,830 × 3,000
68	2,280 × 3,000	72	2,280 × 3,000

Mattresses - Flame Retardant

Made of 30% flame retardant modacryl (Protex) and 70% cotton & Polyester honeycomb mesh cloth cover. Inside material is made of two levels, 100% polyethylene coil & 100% polyester coil.

Colour: white

Unit Per Pc.

CODE	Size mm	CODE	Size mm
15 02 35	1,000 × 2,000 × 200	15 02 37	1,400 × 2,000 × 200
36	1,200 × 2,000 × 200		

High Resilient Mattress Pads - Flame Retardant

High resilient polyethylene mattress pad with 30% flame retardant modacryl (Protex) and 70% polyester & cotton outer cover. It has superior air conductivity and heat insulation, and keeps the body hot by heat retaining property in winter.

Colour: white

Unit Per Pc.

CODE	Size mm	CODE	Size mm
15 02 45	1,000 × 2,000 × 30	**15 02 46**	1,000 × 2,000 × 80

Bed Pad - Flame Retardant

Made of 30% flame retardant modacryl (Protex) and 70% polyester & cotton cover, filling is polyester cotton (m²/400g), for using on top of mattress.

Unit Per Sht.

CODE	Size mm	CODE	Size mm
15 02 47	1,000 × 2,000	**15 02 49**	1,400 × 2,000
48	1,200 × 2,000		

Feather Pillows - Flame Retardant

100% feather pillow with flame retardant 60% acryl, 35% cotton and 5% nylon mixed cover.

15 02 90	Pillow, feather, flame retardant, white, Size: 43 × 63 cm, Weight: app. 1,200 grm	Pc.

Pillowcases - Flame Retardant

Case is envelope type.

Unit Per Sht.

CODE	Size mm	CODE	Size mm
White		Light Blue	
15 02 91	400×670	**15 02 94**	400×670
92	450×780	**95**	450×780
93	500×900	**96**	500×900

Blankets - Flame Retardant

A flame retardant wool 100% 2 multi-woven fabric blanket. Can be washed and tumble dried at high temperatures.

Size: 1,400×2,000 mm

Unit Per Sht.

CODE	Colour	CODE	Colour
15 03 53	White	**15 03 54**	Beige

Duvet Covers - Flame Retardant

Colour: White

Unit Per Pc.

CODE	Size mm	CODE	Size mm
15 03 56	1,450 × 2,100	**15 03 59**	1,850 × 2,400
57	1,500 × 2,150	**60**	1,900 × 2,450
58	1,550 × 2,150		

Comforters - Flame Retardant

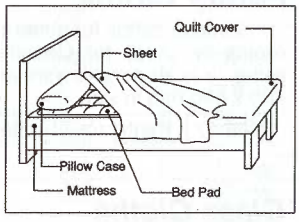
Quilt processed. Inside material is made of 100% polyester.

Size: 1,500 × 2,000 mm, Weight: 1.2 kgs

15 03 86	Comforter, flame retardant, polester, 1,500 × 2,000 mm	Pc.

Illustration of Bed Linen

The vessels registered under the flags of the European Union Member States are to be equipped with bedding components in compliance with the Marine Equipment Directive – Equipments under the Directive list : "Fire protection".



Cook & Steward Coats

White colour, all cotton or cotton/tetoron blended coat. Available in 3 types. Three ready made sizes are available, but when ordering, specify the height and the size of the neck and sleeve in centimeters as well as the type you require.

Closed Collar

Regular Finish

Double Breasted

Unit Per Pc.

Closed Collar		Regular Finish		Double Breasted	
CODE	Size	CODE	Size	CODE	Size
15 04 01	M	**15 04 06**	M	**15 04 11**	M
02	L	**07**	L	**12**	L
03	LL	**08**	LL	**13**	LL

Dimensions of Ready Made Sizes

Size	Cloth Length	Chest	Shoulder Length	Sleeve
M	70 - 72	103 - 106	42 - 44	54 - 56
L	72 - 74	108 - 110	44 - 46	56 - 58
LL	74 - 76	112 - 116	46 - 48	58 - 60

Unit in Centimeter

Cook & Steward Trousers

Cotton in white colour, polyester in black colour and cotton/ polyester blends in stripes are available. When ordering, specify the height, size of waist, and the length of the inseam in centimeters as well as the colour and fabric you require.

White Colour Black Colour Striped

Unit Per Pc.

White Colour		Black Colour		Striped	
CODE	Size	CODE	Size	CODE	Size
15 04 21	M	**15 04 26**	M	**15 04 31**	M
22	L	**27**	L	**32**	L
23	LL	**28**	LL	**33**	LL

Approximate Sizes for Trousers

Size	Waist cm	Inseam cm
M	81	72
L	86	74
LL	91	77

Shirts

Made of white cotton, fastening up at the front with buttons. Available in short sleeves or long sleeves.

Unit Per Pc.

CODE	Size	Neck	Check	Shoulder	Length	Sleeve
Long Sleeves						
15 04 41	M	38	108	50	78	55
42	L	40	114	52	80	56
43	LL	42	120	54	82	57
44	3L	44	130	56	84	56
Short Sleeves						
15 04 46	M	38	108	50	78	22
47	L	40	114	52	80	23
48	LL	42	120	54	82	24
49	3L	44	130	56	84	25

Cook's Caps

Made from white cotton duck also paper made disposable caps are available.

Skull

Crown

Unit Per Pc.

CODE	Material	Type	Colour
15 04 51 52	Paper	Skull Crown	White "
15 04 53 54	Cotton	Skull Crown	White "

Cook's Aprons

Made from white cotton or plastic vinyl. Available in Bib and Waist type.

15 04 61	Apron, white cotton, waist type	Pc.
62	Apron, white cotton, bib type	"
63	Apron, colour vinyl, waist type	"
64	Apron, colour vinyl, bib type	"

Bow Ties

A satin made short bow tie for formal catering apparel.

15 04 71	Bow tie, black	Pc.

Canvas Laundry Bags

Made from No. 11 white canvas. The standard size is 450 mm diam. and 1,170 mm high. Holes for a close string are set and eyeletted at the opening of the bag.

15 05 01	Laundry bag, canvas, D450 × H1,170 mm	Pc.

Laundry Pinches
(Clothes Pins)

Plastic made pinches which will not stain clothing with rust or flaking paint.

15 05 11	Laundry pinches plastic 10's/pkt	Pkt
12	" 20's/pkt	"

Laundry Lines

Made of 3 synthetic strands of 4 mm diam, high tensile rope.

Available 5 mtr in coil with hooks at both ends and length adjusting plates, or in 200 mtr coils with cut ends.

15 05 21	Line, laundry, 5 mtr with hook	Pc.
22	Line, laundry, 200 mtr	C/L

Coat Hangers

Made of wood or plastic, styled with a bar. Each hanger is approx. 400 mm wide.

Unit Per Pc.

CODE	Description
15 05 26	Lacquered, natural finished hard wood with metal hook
15 05 27	Plastic made, solid-core durable/unbreakable tubular plastic

Plastic Storage Baskets

A rigid plastic container for storing laundry, dishes, or various deck and engine stores.

Unit Per Pc.

CODE	Dimensions mm			CODE	Dimensions mm		
	Length	Width	Height		Length	Width	Height
15 05 31	620	440	340	15 05 32	600	430	300

Plastic Clear Storage Containers with Lid

A rigid plastic clear container with lid for storing clothes, linens, materials, foods, etc.

Unit Per Pc.

CODE	Inner Size mm	Outer Size mm
15 05 41	442 × 298 × 170	530 × 360 × 185
42	442 × 298 × 255	530 × 360 × 270
43	436 × 292 × 355	530 × 360 × 370
44	541 × 371 × 210	635 × 440 × 225
45	541 × 371 × 310	635 × 440 × 325
15 05 46	535 × 365 × 398	635 × 440 × 435

Dollies
for Plastic Container

Easy loading and handling for plastic container. Rimmed fame prevents slipping from moving dolly. Maximum work load is up to 150 kgs.

Unit Per Pc.

CODE	Inner Frame Size mm	For
15 05 51	355 × 500 × 135	150541/150542/150543
52	440 × 610 × 135	150544/150545/150546

Towels

Made of 100% cotton for durability and absorption. Looped cotton fabric on both sides.

Unit Per Sht.

CODE	Name	Colour	Size mm	Weight per Sht
15 06 01	Bath	White	730 × 1,330	315 grm
02		Blue		
15 06 03		White	670 x 1,270	305 grm
04		Blue		
15 06 06	Face	White	390 × 1,000	115 grm
07		Blue		
15 06 08		White	400 × 800	105 grm
09		Blue		
15 06 11	Sweat	White	300 × 760	30 grm

Sponge Cloths

A loosely woven soft porous cotton fabric used for cleaning dishes and machinery. Usual size is 350 x 450 mm.

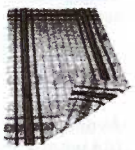
15 06 16	Sponge cloth 350 × 450 mm	Sht

Pantry Cloths

Made of cotton for general use in pantry rooms or galley for cleaning, as a shelf lining, or to place tableware and utensils on. 400 x 690 mm in size.

15 06 17	Pantry towel cotton 400 × 690 mm	Sht

Glass Cloths
(Tea Towels)



Cotton & woven blended cloth, mainly used for glassware, etc. Size is 410 x 700 mm.

15 06 18	Glass towel 410 × 700 mm	Sht

Duster Cloths

A hand cloth used for dusting. Several colours and sizes are available, the yellow colour, size 450 x 500 mm is most common.

15 06 21	Duster cloth	Sht

Mutton Cloths (Stockinet)

An approx. 400 mm wide continuous length of stockinet. Used for wrapping meat and for filtering purposes. Sold by weight.

15 06 26	Mutton cloth	Kg.

Table Cloths

A wide range of sizes, types and materials are available. The most popular material is a woven floral design of cotton Damask pattern, on a white, coloured, or checked background. When ordering, please specify the following matters:

(A) Size: Finished size or table size
(B) Shape: Square, rectangular, round
(C) Material: Cotton Damask or any others
(D) Colour: White, blue, green, checkered or plain

How to order; 15 - 06 - 41

Table cloth x Size x Type x Material x Colour (Sht)

Plastic Table Cloths

Cotton Lined

Vinyl cotton lined oil cloth type. Various colours in checkered pattern are set on a white background. Has 2 fixed widths of 1,070 and 1,370 mm in a bundle of 30 mtrs. Sold by length in meters.

Unit Per Mtr

CODE	Width mm	CODE	Width mm
15 06 51	1,070	**15 06 52**	1,370

Transparent Plastic Sheeting

Very useful as a table cloth cover or for covering floors In accommodations or hallways during paintwork, while in dock, or when discharging iron, ore, coal or other dry cargo.

Unit Per Rol.

CODE	Size mm		
	Thick	Width	Length
15 06 61	0.1	915	50 mtr
62		1,370	
63		1,830	
15 06 64	0.1	915	100 mtr
65		1,370	
15 06 66	0.2	915	50 mtr
67		1,370	
68		1,830	
15 06 71	0.3	915	30 mtr
72		1,370	
73		1,830	
15 06 76	0.5	915	30 mtr
77		1,370	
78		1,830	
15 06 79	1.0	915	10 mtr
15 06 80	2.0	915	10 mtr

Moltplain Foam Rubbers

A multi purpose foam rubber which can be used as an oil filter. It can also be used to place under items on smooth surfaces such as tables or desks to prevent them from sliding while at sea.

Unit Per Sht.

CODE	Thickness mm	CODE	Thickness mm
15 06 81	5	**15 06 84**	20
82	10	**85**	25
83	15		

Non-Skid Sheeting

Rubber made mesh sheet. Used for preventing dishes, etc. from slipping on a smooth surface. Thickness 2 mm, width 600 mm or 800 mm, length 30 mtrs/bolt. Sold by length at random. Minimum length is one meter.

15 06 90	Non skid mesh sheet, width 600mm	Mtr
91	800mm	"

Hook & Loop Tapes

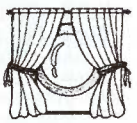
(Velcro Tapes / Magic Tapes)

So called Velcro tape. Consists of two parts of tape, one with hooks and the other with loops. Normally the reverse of the tapes are glued. Can be fastened and closed almost permanently.

Unit Per Rol.

CODE	Size W x L	CODE	Size W x L
15 07 01	25 mm x 40 cm	**15 07 04**	25 mm x 25 mtr
02	25 mm x 1.5 mtr	**05**	50 mm x 25 mtr
03	25 mm x 3.0 mtr	**06**	100 mm x 25 mtr

Porthole Curtains

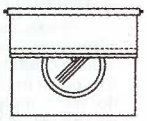


Made to order. Pairs available in rod-pocketed or pinch pleated styles with hooks or rings. When ordering, please ask for fabric samples and specify details.

How to order : 15 - 07 - 12

Curtain, porthole, size x type x material (Pr.)

Roller Blinders



For covering a porthole. Made to order. When ordering, please specify the width, length and material required.

How to order : 15 - 07 - 13

Roller blinder, width x length x material (Set)

How to measure shades for replacement.

Specify on your order "tip-to tip". If you measure the fabric width only, be sure to specify so on your order.

Shower Curtains

Shower bath curtain in coloured, durable, waterproof vinyl with metal grommets. Standard size is 1,000 x 1,900 mm or 1,800 x 2,000 mm with 8 - 12 grommets. When ordering, please specify the size and colour required

How to order : 15 - 07 - 14

Curtain, shower, vinyl, size x colour (Pc.)

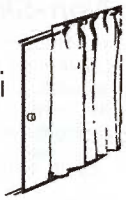
Adjustable Rails

Chromed Adjustable Rails is also available, Standard size is 22mm dia with range 1,100mm to 2,000mm length.

How to order : 15 - 07 - 17

Adjustable rails, chrome, dia and length (Pc.)

Door Curtains



For use on the cabin door. Made to order. When ordering, please specify the size, material and other necessary information.

How to order : 15 - 07 - 15

Door curtain, size x material x type (Pc. or Pr.)

Flame Retardant Curtains

Textile fibre which significantly reduces the risk of fire by being permanently fire retardant. These curtains also withstand industrial cleaning processes.

When ordering, please specify the width, length and materials required.

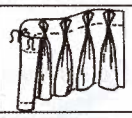
How to order : 15 - 07 - 16

Curtain, flame retardant, width x length x materials (Set)

Description of Drapery Types

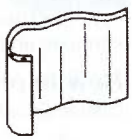
The followings are reference for ordering the formation of drapery.

·Pinch-Plated #D10010



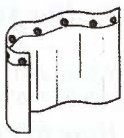
Two or three finger pleats sewn into the drape to create folds. Metal hooks included (zinc-plated). One width will cover up to 30" wide (pleated). Widths can be joined for wider areas.

·Snap-Top #D10020



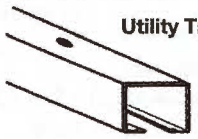
Snap tape sewn along the top of the back of the curtain. Snaps 4-1/4" O.C. (11mm). Easily snaps onto nylon track slides. No hooks to become lost, curtain always hangs straight. Easily removed and rehung for cleaning. Curtains are custom made to your exact measurements. Can be made unlined or blackout lined. Best suited for Bunk or Door Curtains.

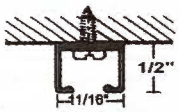
·Grommet Top Drape #D10030



Brass or zinc grommets in double folded top. Grommets spaced 6" on center. Attaches to track #9046 or #94004 with hook slides. One width will cover up to 50" wide (flat). Widths can be joined for wider areas. Can be made unlined or blackout lined. Best suited for Bunk or Door Curtains.

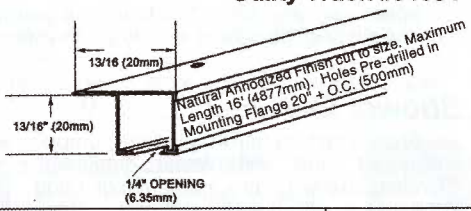
Utility Track #9046



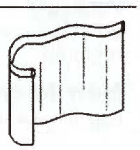


Holes Approx 20" on Center, Finish: White or Natural Aluminum. Custom Cut to Length, Max, Length 16 ft.

Utility Track #94004



·Rod Pocket Drape #D10040

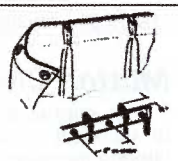


1-1/2" Pocket sewn into the top of drape. Used with 3/8" solid rods #9-002 or #9-004 (through pocket). One width will cover up to 50" wide (flat). Width can be joined for wider areas. Can be made unlined or blackout lined. Best suited for Porthole or Door Curtains.

3/8" SOLID RODDING

9 - 002 STEEL (PAINTED BRASS)
9- 004 ALUMINUM (BRASS PLATED)

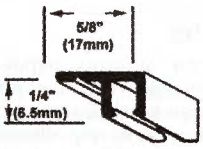
·Marine Fold Drape #D10050



Made with snap tape, 3/4" pleats sewn into top. Snaps are 6" on center. Used with track #M-110 (snap slides). One width will cover up to 36" wide (pleated). Widths can be joined for wider areas. Can be made unlined or blackout lined. Best suited for Porthole Curtains.

SMALL UTILITY TRACK #M-110

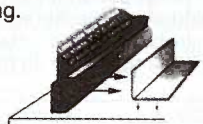
Remark: Information and illustrations are supplied from Metro Marine Design Associates.



Solar Shades (Spring Roller Type)

An universal locking bracket type solar shades for ship's bridge and wheelhouse windows. The screen has 100% optical clarity and industrial strength is 5 MILS. The surface of screen is scratch resistant by coating on inside surface, and there are two patterns of screen rolling method, "Spring roller" or "Clutch springless roller". Both 3" strips (Outside mount) and 3" flanges (Inside mount) are included with every order, so that the hem bar of the screen and flanges attached to window recess are secured with Velcro tape from swinging. Please specify the size of window, type of screen rolling method, etc. Please ask more information to your local distributors when ordering.

Spring Roller Clutch Springless Roller



Valveco Hold-down System

Spring Roller :

Pull hem-bar to raise and lower shade.

Clutch Springless Roller :

Loop of nylon bead-chain rotates roller to raise or lower shade.

Unit Per Set

CODE	Type	Remark
15 07 21	Spring roller	Size and type of screen rolling method are to be confirmed.
15 07 22	Clutch Springless Roller	

Name of Mfr : Metro Marine Design Associates

Anti-shatter Films (Blast Mitigation)

Anti-shatter film provides protection from flying glass in the event of a natural disaster or demolition by pirates. It forms an almost invisible protective coating on the glass surface. This window film should only be applied to flat glass. It should never be applied to polycarbonate (plastic). Adhesive window films are constructed from a multi-lamination of micro-thin polyester. They also have a scratch resistant coating to protect the film surface and enhance durability (except films for external application). The film should be cut 10 mm over size in both dimensions, and trim around the oversized edges using a sharp trimming knife after squeezed the film.

15 08 21	Film, anti-shatter (Blast mitigation), 200 micron, Width 152 cm x Length 15 mtr	Roll

TABLEWARE & GALLEY UTENSILS

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Ice Instruments P. 17-12 ~ 13	Serving Utensils P. 13	Napkin Paper P. 17-13 ~ 14	Flying Pans & Cooking Pots P 17-14 ~ 17
Roasting Pans, Mixing Bowls, Strainers, etc. P. 17-17 ~ 19	Knives P. 17-19 ~ 21	Peelers & Scalers P. 21	Butcher's Gear P. 21
Sharpening Stones P. 17-21 ~ 22	Kitchen Utensils P. 17-22 ~ 24	Baker & Pastry Utensils P. 17-24 ~ 26	Squeezers & Mashers P. 17-26 ~ 27
Storage Containers P. 17-27 ~ 29	Japanese Style Tableware P. 17-29- ~ 30	Japanese Style Pans & Ladles P. 17-30 ~ 31	Japanese Style Baskets P. 17-31 ~ 32
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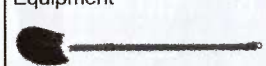
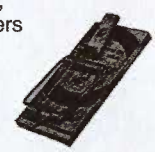
Galley Cleaning Equipment P. 17-37 ~ 39	Buckets & Garbage Bags P. 17-39 ~ 41	Foils & Roll Papers P. 17-41 ~ 42	Cabin Cleaning Equipment  P. 17-43
Smoking Goods P. 17-44	Flower Vases P. 17-44	Rat Traps, Fly Swatters  P. 17-44	Electrical Cooking Appliances P. 17-44 ~ 46
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174590	17-46	174667	17-47	175032	17-49		
174591	17-46	174671	17-47	175042	17-49		
174592	17-46	174672	17-47	175043	17-49		
174593	17-46	174676	17-47	175071	17-49		
174594	17-46	174677	17-47	175072	17-49		
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174630	17-46	174751	17-48	175170	17-51		
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174647	17-46	175005	17-48	175574	17-52		
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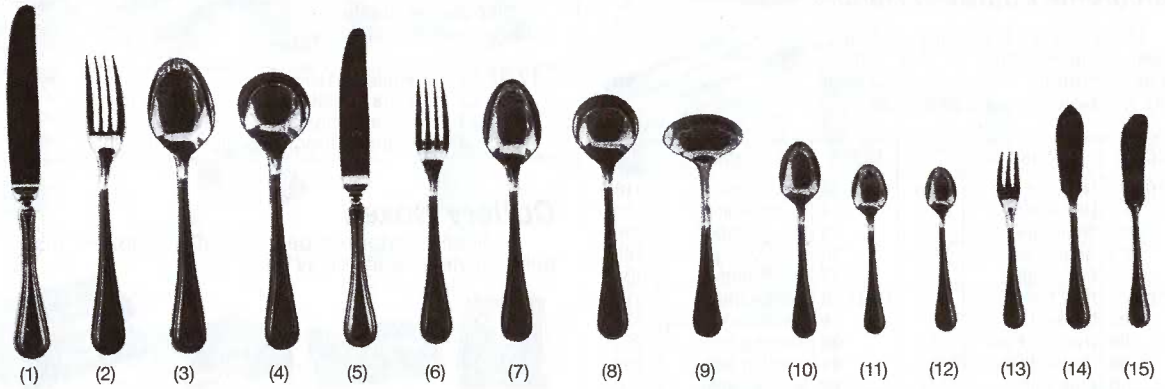
PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

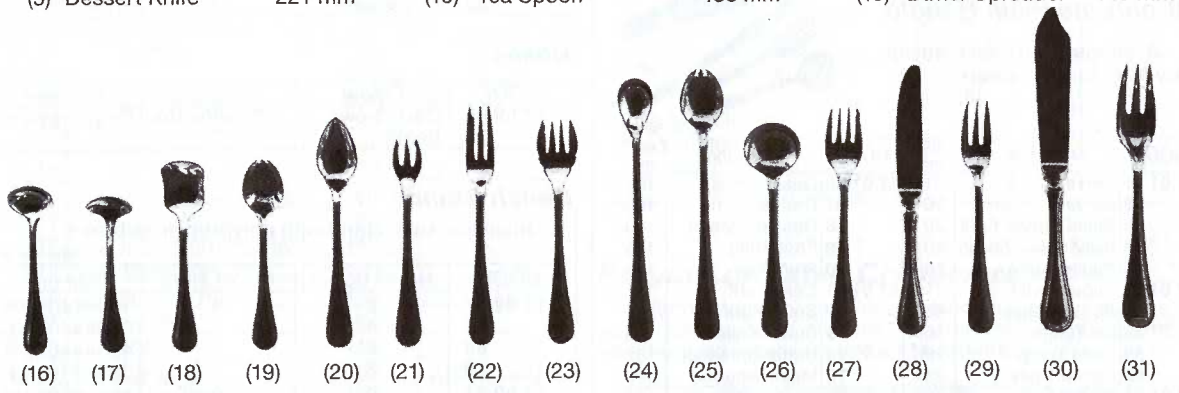
1. Cutlery



(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

(1)	Table Knife	249 mm	(6)	Dessert Fork	188 mm
(2)	Table Fork	212 mm	(7)	Dessert Spoon	187 mm
(3)	Table Spoon	215 mm	(8)	Dessert Soup Spoon	173 mm
(4)	Table Soup Spoon	199 mm	(9)	Sauce Ladle	163 mm
(5)	Dessert Knife	221 mm	(10)	Tea Spoon	138 mm

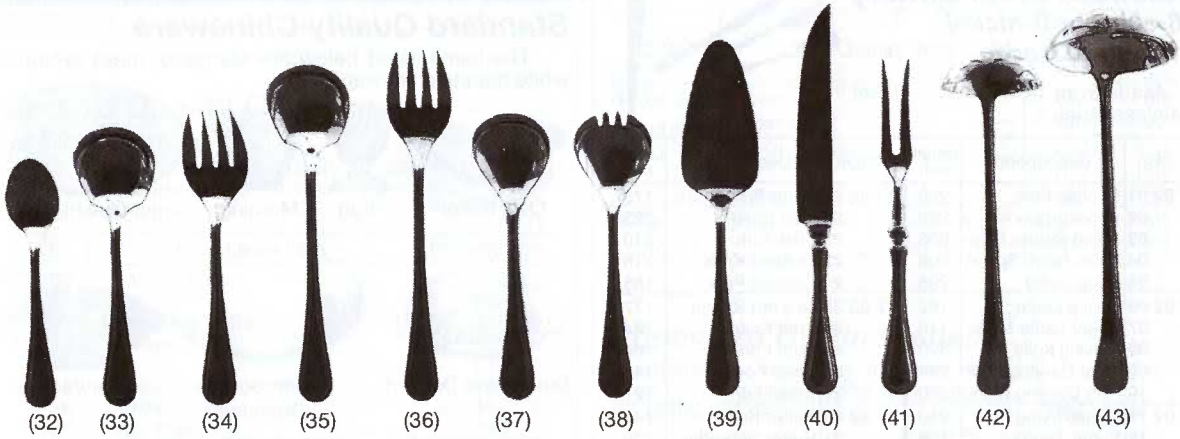
(11)	Coffee Spoon	120 mm
(12)	Demitasse Spoon	116 mm
(13)	Small Fork	124 mm
(14)	Butter Knife	159 mm
(15)	Butter Spreader	148 mm



(16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31)

(16)	Small Soup Spoon	120 mm	(21)	Cocktail Fork	156 mm
(17)	Sugar Ladle	118 mm	(22)	Cake Fork	169 mm
(18)	Ice Cream Spoon	135 mm	(23)	Oyster Fork	145 mm
(19)	Strawberry Spoon	137 mm	(24)	Soda Spoon	184 mm
(20)	Grapefruit Spoon	163 mm	(25)	Melon Spoon	189 mm

(26)	Bouillon Spoon	152 mm
(27)	Salad Fork	160 mm
(28)	Fruit Knife	185 mm
(29)	Fruit Fork	163 mm
(30)	Fish Knife	220 mm
(31)	Fish Fork	181 mm



(32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43)

(32)	Fish Sauce Spoon	183 mm
(33)	Service Spoon	209 mm
(34)	Service Fork	218 mm
(35)	Chauffeing Service Spoon	250 mm
(36)	Chauffeing Service Fork	260 mm
(37)	Salad Service Spoon	211 mm

(38)	Salad Service Fork	211 mm
(39)	Cake Server	259 mm
(40)	Carving Knife	277 mm
(41)	Carving Fork	240 mm
(42)	Soup Ladle Small	246 mm
(43)	Soup Ladle Large	286 mm

7TH 17

Stainless Steel Cutlery
18-chrome Engraved Handle

Made from 18-chrome stainless steel. The handles of this cutlery have a modern stream lined design and are a widely used product.

Unit Per Pc.

CODE	Description	Length mm	CODE	Description	Length mm
17 01 01	Dinner Knife	233	17 01 13	Small Fork	118
02	Dinner Fork	210	14	Butter Knife	150
03	Table Spoon	203	15	Melon Spoon	198
04	Soup Spoon	172	16	Cocktail Spoon	188
05	Fish Knife	210	17	Tea Spoon	133
17 01 06	Fish Fork	177	17 01 18	Coffee Spoon	119
07	Dessert Knife	213	19	Ice Cream Spoon	132
08	Dessert Fork	185	20	Serving Fork	220
09	Dessert Spoon	180	21	Serving Spoon	204
10	Fruit Knife	178	22	Sauce Ladle	160
17 01 11	Fruit Fork	148	17 01 23	Sugar Ladle	115
12	Cake Fork	144			

Stainless Steel Cutlery
18-chrome Plain Handle

A simple and plain design, very easy to keep clean.

Unit Per Pc.

CODE	Description	Length mm	CODE	Description	Length mm
17 01 51	Serving Fork	216	17 01 66	Dessert Knife	196
52	Serving Spoon	201	67	Dessert Fork	185
53	Salad Server Fork	201	68	Dessert Spoon	180
54	Salad Server Spoon	201	69	Fruit Knife	175
55	Sauce Ladle	160	70	Fruit Fork	155
17 01 56	Sugar Ladle	115	17 01 71	Cake Fork	137
57	Sugar Tongs	108	72	Small Fork	122
58	Ice Tongs	165	73	Butter Knife	148
59	Cake Tongs	185	74	Butter Spreader	132
60	Dinner Knife	237	75	Melon Spoon	196
17 01 61	Dinner Fork	202	17 01 76	Cocktail Spoon	185
62	Table Spoon	198	77	Tea Spoon	132
63	Soup Spoon	172	78	Coffee Spoon	116
64	Fish Knife	205	79	Ice Cream Spoon	132
65	Fish Fork	184	80	Strawberry Spoon	134

Stainless Steel Cutlery
18-chrome 8-nickel Standard Grade

Made from 18-chrome 8-nickel stainless steel.

Unit Per Pc.

CODE	Description	Length mm	CODE	Description	Length mm
17 02 01	Serving Fork	220	17 02 20	Soup Spoon	175
02	Serving Spoon	208	21	Fish Knife	223
03	Salad Server Fork	203	22	Fish Fork	210
04	Salad Serve Spoon	205	23	Dessert Knife	215
05	Soup Ladle	296	24	Dessert Fork	185
17 02 06	Sauce Ladle	162	17 02 25	Dessert Spoon	177
07	Sugar Ladle Meat	115	26	Fruit Knife	184
08	Carving Knife	320	27	Fruit Fork	169
09	Meat Carving Fork	284	28	Cake Fork	149
10	Fish Carving Knife	290	29	Small Fork	127
17 02 11	Fish Carving Fork	250	17 02 30	Butter Knife	144
12	Sugar Tongs	108	31	Butter Spreader	139
13	Ice Tongs	165	32	Melon Spoon	200
14	Cake Tongs	185	33	Cocktail Spoon	190
15	Cake Server	250	34	Tea Spoon	132
17 02 16	Knife Steel	335	17 02 35	Coffee Spoon	118
17	Dinner Knife	246	36	Ice Cream Spoon	130
18	Dinner Fork	205	37	Strawberry Spoon	134
19	Table Spoon	199			

Plastic Cutlery

Disposable plastic cutlery, ideal for party use.

17 02 51	Knife Plastic	175mm	Pc.
52	Fork Plastic	144mm	"
53	Spoon Plastic	147mm	"
54	Coffee Spoon Plastic	80mm	"

Cutlery Boxes

Available various types of cutlery boxes, made of polypropylene or stainless steel.

Compartment Dispenser Box Bench Stand

Unit Per Pc.

CODE	Type	Material	Size mm
17 02 61	Compartment	Polypropylene	515×295× 90
63	Dispenser	"	530×325×160

Boxes

Unit Per Pc.

CODE	Colour	Size mm	Material
17 02 65	Dark Brown	125×300×106	Polypropylene
66	Beige	"	"

Bench Stands

Stainless steel stand with polypropylene boxes.

Unit Per Set

CODE	No. of Boxes	No. of Tiers	Size mm
17 02 67	2	2	180×440×230
68	4	"	300×440×230
69	6	"	430×440×230
70	8	"	550×440×230
17 02 71	3	3	180×550×350
72	6	"	300×550×350
73	9	"	430×550×350
74	12	"	560×550×350

2. Plate & Cups

Standard Quality Chinaware

The items listed below are standard, mass produced white marine chinaware.

Oval Baker Egg Morning Oval Platter

Dinner and Dessert Rim Soup (Breakfast) Oval Vegetable

Bread (Side Plate) Dessert Dinner Rim Soup Coupe Soup

Cereal

Fruit

Tea

Coffee

Mocha

After Dinner
(Greek Coffee Cup & Saucer)

Mug

Unit Per Pc.

CODE	Std. Quality Item	Size mm	Contents
17 03 01	Oval Baker	270×165	
17 03 02	Oval Platter	207×151	
03	"	235×172	
04	"	258×190	
05	"	293×210	
06	"	311×230	
07	"	360×260	
08	"	414×300	
17 03 09	Egg Cup with Stem	48	
17 03 10	Dinner Plate	233	
11	"	262	
17 03 12	Rim Soup Plate	205	
13	"	233	
17 03 14	Dessert Plate	191	
15	"	210	
17 03 16	Bread Plate (Side Plate)	168	
17 03 17	Morning Cup 200 cc	86	
18	Sauce for Morning Cup	148	
17 03 19	Oval Vegetable Dish	322×232×70	
17 03 26	Coupe Soup Plate	195	
17 03 27	Cereal Bowl	152	
17 03 28	Fruit Plate	142	
17 03 29	Tea Cup only	81	210cc(7 oz)
30	Saucer for Tea Cup	150	
17 03 31	Coffee Cup only	70	150cc(5 oz)
32	Saucer for Coffee Cup	150	
17 03 33	Mocha Cup only	64	120 cc (4 oz)
34	Saucer for Mocha Cup	126	
17 03 35	After Dinner Cup only	61	90cc(3 oz)
36	Saucer for A.D. Cup	121	
17 03 37	Mug	78	290cc

Standard Quality Chinaware

Blue Lined

Blue lined standard quality chinaware. A wide range of item patterns are available.

Unit Per Pc.

CODE	Blue-Lined Item	Diameter mm
17 03 50	Dinner Plate	262
51	"	233
52	Rim Soup Plate	233
53	Dessert Plate	191
54	"	210
55	Bread Plate (Side Plate)	168
56	Cereal Bowl	152
57	Fruit Plate	142
17 03 58	Tea Cup 208 cc	81
59	Saucer for Tea Cup	150
60	A.D. Cup 90 cc	61
61	Saucer for A.D. Cup	121
17 03 62	Coffee Cup 150 cc	74
63	Saucer for Coffee Cup	133

A.D. denotes After Dinner.

Melamine Tableware

A range of Melaware that resists cracking and chipping and is suitable for repeated cleaning in dishwashers. Easy to handle and store. Colours will not fade.

Meat

Milk Cup

Mug Cup

Coffee Cup

Unit Per Pc.

CODE	Melamine Item	Size mm Diam.	Size mm Height	cc
17 04 01	Meal Plate	210	18	-
02	"	230	20	-
03	Rice Plate	190	18	-
04	Cake Plate	160	15	-
17 04 05	Oval Plate	230×167	21	-
06	"	265×200	25	-
07	"	307×221	26	-
17 04 08	Comparted Round	213	23	-
09	"	250	27	-
10	Comparted Oval	232×177	21	-
11	"	315×220	23	-
17 04 12	Rim Soup Plate	190	32	320
13	"	230	40	240
17 04 14	Milk Cup	73	90	200
15	Mug Cup	85	74	260
16	Coffee Cup	75	65	170
17	Saucer for Coffee Cup	150	15	-

Serving or Table Chinaware

Standard quality serving chinaware such as creamers, sugar bowls, soup tureens, etc. are widely used and standardized regarding size and contents.

Creamer Sugar Bowl Tea or Coffee Pot Coffee Pot Soup Tureen

Unit Per Pc.

CODE	Std. Quality Item		Dimensions cc	Dimensions Height mm
17 04 31	Creamer		190	84
32	Sugar Bowl		300	92
33	Tea or Coffee Pot		450	110
34	"		700	130
35	Coffee Pot		480	135
17 04 37	Soup Tureen	312×185 mm	1,500	150
38	"	350×213 mm	2,500	182

Stoneware Gratin Dishes

Stoneware made gratin dishes. When ordering, specify the shape and size of the dishes required.

Unit Per Pc.

Oval		Round	
CODE	Size mm	CODE	Size mm
17 04 51	190× 90	17 04 53	130
52	210×100	54	140
		55	150

Oval

Round

TH 7

Ovenware Gratin Dishes

High quality chinaware suitable for oven cooking. A wide range of patterns are available as listed below. When ordering, specify type and size.

Oval

Round

Oblong

Unit Per Pc.

CODE	Type	Size mm
17 04 61	Oval	191×123×33
62	"	228×139×34
63	"	324×194×45
64	"	366×222×51
65	"	408×240×57
66	"	445×265×60
17 04 67	Round	146×41
68	"	168×44
69	"	198×49
17 04 70	Oblong	179×123×42
71	"	249×159×48
72	"	290×212×48

Cast Steel Steak Platters

with Wooden Base

Platter is made of cast steel. Furnished with a wooden base. For serving steaks or any other food "sizzling hot". Furnished as a set. Tray size is 380 x 230 mm.

17 04 81	Steak platter, cast steel, 300×215mm	Set

Paper Plates

Disposable paper plates for serving food or snacks, ideal for party use.

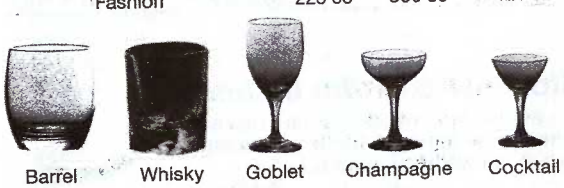
Unit Per Pc.

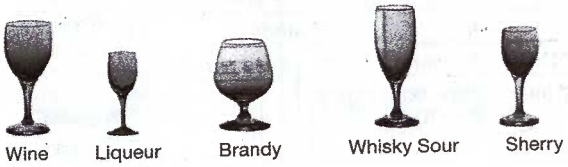
CODE	Type	Size mm	Packet
17 04 86	Round	171	250'S
87	"	222	250'S
88	Comparted	235	125'S
89	Oval	254×191	125'S

Standard Plain Glassware

Standard glassware tumblers of various shapes, and uses. Each pattern is packed and furnished 12 pieces/box. Cut design can be inserted upon request.

Hi-Ball, Old-Fashion, Beer, Straight 225 cc, Straight 360 cc, Straight 420 cc


Barrel, Whisky, Goblet, Champagne, Cocktail


Wine, Liqueur, Brandy, Whisky Sour, Sherry

Unit Per Pc.

CODE	Type	Contents cc	Contents oz	Size mm Diam	Size mm Height
17 06 01	Hi-Ball	245	8-3/4	65	116
02	Old Fashion	200	7	73	84
03	Beer	480	18	68	154
04	Straight	225	8	66	104
05	"	295	10	71	115
17 06 06	Straight	360	12-3/4	69	140
07	"	420	15	77	151
08	Barrel	270	9	74	79
09	Whisky	40	1-1/2	43	53
10	"	60	2	48	61
17 06 11	Goblet	300	10-3/4	77	134
12	Champagne	130	4-1/2	85	110
13	Cocktail	70	2-1/2	75	105
14	Wine	50	1-2/3	46	105
15	"	90	3-1/5	54	110
17 06 16	Liqueur	30	1	37	92
17	Brandy	210	7-1/2	55	107
18	"	330	11-3/4	77	116
19	Whisky Sour	135	4-4/5	56	144
20	Sherry	70	2-1/2	51	116

Special Quality Glassware

One piece, hand blown glassware with a European style stem. Owners emblem, house flag or cut design can be inserted upon request.

Goblet, Champagne, Cocktail, Red Wine, White Wine, Liqueur

Unit Per Pc.

CODE	Type	Contents cc	Contents oz	Size mm Diam	Size mm Height
17 06 31	Goblet	200	8	70	120
32	Champagne	180	6	90	133
33	Cocktail	90	3	63	105
34	Red Wine	160	5-1/2	60	100
35	White Wine	70	2-1/2	53	80
17 06 36	Liqueur	28	1	27	65

Hard-Strong Glass Tumblers

Manufactured under a patented process, these glasses are thin but strong and will not break easily. Packed 12 pieces per box.

Straight, Barrel, Table

Unit Per Pc.

CODE	Type	Contents cc	Contents oz	Size mm Diam	Size mm Height
17 06 41	Straight Tumbler	180	6-2/5	60	92
42	"	210	7-1/2	64	100
43	"	290	10	71	117
44	Barrel Tumbler	150	5	56	73
45	"	190	6-2/5	56	94
17 06 46	Barrel Tumbler	240	8-1/2	58	106
47	Table Tumbler	180	6-2/5	55	94
48	"	240	8-1/2	63	94

Heavy Duty Glassware

Well balanced modern stemware, made of crystallized strengthened glass for ships use.

Wine Long

Wine Short

Sherry

Whisky Sour

Brandy

Goblet

Cocktail

Champagne

Unit Per Pc.

CODE	Type	Contents cc	Contents oz	Size mm Diam	Size mm Height
17 06 51	Wine Long	185	6-3/5	52	157
52	Wine Short	185	6-3/5	66	136
53	Sherry	85	3	54	122
54	Whisky Sour	130	4-1/3	49	144
55	Brandy	340	12	63	127
17 06 56	Goblet	325	11-1/2	71	153
57	Cocktail	100	3-1/2	71	111
58	Champagne	155	5-1/2	80	114

Beer Mugs

Heavy based glass mug.

Unit Per Pc.

CODE	Contents cc	Size mm Diam	Size mm Height	CODE	Contents cc	Size mm Diam	Size mm Height
17 06 66	265	72	100	17 06 68	630	85	177
67	500	79	167	69	840	96	189

Disposable Cups

Paper or styrofoam plastic suitable for use with hot or cold drinks. Also for use in vending machines.

With Handle Paper

Styrofoam

Stick Spoon

Without Handle Paper

Insert Plastic

Plastic

Holder Plastic

Unit Per Pc.

CODE	Size Diam x H mm	CC	Type
Paper			
17 06 81	73 x 81	205	with Handle
82	73 x 81	205	without Handle
88	77 x 93	270	"
89	81 x 118	360	"
90	83 x 131	420	"
91	89 x 139	545	"
Plastic			
17 06 83	70 x 92	215	without Handle
92	77 x 92	275	"
93	79 x 120	340	"
94	84 x 122	400	"
95	90 x 135	545	"
Styrofoam			
17 06 84	80 x 92	260	without Handle
Plastic Insert Cup & Holder			
17 06 85	81 x 77	204	Insert Cup
86	-	-	Holder
87	L: 130 mm	-	Stick Spoon

Standard Quantity in Box for Reference Purpose

CODE	Q'ty	CODE	Q'ty	CODE	Q'ty
Paper		Plastic		Styrofoam	
17 06 81	2,000's	17 06 83	3,000's	17 06 84	2,000's
82	2,000's	92	2,500's	Plastic Insert Cup & Holder	
88	2,500's	93	1,000's	17 06 85	2,500's
89	1,400's	94	1,000's	86	100's
90	500's	95	500's	87	1,000's
91	500's				

Straws

A plastic hollow tube for drinking.

Unit Per Pc.

CODE	Type	Size mm Diam	Size mm Length
17 06 96	Standard	4	180
17 06 97	Big	6	180
98	"	6	210
17 06 99	Flexible	6	210

3. Tableware

Ice Cream and Sherbet Dishes

Glass

Glass stemware in three types for ice cream or sherbet.

Flat Bottom

Goblet

Tulip

Unit Per Pc.

CODE	Type	Size mm Diam	Size mm Height
17 07 01	Flat bottom	96	80
02	Goblet	100	90
03	Tulip	119	90

Stainless Steel

Stainless steel bowl and cup for individual service.

Bowl

Cup

Unit Per Pc.

CODE	Type	Size mm Diam	Size mm Height
17 07 06	Bowl	110	25
07	Cup	100	56

Ice Cream Scoops (Ice Cream Dishers)

Stainless steel twin grip ice cream portioner. Available in round and oval easy clean types.

Round Scoop

Oval Scoop

Unit Per Pc.

CODE	Type	Size & Capacity
17 07 11	Round	55 mm × 50 cc
12	"	59 " × 60 "
13	"	65 " × 80 "
14	"	68 " × 90 "
15	Oval	62 × 47 mm × 40 cc

Glass Plates and Dishes

Round Plate

When ordering, specify diameter.

Unit Per Pc.

CODE	17 07 31	17 07 32	17 07 33	17 07 34
Diam. mm	160	180	230	300

Fruit Dish

Glass made with an engraved design. Has a 144 mm diameter and 25 mm height.

17 07 38	Fruit dish, glass, 144 mm diam.	Pc.

Bowls

Glass Bowl

Multi purpose glass bowl for fruits, ice cream, salad, jam, etc.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 07 41	120	17 07 43	230
42	160		

Tempered Glass Bowl

Tempered plain, clear glass bowls. Made of a thick, resistant glass which won't chip or crack.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 07 46	120	17 07 49	200
47	140	50	230
48	170		

Glass Salad Bowl

Made of glass with an engraved design.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 07 56	129	17 07 58	180
57	150	59	210

Plastic Salad Bowl

Heavy duty, transparent, plastic salad bowl.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 07 61	160	17 07 64	225
62	185	65	250
63	200		

Wood Salad Bowl

Machine carved from hard wood and finished with a protective lacquer. Used mainly for salad and vegetable servings.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 07 71	150	17 07 74	250
72	180	75	300
73	200		

Wooden Salad Servers

A set consists of a wooden fork and spoon.

17 07 80	Wooden salad server, length	255 mm	Set
81	"	300 mm	"

Wood Spoons

Plain wood serving and stirring spoon.

17 07 82	Wooden spoon,	L 250 mm	Pc.
83	" "	L 300 mm	"
84	" "	L 400 mm	"
85	" "	L 600 mm	"

Serving Tongs

Available in various types and lengths for serving salad, bread and cake, etc.

Plastic Salad Serving

Stainless Steel Salad Serving

Stainless Steel Spaghetti Serving

Stainless Steel Bread & Cake Serving

Stainless Steel Multipurpose Serving

Unit Per Pr.

CODE	Serving for	Material	Overall Length mm
17 07 91	Salad	Plastic	230
92	"	Stainless Steel	240
17 07 93	Bread & Cake	Stainless Steel	215
17 07 94	Multi Purpose	Stainless Steel	240
95	"	"	300
96	"	"	390
17 07 97	Spaghetti	Stainless Steel	260

Stainless Steel Dishes

Oval

Round

Oval and round type stainless steel serving dishes. Suitable for buffets and arrangements of any type of food. Cleans very easily.

Unit Per Pc.

Oval		Round	
CODE	Size mm	CODE	Diam. mm
17 08 01	200 × 150	17 08 16	165
02	230 × 165	17	200
03	255 × 180	18	230
04	305 × 205	19	255
05	355 × 240	20	305
17 08 06	410 × 275	17 08 21	355
07	460 × 310	22	410
08	510 × 355	23	460
09	560 × 380		
10	610 × 445		

Stainless Steel Gravy Boats

For serving sauce, etc. When ordering, specify content capacity.

Unit Per Pc.

CODE	17 08 31	17 08 32	17 08 33
Capacity (cc)	200	300	400

Stainless Steel Soup Tureens Plain Round

Plain stainless steel round soup tureen. Available in 5 sizes complete with cover.

Unit Per Pc.

CODE	Contents ltr	Size mm (Diam x Height)
17 08 38	0.4	150 x 100
34	1.3	192 x 135
35	3.0	256 x 158
36	2.4	200 x 210
37	4.0	282 x 195

Stainless Steel Soup Tureens

Oval and round type soup tureen made of stainless steel. Provided complete with cover.

Oval

Round

Unit Per Pc.

CODE	Type	Contents ltr.	CODE	Type	Contents ltr.
17 08 41	Oval	2.6	**17 08 43**	Round	2.8
42	"	4.0			

Stainless Steel Vegetable Dishes

Oval

Undivided oval and rectangular vegetable dish. Stainless steel, complete with cover for self service of fresh or steamed vegetables, pastas and salads.

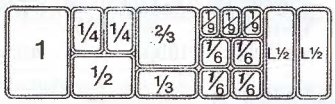
Rectangular

Unit Per Pc.

CODE	Type	Size mm
17 08 47	Oval	287 x 206 x 38
17 08 48	Rectangular	310 x 243 x 46
49	"	370 x 304 x 46

Stainless Steel Food Service Containers

Stainless steel containers designed to prepare, store, freeze and serve foods. The graduated size pans can be used in any combination with each other. Containers can also save the dead spaces combining the graduated pans efficiently as the picture shows below. When ordering, specify the type and size required. Containers with an outer depth of 65 mm or 150 mm graduated containers are also available if required.



Unit Per Pc.

CODE	Type	Inner Size mm	ltr
17 08 51	1/9	150 x 82 x 100	1.0
52	1/6	150 x 136 x 100	1.6
53	1/4	240 x 136 x 100	2.6
54	1/3	300 x 150 x 100	3.8
55	1/2	300 x 240 x 100	6.2
17 08 56	L 1/2	500 x 136 x 100	5.8
57	2/3	325 x 300 x 100	8.6
58	1	500 x 300 x 100	13.8

Stainless Steel Covers for Food Service Container

Stainless steel cover with handle for above mentioned food service containers. When ordering, specify the size of the container as shown in the illustration above.

Unit Per Pc.

CODE	Type Number	Size mm	CODE	Type Number	Size mm
17 08 61	1/9	176x108	**17 08 65**	1/2	327x265
62	1/6	176x163	**66**	L 1/2	530x163
63	1/4	265x163	**67**	2/3	353x327
64	1/3	327x176	**68**	1	530x327

Stainless Steel Vegetable Bowls

Oval shaped stainless steel bowls for serving vegetables.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 09 06	200x135x30	**17 09 08**	255x180x30
07	230x155x30	**09**	290x206x38

Stainless Steel Cake or Fruit Stands

Fancy

Plain

Fancy and plain type table stand for serving cake or fruit.

Unit Per Pc.

CODE	Type	Size mm	
		Diam	Height
17 09 16	Fancy	270	110
17 09 17	Plain	255	140
18	"	285	170

Plastic Fruit Baskets

Meshed plastic round basket for serving fruit.

17 09 21	Fruit basket plastic 275 mm diam. x 73 mm height	Pc.

Stainless Steel Bread Trays

Oval shaped tray for serving sliced bread. Size 332 X 195 mm.

17 09 26	Bread tray, stainless steel 332 x 195 mm	Pc.

Stainless Steel Toast Racks

Convenient serving tray for toast. Holds 4 slices in a standing rack design.

17 09 27	Toast rack, stainless steel, 4 slices	Pc.

Bread Baskets

Plastic

Plastic made oval shape basket.

17 09 31	Bread basket, plastic, oval 295 x 200 x 98 mm	Pc.

Bamboo

Bamboo made oval shaped bread basket.

17 09 32	Bread basket, bamboo, oval 290 x 180 x 90 mm	Pc.

Stainless Steel Egg Cups

Size : D 50 mm x H 60 mm.

17 09 40	Egg cup, stainless steel	Pc.

Stainless Steel Finger Bowls

Used to rinse the hands during meals or to keep premeasured amounts of spices or other ingredients at easy reach when cooking.

Size : D 110 mm x H 50 mm.

17 09 42	Finger bowl, stainless steel, 110 mm ϕ	Pc.

Table Bells

Brass with a chrome plated finish.

Size : D 75 mm x H 90 mm.

17 09 46	Table bell, chrome plated brass	Pc.

Hand Bells

Polished brass made for announcing meal time, etc.

17 09 47	Hand bell, brass, 125 mm diam.	Pc.
48	" " 145 mm diam.	"

Salt & Pepper Shakers

Glass

Fluted sides with plastic or stainless steel top.

Unit Per Pc.

CODE	Name	Top
17 10 01	Salt Shaker	Plastic
02	"	Stainless Steel
03	Pepper Shaker	Plastic
04	"	Stainless Steel

Stainless Steel

Marked on top with the letters "S" or "P" respectively for distinguishing between salt and pepper. The stainless steel shakers won't break and are easy to clean.

Unit Per Pc.

CODE	For	Size mm
17 10 06	Salt	D 73 x H 91 mm
07	Pepper	

Wood Salt Shakers & Pepper Mills

Old fashion designed wooden salt shaker, and pepper mill.

17 10 11	Salt shaker, wood 48 mm dia x H 120 mm	Pc.
17 10 12	Pepper mill, wood 48 mm dia. x H 120 mm	"

Caster Sets

Salt & Pepper

Two glass shakers, complete with stainless steel stand.

17 10 16	Salt & pepper caster set	Set

Sauce

Revolving stand with 4 bottles for Worcestershire sauce, soy sauce, salt and tooth picks. Available in all plastic or glass body with stainless steel cap type in set.

Unit Per Pc.

CODE	Name	Top
17 10 18	Plastic	Plastic
19	Glass with stainless steel cap	Stainless steel

Oil & Vinegar

Stainless steel made stand with two glass bottles for vinegar, oil or other dressings. Available in a set or individual bottles.

CODE	Description
	Unit Per Set
Caster Set	
17 10 21	80 cc x 2 btls
22	180 cc x 2 btls
	Unit Per Pc.
Bottle only	
17 10 23	80 cc
24	180 cc

4 Pcs Cruet Stand Sets

(Condiment Sets)

Stainless steel stand with two glass bottles for vinegar, etc., and two glass cruets for salt and pepper.

17 10 26	Cruet stand set 4 pcs	Set

Stainless Steel Spice Containers

Stainless steel spice container with cover. Designed especially for spice. Available in six different sizes to hold oblong inner boxes.

Unit Per Pc.

CODE	No. of Inner Boxes	Container Size mm
17 10 28	2	L255 x W145 x H60
17 10 31	3	L330 x W145 x H60
17 10 29	4	L435 x W145 x H60
32	"	L285 x W225 x H60
17 10 30	5	L543 x W145 x H60
17 10 33	6	L330 x W285 x H60

Plastic Sauce Dispensers

Plastic squeeze dispensers used for sauce, ketchup, mustard and other condiments. Available in red, yellow and white colours for identification of the contents.

Unit Per Pc.

CODE	Capacity	Size D x H mm	Colour
17 10 36	180 cc	45 x 180	Red
37			Yellow
38			White
17 10 39	270 cc	50 x 185	Red
40			Yellow
41			White
17 10 42	400 cc	60 x 205	Red
43			Yellow
44			White

Glass Sauce Bottles

Glass bottle with plastic or stainless steel top and pouring spout. Ideal for use with soy sauce or other cooking oils.

Plastic Top

Stainless Steel top

Unit Per Pc.

CODE	Top	Capacity	Size D x H mm
17 10 46	Plastc	90 cc	60 x 90
47	"	120 cc	57 x 105
45	"	220 cc	70 x 112
17 10 48	Stainless steel	150 cc	57 x 121
49	"	180 cc	70 x 112
50	"	280 cc	70 x 131
53	"	330 cc	70 x 152

Mustard Pots

Glass body with plastic or stainless steel cover with spoon.

17 10 51	Mustard pot, glass, w/plastic cover	Pc.
52	" " " , w/stainless steel cover	"

Bitters Bottles

For holding bitters or oil seasonings which should be dispensed in droplets. Bottle stands at 160 mm height.

17 10 54	Bitters bottle, glass	Pc.

Syrup Pitchers

Stainless Steel

Made of stainless steel. Syrup pours easily when the tab is pulled back and the pitcher is tipped forward.

17 10 55	Syrup pitcher, stainless steel 250 cc	Pc.
56	" " 300 cc	"

Glass

Pitcher has a glass body with a plastic lid and handle. On the lid there is a built in spring which extends when the lever is pulled allowing the syrup to flow out easily.

17 10 58	Syrup pitcher, glass 200 cc	Pc.

Plastic Butter Cases

Plastic made economical butter case with cover.

17 10 61	Butter case with cover, plastic W80 x L150 x H40 mm	Pc.

Stainless Steel Butter Trays

Plastic Cover

Stainless steel butter tray with cover.

Unit Per Pc.

CODE	Cover	Size mm
17 10 63	Plastic	L185 x W110 x H55
64	S. Steel	

S. Steel Cover

Stainless Steel Butter Dishes

Made of stainless steel. The dish has a rolled rim.

17 10 66	Butter dish, stainless steel D95 x H70 mm	Pc.

Stainless Steel Jam Bowls

To be used for jam, marmalades, sugar, etc. Lid is not included.

Unit Per Pc.

CODE	Contents cc	Size mm	
		Diam	Height
17 10 71	80	57	45
72	140	68	48
73	280	82	65

Glass Jam Casters

Twin jam pots in one holder. Glass pot furnished with plastic lid.
Size: 163 mm x 75 mm.

17 10 76	Jam caster set, glass, twin	Set

Glass Jam Pots

Single jam pot. Quality and design same as above.
Size : D 82 mm x H 92 mm.

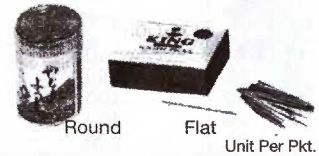
17 10 77	Jam pot, glass	Pc.

Glass Jam or Cheese Dishes

Made of plate glass with a stainless steel cover.
Size : D 100 mm x H 47 mm.

17 10 78	Jam or cheese dish glass with stainless steel cover	Pc.

Tooth Picks



Round Flat

Wooden tooth picks, available in round or flat types.

Unit Per Pkt.

CODE	Type	Contents
17 10 90	Round	150'S
91	Flat	750'S
92	Individually wrapped round	1000'S

Tooth Pick Holders

Plastic

Made of plastic with a transparent cover.
Size : D 59 mm x H 73 mm

17 10 95	Tooth pick holder, plastic	Pc.

Glass

Size : D 44 mm x H 52 mm.

17 10 96	Tooth pick holder, glass	Pc.

Sugar Pots

Glass

A glass bowl with a stainless steel lid and handle. The lid has a hole on it for closing the lid while a spoon is in the bowl. Furnished without spoon unless specified otherwise.

17 11 01	Sugar bowl, glass diam 80 mm x height 135 mm	Pc.

Stainless Steel

17 11 06

17 11 07

17 11 08 - 10

Unit Per Pc.

CODE	Contents cc	Size mm Diam	Size mm Height
17 11 06	280	82	85
17 11 07	350	88	64
17 11 08	130	70	65
09	200	80	75
10	360	95	90

Sugar Dispensers

Glass dispensers with a stainless steel top fitted with a dispenser nozzle. The nozzle automatically controls the quantity of the sugar dispensed at one time.

17 11 11	Sugar dispenser, glass automatically adjusted	Pc.

Stainless Steel Creamers

To be used as a creamer or milk pitcher. The pattern shown on the left hand side is furnished without a lid.

17 11 21 - 22

17 11 23 - 25

Unit Per Pc.

CODE	Contents cc	Size mm Diam	Size mm Height
17 11 21	140	47	50
22	280	69	90
17 11 23	100	55	75
24	160	65	85
25	220	75	95

Stainless Steel Coffee Pots

Below are shown a few of the different types of coffee pots which are most popular. When ordering, specify the type as well as the carrying capacity by the code numbers listed below.

17 11 27 - 30

17 11 32 - 34

17 11 35 - 37

Unit Per Pc.

CODE	Contents cc	Size mm Diam	Size mm Height
17 11 27	370	75	115
28	460	80	140
29	900	90	185
30	1,100	100	205
17 11 32	460	76	126
33	550	84	132
34	900	103	140
17 11 35	400	75	130
36	750	100	160
37	1,000	110	190

Stainless Steel Tea Pots

These pots can be used either as tea or coffee pots. When ordering, please specify the code number as well as the carrying capacity.

17 11 41 - 43

17 11 44

17 11 45 - 48

Unit Per Pc.

CODE	Contents cc	Size mm Diam	Size mm Height
17 11 41	460	83	84
42	550	92	90
43	900	118	118
17 11 44	500	100	115
17 11 45	370	80	110
46	460	95	125
47	900	110	140
48	1,100	127	155

Turkish Coffee Pots

Made of aluminium with a long handle for convenience. Designed to prepare Turkish style coffee.

Unit Per Pc.

CODE	Cups	Size mm Base Diam	Size mm Height
17 11 51	1	57	63
52	2	68	75
53	3	75	83
54	5	90	92

Boiling Coffee Pots

Stainless Steel

Decanter

Unit Per Pc.

CODE	Capacity Ltr	CODE	Capacity Ltr
Stainless Steel		**Decanter**	
17 11 66	1.5	**17 11 56**	0.3
67	3.0	**57**	0.5
68	4.0	**58**	0.7
		59	0.8
		60	1.2
		69	1.8

Coffee Makers "Mocha Express"

A coffee maker for use with filter paper. Available in 3 sizes. Filter papers must be ordered separately.

17 11 71	Coffee maker "Mocha Express"	No. 3	Pc.
72	"	No. 6	"
73	"	No. 9	"

Filter Paper

Round type filter paper for "Mocha Express".

Unit Per Pkt.

CODE	Name	Size No. Diam. mm		Packed in
17 11 76	Round Filter Paper	No. 3	56	100's
77	"	No. 6	60	100's
78	"	No. 9	68	100's

Percolators

Stainless steel made pot & cover with glass knob. Can be furnished for 6 or 8 cup capacity.

Unit Per Pc.

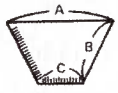
CODE	Cap Capacity	Size mm
17 11 81	6	175 × 115
82	8	205 × 115

Melita Coffee Maker

Cups & Filter Paper

Simple and easy coffee making cup and filter paper.

Filter Cup



Filter Paper

Filter Cups

17 11 86	Melita coffee maker cup size No.	1 x 2	Pc.
87	"	1 x 4	"
88	"	1 x 6	"

Filter Paper

Unit Per Pkt.

CODE	Size No.	Actual Size mm			Packed in
		A	B	C	
17 11 91	1 x 2	160	85	55	100's
92	1 x 4	197	127	55	100's
93	1 x 6	225	135	55	100's

Crinkled Coffee Filter Papers

Disposable filters to fit most coffee brewers. Packed 1,800 per case. Described sizes are measured when the filter is extended.

Unit Per C/S

CODE	Diam. mm	Pcs Per Case
17 11 94	230	1,000's
95	250	"
98	270	"
99	280	"
17 11 96	250	1,800's
97	280	"

Water Jugs

Plastic

Plastic handy jug.

17 12 01	Water jug, plastic, 2 ltr	Pc.

Plastic – Double Framed Wall

As polyurethane foam is filled between the double framed wall, it holds cold water for longer periods than conventional plastic water jugs. Also the body will not get wet by drops of dew even if filled with ice water.

17 12 03	Water jug, plastic, double framed wall, 1.7 ltr	Pc.

Glass – (Carafe)

Glass water jug with plastic handle.

Unit Per Pc.

CODE	Contents	Size mm	
	ltr	Diam	Height
17 12 06	1.2	110	235
07	1.9	138	270

Glass, with Ice Lip

Glass water jug with ice lip and handle. Body diam. 155 mm and height 325 mm.

17 12 09	Water jug, glass 2 ltr	Pc.

Stainless Steel

Available in plain and ice lip and insulated types.

Plain

Ice-lip

Insulated

Unit Per Pc.

CODE	Type	Ltr
17 12 16	Plain	1.8
17	"	2.8
17 12 18	Ice-lip	2.0
17 12 19	Insulated	1.0
20	"	1.85

Glass Water Decanters

Glass made bottle with plastic plug.
Size : Bottom Diam. 105 mm x Height 220 mm.

17 12 11	Water decanter glass, 220 mm height	Pc.

Thermos Bottles

Insulated jug with rotating stopper to keep the spout open or closed and avoid spillage

Unit Per Pc.

CODE	Capacity	CODE	Capacity
17 12 31	1 ltr	17 12 32	1.9 ltr

Air Pressure Type

Air pressure type thermos bottle. Liquid is dispensed by pressing a pump tab at the top of the thermos.

Unit Per Pc.

CODE	Capacity	CODE	Capacity
17 12 33	2.2 ltr	17 12 34	3.0 ltr

Thermos Water Tanks

Mobile water container with insulation. Allows the keeping of hot or cold water.

17 12 36	Thermos water tank, capacity 10 ltr	Pc.

4. Bar Utensils

Pouring Measure

Shot pourer, easily attachable to a liquor bottle to dispense the same premeasured quantity (1 oz) each time.

17 13 06	Pouring measure, 28.5 cc	Pc.

Non-Drip Measure and Brackets

Non Drip Measure

Standard, non-drip, all purpose spirit measure in 28.5 cc.

Bottle Brackets

Standard single bracket suitable for clamping to a wall or shelf. Polished aluminium. Height with standard bottle, approx. 460 mm.

17 13 11	Non-Drip spirit measure 28.5 cc	Pc.
17 13 12	Standard single bottle bracket	"
17 13 13	Non-Drip spirit measure with single bottle bracket	Set

Stainless Steel Jigger Cups

For measuring whisky, cocktail ingredients, etc. Both ends of the jigger can be used as measuring cups.

Unit Per Pc.

CODE	Cup Contents cc	Cup Contents oz	Size mm
17 13 16	28 × 56	1 × 2	110 × 40 × 45
17	14 × 28	1/2 × 1	90 × 35 × 37

Stainless Steel Cocktail Shakers

A handy designed shaker for cocktails, iced juice, etc.

Unit Per Pc.

CODE	Cup Contents cc	Cup Contents oz	Size mm
17 13 21	200	7	150 × 65
22	330	12	175 × 75
23	500	17	205 × 80

Cocktail Glasses with Strainers

Mixing glass of H135 x D85 mm with stainless steel strainer. Specify if stainless steel twisted bar spoon, length 135 mm, is required.

Cocktail Glass

Strainer

Bar Spoon

17 13 31	Cocktail glass with strainer	Pc.
32	Bar spoon for cocktail	"

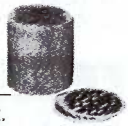
Muddlers

Cocktail stirrer, available in plastic and stainless steel, length 200 mm.

17 13 36	Muddler, plastic, 200 mm length	Pc.
37	Muddler, stainless steel 200 mm length	"

Coasters

Available in a round and square type, paper, copper or leather.



17 13 41	Coaster, paper, round 100's/pkt	Pkt.

5. Ice Instruments

Ice Pails

Designed as an ice cube server. Non insulated. Handle can be folded. Furnished with ice tongs.

Unit Per Set

CODE	Capacity	CODE	Capacity
Glass		**Stainless Steel**	
17 13 49	1.5 ltr	**17 13 46**	1 ltr
		51	1.5 ltr
		47	2 ltr
		48	3 ltr
		50	5 ltr

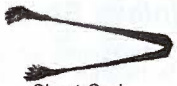
Thermos Type

Insulated thermos ice cube container. Furnished without ice tongs.

17 13 52	Ice pail, thermos, 1.1 ltr	Pc.
53	" 1.4 ltr	"

Ice Tongs

Long Grab



Short Grab

Unit Per Pr.

CODE	Length mm	CODE	Length mm
Long Grab		**Short Grab**	
17 13 56	145	**17 13 58**	155
54	180	**57**	180
55	215	**59**	210

Stainless Steel Champagne Coolers

Has handles at both sides.

Unit Per Pc.

CODE	Capacity	Diam
17 13 61	4.5 ltr	190 mm
17 13 62	6.0 ltr	225 mm

Ice Chippers

Heavy duty ice chippers with 3 steel points set in a cast iron shank.

17 13 71	Ice chipper, 3 points, overall length 195 mm	Pc.

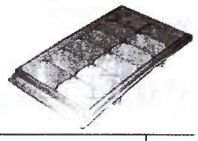
Ice Picks

Steel pick with wooden handle. Handle has a metal head.

17 13 72	Ice pick, overall length 235 mm	Pc.

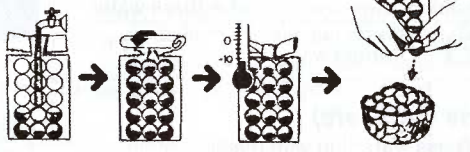
Ice Cube Trays

Tray is made of plastic to make removing the ice cubes easier. Just twist the tray and the ice cubes come out without breaking.



17 13 76	Ice cube tray plastic	Pc.

Ice Cube Packs



Fill with Water — Tie Fast — Put in Freezer — Push Out

17 13 78	Ice cube pack plastic, 325 × 160 mm, 10's	Pkt.

Ice Block Tongs (Crampons)

For carrying ice blocks with a firm grip. Pin pointed hook ends prevent slipping.

Unit Per Pr.

CODE	Opening	CODE	Opening
17 13 80	400 mm	**17 13 82**	600 mm
81	500 mm		

Hand Claws

A wood handle with curved claw for handling ice block, frozen meat or fishes.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
17 13 84	300	**17 13 87**	390
85	330	**88**	420
86	360	**89**	450

Ice Block Cutting Saws

For cutting ice blocks with stainless steel blade. The length in the table are indicated only blade length.

Unit Per Pc.

CODE	Blade Length mm	CODE	Blade Length mm
17 13 90	300	**17 13 95**	450
91	330	**96**	480
92	360	**97**	510
93	390	**98**	540
94	420	**99**	600

6. Serving Utensils

Service Trays

Plastic

High density, dishwasher proof and very light. Available in rectangular or round shapes.

Rectangular

Round Non-slip

Unit Per Pc.

CODE	Shape	Size mm	CODE	Shape	Size mm
17 14 01	Rectangular	350×270	**17 14 06**	Round	353
02	"	410×300	**17 14 07**	Round,	353
03	"	435×325	**08**	non-slip	405
04	"	475×370			

Wood

Teak or Mahogany veneer. Available in rectangular or round shapes.

Rectangular

Round

Unit Per Pc.

Rectangular		Round	
CODE	Size mm	CODE	Size mm
17 14 11	420 × 247	**17 14 16**	300
12	460 × 265	**17**	355
13	510 × 308	**18**	400

Stainless Steel

For serving dishes from the galley direct to dining or mess rooms. Trays are available in rectangular, cafeteria, divided and round type.

Round

Cafeteria

Rectangular Comparted

Unit Per Pc.

CODE	Shape	Size mm
17 14 21	Round	300
22		350
23		400
17 14 24	Cafeteria	250 × 350 × 19
25		305 × 415 × 20
26		320 × 435 × 21
17 14 27	Rectangular (handled)	455 × 340
28		505 × 370
29		560 × 405
30		600 × 435
17 14 31	Comparted	400×300×30

Alumite

Unit per Pc.

CODE	Size mm
17 14 33	460 × 305 × 25
34	500 × 330 × 27
17 14 35	535 × 340 × 27
36	580 × 385 × 30

Melamine Service Trays

Comparted service tray for serving dishes from the galley direct to dining or mess rooms. Made of Melamine.

Unit Per Pc.

CODE	Size mm	Number of Pockets
17 14 32	394 × 294	6

Stainless Steel Menu Holders

Available in various types, but the two most common are listed below.

"T"

"I"

Unit Per Pr.

CODE	Description	Height mm
17 14 45	T shape pinch	85
46	I " "	60

Menu Cards

Plain white paper of a standard size convenient for posting a daily menu. If necessary, sizes other than those listed below are available upon request.

17 14 47	Menu card white plain 130 × 180 mm	Sht
48	" " " " 150 × 200 mm	"

7. Napkin Paper

Napkin Papers (Serviettes)

Napkin paper can be furnished unfolded or folded. 3 colours are available in 1/4 sized folded napkin papers.

Unfolded

Folded

Sizes and types are listed below. Please specify whether folded or unfolded napkins are required.

CODE	Type	Colour	Open Size mm	Unit
17 14 51	Unfolded	White	250 × 250	1,000's/pkt
52	"	"	300 × 300	"
17 14 53	1/6 Folded	White	250 × 250	100's/pkt
59	"	"	"	1,000's/pkt
54	"	"	"	10,000's/ctn
17 14 55	1/4 Folded	White	320 × 320	500's/pkt
56	"	Blue	"	"
57	"	Orange	"	"
58	"	Pink	"	"

Stainless Steel Paper Napkin Holders

The two napkin holders shown on the left are for hand folded, diagonal shaped napkins and the holder on the right is for prefolded 1/4 sized napkins.

17 14 61

17 14 62

17 14 63

Unit Per Pc.

CODE	Description	Size mm
17 14 61	For Hand folded napkin papers	72 × 140
62	"	122 × 140
63	For Ready folded napkin papers	95 × 140

Stainless Steel Paper Napkin Dispensers

Unit Per Pc.

CODE	Size mm
17 14 66	115 × 95 × 140
17 14 67	220 × 105 × 190

Cotton Damask Napkins

Woven from white cotton damask. Standard sizes are 450 mm square and 500 mm square. Other sizes are available upon request.

17 14 71	Napkin, table, cotton damask white 450 mm sq.	Sht
17 14 72	" 500 mm sq.	"

Napkin Rings (Serviette Rings)

Stainless

Acryl

Used for enclosing table napkin. 45 mm diameter.

Unit Per Pc.

CODE	Material	CODE	Material
17 14 74	Stainless steel	17 14 75	Acryl resin

Paper Table Napkins

2 ply crepe paper table napkins.

Unit Per C/T

CODE	Size mm	Per/Carton
17 14 76	330 × 330	2,400's
77	450 × 450	2,000's
79	450 × 450	100's

Lace Paper (Paper Doily)

Round

Oval

Lace like decorated doily for trays, coffee tables, etc. Round or oval design.

Unit Per Pkt.

Round			Oval		
CODE	Diam. mm	Pkt	CODE	Diam mm	Pkt
17 15 01	100	500's	17 15 21	150 × 105	500's
02	127	"	22	170 × 110	"
03	150	"	23	200 × 140	"
04	175	"	24	254 × 175	"
05	200	"	25	305 × 215	"
17 15 06	225	500's	17 15 26	355 × 240	300's
07	254	"	27	405 × 265	"
08	275	"	28	455 × 290	"
09	305	"	29	505 × 330	"
10	330	300's	30	555 × 340	"
17 15 11	355	300's	17 15 31	625 × 410	300's
12	405	"	32	610 × 280	"
13	455	"			
14	505	"			

8. Frying Pans & Cooking Pots

Frying Pans

Steel

Heavy black wrought steel pan and handle.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 17 01	160	17 17 09	320
02	180	10	340
03	200	11	360
04	220	12	380
05	240	13	400
17 17 06	260	17 17 14	420
07	280	15	450
08	300		

Stainless Steel

Stainless steel frying pan with a long plastic handle which will not conduct heat.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 17 16	160	17 17 20	260
17	180	21	280
18	200	23	300
19	220	28	330
22	240		

Aluminium

Made of heavy duty aluminium for use on all types of stoves or grills.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 17 24	210	17 17 26	270
25	240	27	300

Teflon Coated

A steel frying pan coated with teflon to prevent foods from sticking to the pan and scorching.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 17 29	190	17 17 33	280
30	220	34	320
31	240	35	370
32	260		

Cast Aluminium Steak Pans

Oval type pan with a wooden handle, made of heavy duty cast aluminium, ideal for cooking steaks or chicken for a special grill-broiled taste.

17 17 36	Steak pan, cast alum, oval 260 × 240 mm	Pc.
37	" 320 × 240 mm	"

Cast Iron Skillets

Welded Handle

Wooden Handle

A heavy duty cast iron frying pan suitable for preparing large amounts of food. Available with welded handle or wooden handle.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
	Welded Handle		
17 17 38	240	17 17 39	260
	Wooden Handle		
17 17 40	160	17 17 44	240
41	180	45	260
42	200	46	280
43	220	47	300

French Fryers

Steel made deep fryer for frying shrimp, chicken croquette, etc. Handle comes riveted to the pan and a wire strainer basket is also available upon request.

With Wire Basket			Wire Basket Only		
CODE	Diamx Depth mm	Unit	CODE	Diamx Depth mm	Unit
17 17 51	300 x 180	Set	17 17 53	240 x 180	Pc.
52	360 x 200	"	54	280 x 200	"

Baskets for Cooking

For Boiling Spaghetti

Stainless steel mesh basket with handle for boiling spaghetti.

Unit Per Pc.

CODE	Basket Diam x Depth mm	Overall Height mm	CODE	Basket Diam x Depth mm	Overall Height mm
17 17 56	120x190	380	17 17 58	100x300	490
57	140x230	420			

For Boiling

Stainless steel wire basket for boiling chips, spaghetti, etc., with wire handle.

Unit Per Pc.

CODE	Diam x Depth mm	For Pan Diam mm	CODE	Diam x Depth mm	For Pan Diam mm
17 17 81	160x 90	180	17 17 84	220x140	240
82	180x100	200	85	240x150	270
83	200x107	220	86	240x150	270

Remark: 171786 has a hook to rest on a rimmed pan without slipping.

For Frying Potato

For flying potato crisps. Made of stainless steel with handle.

Unit Per Pc.

CODE	Basket Size mm LxWxD	Handle Length mm
17 17 87	210 x 150 x 150	280
88	270 x 120 x 120	280
89	270 x 180 x 120	280

Saute Pans

Standard Aluminium

Aluminium saute pan with handle and lid for sauteeing vegetables, etc. throughly at a low temperature.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 01	150 x 60	1.0	17 18 04	240 x 80	3.4
02	180 x 65.5	1.5	05	270 x 90	5.0
03	210 x 70	2.4	06	300 x 100	6.0

Heavy Duty Aluminium

Heavy duty, 3 mm thick, polished aluminium saute pah. Complete with lid. The handle is securely riveted to the body.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 11	150 x 60	1.0	17 18 15	270 x 90	5.0
12	180 x 65	1.5	16	300 x 100	6.0
13	210 x 70	2.4	17	330 x 110	9.5
14	240 x 80	3.4	18	360 x 120	12.0

Stainless Steel

Stainless steel saute pan with handle and lid for sauteering vegetables etc.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 17 91	160 x 60	1.0	17 17 95	240 x 80	3.5
92	180 x 65	1.6	96	270 x 90	5.0
93	200 x 70	2.0	97	300 x 100	7.0
94	210 x 70	2.3			

Sauce Pans (Stew Pans)

Standard Aluminium

Pans with a capacity up to 6.0 ltrs come with the regular straight handle. Pans with a capacity greater than 6.0 ltrs have looped handles.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 21	150 x 90	1.5	17 18 25	270 x 150	8.6
22	180 x 100	2.7	26	300 x 180	12.0
23	210 x 120	4.2	27	330 x 190	16.0
24	240 x 130	6.0	28	360 x 210	22.0

Heavy Duty Aluminium

Heavy duty aluminium made sauce pan for boiling and cooking. Capacity up to 6.2 ltrs has one straight handle, and over 6.2 ltrs size has two loop handles.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 31	150 x 90	1.5	17 18 35	270 x 150	8.6
32	180 x 110	2.8	36	300 x 170	12.0
33	210 x 120	4.2	37	330 x 210	18.0
34	240 x 140	6.2	38	360 x 230	23.0

Stainless Steel

Stainless steel made sauce pan with handle and lid for boiling and cooking.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 19 51	160 x 90	1.7	17 19 55	240 x 140	6.0
52	180 x 110	2.7	56	270 x 150	8.6
53	200 x 120	3.6	57	300 x 170	12.0
54	210 x 125	4.2			

Braziers

Standard Aluminium

Standard aluminium made shallow pan with riveted handles.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 41	210 x 70	2.4	17 18 48	420 x 140	19.0
42	240 x 80	3.6	49	450 x 150	23.0
43	270 x 90	5.0	50	480 x 160	29.0
44	300 x 100	6.8	51	510 x 170	34.0
45	330 x 110	9.4	52	540 x 180	41.0
17 18 46	360 x 120	12.0	17 18 53	600 x 210	56.0
47	390 x 130	15.0			

Heavy Duty Aluminium

A heavy duty 3.0 mm thick aluminium shallow pan with riveted handles.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 56	270 x 90	5.0	17 18 61	420 x 140	19.0
57	300 x 100	6.8	62	450 x 150	23.0
58	330 x 110	9.4	63	480 x 160	29.0
59	360 x 120	12.0	64	510 x 170	34.0
60	390 x 130	15.0	65	600 x 210	56.0

Stainless Steel

Stainless steel made shallow pan with lid and riveted handle.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 61	210 x 70	2.3	17 18 66	360 x 120	12
62	240 x 80	3.5	67	390 x 130	15
63	270 x 90	5.0	68	420 x 140	19
64	300 x 100	6.7	69	450 x 150	23
65	330 x 110	9.5			

Sauce Pots

Standard Aluminium

Standard aluminium sauce pot with loop handles.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 71	180 x 130	3.0	17 18 78	390 x 250	30
72	210 x 150	5.0	79	420 x 280	38
73	240 x 160	7.2	80	450 x 300	49
74	270 x 180	10.0	81	480 x 330	60
75	300 x 190	13.0	82	510 x 350	70
17 18 76	330 x 220	18.0	17 18 83	540 x 370	84
77	360 x 240	24.0	84	600 x 390	113

Heavy Duty Aluminium

A heavy duty alum. made sauce pot. The handles are riveted to the pot body. Thickness of the aluminium is 3.0 – 5.0 mm.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 18 86	240 x 170	7.8	17 18 92	420 x 270	38.0
87	270 x 180	10.0	93	450 x 290	46.0
88	300 x 200	15.0	94	480 x 320	58.0
89	330 x 210	18.0	95	510 x 350	70.0
90	360 x 230	23.0	96	600 x 400	113
17 18 91	390 x 240	28.0			

Stainless Steel

Stainless steel made sauce pots that have a copper lined bottom to distribute heat faster and more evenly, using less fuel or electricity.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 19 08	210 x 140	4.7	17 19 04	360 x 240	24
09	240 x 170	7	05	390 x 250	30
01	270 x 180	10	06	420 x 280	38
02	300 x 190	13	07	450 x 310	49
03	330 x 220	18			

Stock Pots

Standard Aluminim

Standard aluminium made stock pot with handles riveted to the pot body.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 19 11	180 x 160	4.4	17 19 18	390 x 370	44
12	210 x 190	6.5	19	420 x 400	55
13	240 x 220	10.0	20	450 x 430	68
14	270 x 250	14.0	21	480 x 450	81
15	300 x 280	20.0	22	510 x 480	98
17 19 16	330 x 310	26.0	17 19 23	540 x 520	116
17	360 x 340	34.0	24	600 x 580	160

Heavy Duty Aluminium

A heavy duty aluminium made stock pot with handles riveted to the pot body. The aluminium is 3.0 – 5.0 mm thick.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 19 26	240 x 240	11	17 19 32	420 x 420	57
27	270 x 270	15	33	450 x 450	70
28	300 x 300	20	34	480 x 480	85
29	330 x 330	27	35	510 x 510	100
30	360 x 360	35	36	600 x 600	164
17 19 31	390 x 390	45			

Stainless Steel

Ideal for cooking large quantities of sauce or stock evenly without scorching or thickening.

Unit Per Pc.

CODE	Diam x Depth mm	ltr	CODE	Diam x Depth mm	ltr
17 19 39	210 x 210	7.2	17 19 45	390 x 390	45
40	240 x 240	10	46	420 x 420	57
41	270 x 270	15	47	450 x 450	70
42	300 x 300	20	48	480 x 480	85
43	330 x 330	27	49	510 x 510	100
17 19 44	360 x 360	35			

Casseroles

A large deep dish made of china or heat-resisting glass for oven cooking.

China

Heat Resisting Glass

Unit Per Pc.

CODE	Diam cm	ltr	CODE	Diam cm	ltr
	China			Heat-resisting Glass	
17 18 07	20	2.4	17 18 29	20	2.4
08	22	3.3	30	22	3.3
09	24	4.2	39	24	4.2
10	26	5.3	40	26	5.3
19	28	6.7	54	28	6.7
20	30	8.4	55	30	8.4

Aluminium Pressure Cookers

Aluminium mirror polished cooker with handles at both sides. Pressure control valve at the lid will release steam regularly to control pressure. This pressure cooker requires approx. one-third of the energy required by ordinary cooking pans.

Unit Per Pc.

CODE	Diam × Depth mm	ltr	CODE	Diam × Depth mm	ltr
17 19 10	210 × 200	4	17 19 50	268 × 215	12
25	230 × 210	6	77	268 × 260	14
37	250 × 210	8	78	268 × 270	15
38	260 × 215	10	79	268 × 330	18

Aluminium Standard Fish Kettles

A standard aluminium kettle complete with drainer and lid. Allows for slow steam cooking of fish or vegetables to a soft texture.

Unit Per Pc.

CODE	Size mm	CODE	Size mm.
17 19 70	500×240×220	17 19 72	600×270×250
71	560×300×230		

Fish Broilers

For grilling meat, fish, etc. over charcoal fire, gas or electric heaters. Turning can be easily carried out by simply pulling the turning lever.

17 19 76	Broiler fish, galv. iron 360 × 300 mm	Pc.

Stainless Steel Cooking Ware

Silvinox Venus Series

These Venus series are made from the best quality of stainless steel 18/10, an alloy which contains 18% chromium 10% nickel and 72% iron. Various kinds of Silvinox cooking ware are available. The most common types are listed below with their respective specifications.

Casserole

Sauce Pan

Frying Pan

Specification

Illustration	Description	Item No.	Diam. mm Top	Diam. mm Bottom	Capacity ltr
	Casserole with two stainless steel handles and lids	2322 2324 2326	220 240 260	200 220 240	4.0 5.2 6.6
	Sauce pan with one staiinless steel handle and lids	6414 6416 6418 6420	140 160 180 200	120 140 160 180	1.0 1.5 2.2 3.0
	Flying pan non lid	4622 4624 4626	220 240 260	160 180 200	

How to order : CODE

ITEM NO., ITEM

Unit Per Pc.

CODE	Item No.	Item	CODE	Item No.	Item
17 19 81	2322	Casserole	17 19 86	6418	Sauce Pan
82	2324	"	87	6420	"
83	2326	"	88	4622	Frying Pan
84	6414	Sauce Pan	89	4624	"
85	6416	"	90	4626	"

Name of Mfr. : Demeyere N.V.

Egg Poachers

Stainless steel pan fitted with a plastic handle and complete with poaching cups and lid.

Unit Per Pc.

CODE	Size	CODE	Size
17 20 01	4 cups × 200 mm ϕ	17 20 03	5 cups × 250 mm ϕ
02	6 cups × 250 mm ϕ		

Kettles

Alumite

Alumite made flat based kettle with an ebonite covered handle.

Unit Per Pc.

CODE	Diam. mm	ltr	CODE	Diam. mm	ltr
17 20 11	145	2	17 20 15	180	6
12	160	3	16	220	8
13	180	4	17	220	10
14	240	5			

Stainless Steel

The kettle body is made of one piece of stainless steel sheet. A very rigid kettle. Handle is covered with ebonite.

Unit Per Pc.

CODE	Diam. mm	ltr	CODE	Diam. mm	ltr
17 20 21	125	1.0	17 20 25	185	4.0
22	150	1.5	26	220	5.0
23	160	2.0	27	230	6.0
24	180	3.0			

9. Roasting Pans, Mixing Bowls, Strainers, etc.

Roasting Pans with Lid

Aluminium

Made of aluminium bakeware with lid. Please specify only pan or pan with lid required.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
Pan with Lid		Pan only	
17 20 61	350 × 250 × 70	17 20 71	350 × 250 × 70
62	400 × 300 × 80	72	400 × 300 × 80
63	500 × 400 × 90	73	500 × 400 × 90
64	600 × 450 × 100	74	600 × 450 × 100
65	650 × 500 × 100	75	650 × 500 × 100
17 20 66	700 × 550 × 110	17 20 76	700 × 550 × 110

Aluminium Deep

Deep type aluminium roasting pan with lid. Please specify only pan or pan with lid required.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
Pan with Lid		**Pan only**	
17 20 81	350 × 250 × 150	**17 20 91**	350 × 250 × 150
82	400 × 300 × 150	**92**	400 × 300 × 150
83	500 × 400 × 150	**93**	500 × 400 × 150
84	600 × 450 × 150	**94**	600 × 450 × 150
85	650 × 500 × 150	**95**	650 × 500 × 150
17 20 86	700 × 550 × 150	**17 20 96**	700 × 550 × 150

Roast Pans

Aluminium

Made of aluminium bakeware. The pan size 640 x 425 x 120 mm and only has handles at both ends.

Unit Per Pc.

CODE	17 21 01	17 21 02	17 21 03
Size mm	400 × 280 × 65	490 × 325 × 80	640 × 425 × 120

Steel

Made of steel with folding type handles at both ends. Any sizes not listed here can be made to order.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 21 06	350 × 270 × 45	**17 21 08**	500 × 350 × 50
07	380 × 320 × 45	**09**	545 × 395 × 40

Rectangular Pans

Aluminium

Aluminium made pan to store meat, fish, vegetables, etc. prior to cooking.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 21 11	160 × 110 × 25	**17 21 15**	175 × 210 × 35
12	190 × 135 × 28	**16**	310 × 240 × 35
13	210 × 150 × 30	**17**	345 × 268 × 35
14	240 × 180 × 30	**18**	370 × 305 × 45

Stainless Steel

Stainless steel made pan for storing meat, fish, vegetables, etc. prior to cooking. Stainless steel rack is separate order.

Pan

Rack

Unit Per Pc.

CODE	Size mm	CODE	Size mm
	Pan		**Rack**
17 21 21	300 × 230 × 45	**17 21 71**	258 × 194 × 15
22	320 × 260 × 50	**72**	285 × 213 × 15
23	350 × 270 × 63	**73**	308 × 220 × 15
24	400 × 290 × 67	**74**	360 × 243 × 15
25	480 × 335 × 80	**75**	425 × 280 × 15
17 21 26	570 × 367 × 90	**17 21 76**	510 × 315 × 15

Remark: Each rack sizes in the right column are suitable to each pan sizes in the left column.

Aluminium Pie Dishes

A rectangular shaped aluminium pie server. The inner dimensions are 230 mm width, 300 mm length and 50 mm depth.

17 21 31	Pie dish, aluminium 230× 300 × 50 mm	Pc.

Aluminium Sheet Pans

Made of aluminium. Sometimes used as cover for roasting pan. Stainless Steel made rack is separate order.

Pan

Rack

Unit Per Pc.

CODE	Size mm	CODE	Size mm
	Pan		**Rack**
17 21 35	455 × 330 × 25	**17 21 37**	425 × 300 × 15
36	660 × 445 × 25	**38**	625 × 410 × 15

Remark: Each rack sizes in the right column are suitable to each pan sizes in the left column.

Mixing Bowls

Aluminium

Aluminium made bowl for mixing creams, vegetables, etc.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 21 41	150	**17 21 46**	300
42	180	**47**	330
43	210	**48**	360
44	240	**49**	390
45	270	**50**	450

Stainless Steel

For mixing vegetables, etc. There are many sizes available, so please specify which size you need when ordering.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 21 56	150	**17 21 63**	360
57	180	**64**	390
58	210	**65**	420
59	240	**66**	450
60	270	**67**	500
17 21 61	300	**17 21 68**	550
62	330	**69**	600

Colanders

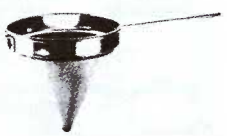
Stainless steel or aluminium made colander (strainer) with riveted handles.

Unit Per Pc.

Stainless Steel		Aluminium	
CODE	Diam. mm	CODE	Diam. mm
17 21 95	270	**17 22 01**	300
96	330	**02**	360
97	390	**03**	400
98	450	**04**	450

Stainless Steel Conical Strainers

Stainless steel, conical shaped strainer with handle.



Unit Per Pc.

CODE	Size mm	
	Diam	Depth
17 22 06	210	180
07	240	230
08	300	300

Strainers

Bowl Strainer

Made of fine mesh stainless steel net with wood handle. Strainer has hubs to allow it to rest on a rimmed pan without slipping.

Unit Per Pc.

CODE	17 22 11	17 22 12	17 22 13
Diam. mm	153	203	254

Oil Strainer

A multi purpose strainer for draining salad, filtering cooking oil, etc. Stainless steel mesh attached to a stainless steel or tin bowl.

Unit Per Pc.

Tin		Stainless Steel	
CODE	Diam. mm	CODE	Diam. mm
17 22 15	218	**17 22 18**	215
16	240	**19**	235
17	275	**20**	275

Tea Strainer

Made of a stainless steel strainer attached to a wood handle.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 22 26	62	**17 22 28**	100
27	85	**29**	130

Potato Strainer

Mesh is made of nylon, extra fine horse hair or stainless steel with a wood rim. The elasticity of the horse hair makes the strainer last longer.

Unit Per Pc.

Nylon			Horse Hair		
CODE	Diam. mm	Mesh	CODE	Diam. mm	Mesh
17 22 31	300	Coarse	**17 22 37**	300	Coarse
32	300	Fine	**38**	300	Fine
17 22 33	330	Coarse	**17 22 39**	330	Coarse
34	330	Fine	**40**	330	Fine
17 22 35	360	Coarse	**17 22 41**	360	Coarse
36	360	Fine	**42**	360	Fine

Stainless Steel

Unit Per Pc.

CODE	Diam. mm	Mesh	
17 21 81	300	Coarse	(14 mesh)
82	300	Medium	(24 mesh)
83	300	Fine	(40 mesh)
17 21 84	330	Coarse	(14 mesh)
85	330	Medium	(24 mesh)
86	330	Fine	(40 mesh)
17 21 87	360	Coarse	(14 mesh)
88	360	Medium	(24 mesh)
89	360	Fine	(40 mesh)

Tomato & Vegetable Strainer

Designed for grating tomatoes, vegetables, etc. Made of stainless steel.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 22 46	240	**17 22 47**	310

Oil Pots

Stainless steel made oil pot for temporary preserving. A strainer is furnished for filtering grounds from oil.

Unit Per Pc.

CODE	Diam×Height mm	ltr	CODE	Diam×Height mm	ltr
17 22 22	140 × 140	2	**17 22 24**	188 × 205	5
23	160 × 160	3			

Funnels

Available in plastic or stainless steel.

Unit Per Pc.

Plastic		Stainless Steel	
CODE	Diam. mm	CODE	Diam. mm
17 22 50	90	**17 22 55**	120
51	120	**56**	160
52	150	**57**	180
53	180	**58**	210
54	210	**59**	250
17 22 49	240		

Wooden Sieves

Wooden rim cook's sieve mainly used for flour sifting. Available in 3 sizes with 2 kinds of mesh.

Unit Per Pc.

CODE	Diam. mm	Mesh	CODE	Diam. mm	Mesh
17 22 61	240	6.5	**17 22 64**	240	24
62	300	6.5	**65**	300	24
63	360	6.5	**66**	360	24

Stainless Steel Sieves

Heavy stainless steel rim with inter-changeable spare meshes.

Rim Mesh

Unit Per Pc.

CODE	Item	Diam. mm	Mesh No.	Remark
17 22 71	Rim	310	-	Rim only
17 22 72	Mesh	310	No. 4 (6.35 mm)	Mesh only
73	"	310	No. 7 (3.63 mm)	"
74	"	310	No. 9 (2.82 mm)	"
75	"	310	No. 20 (1.27 mm)	"
76	"	310	No. 30 (0.83 mm)	"
77	"	310	No. 50 (0.50 mm)	"
78	"	310	No. 65 (0.39 mm)	"

Flour Sifters

These sifters are made of tin and operate manually with the rotation of a handle.

17 22 81	Flour sifter galv. tin, 130 mm diam.	Pc.

10. Knives

Knives

French Knife

Carbon steel or stainless steel blade with a wooden handle.

Unit Per Pc.

Stainless Steel		Carbon Steel	
CODE	Blade Length mm	CODE	Blade Length mm
17 22 91	150	**17 22 99**	150
87	180	**17 23 06**	180
92	200	**00**	200
88	210	**07**	210
93	240	**01**	240
17 22 94	270	**17 23 02**	270
95	300	**03**	300
96	330	**04**	330
97	360	**05**	360

Coloured French Knife

For preventing cross contamination of different food groups. The Food Standards Agency suggests to use each colour of cutting knife with the following foods. Red: Raw meat / Blue: Raw fish / Yellow: Cooked meat / Brown: Vegetables / Green: Salads & fruit / White – Bakery & dairy. Stainless steel blade with plastic handle.

Unit Per Pc.

CODE	Colour	CODE	Colour	CODE	Colour
Blade Size: 200mm		Blade Size: 250mm		Blade Size: 300mm	
17 22 82	Red	17 22 90	Red	17 23 29	Red
83	Blue	98	Blue	32	Blue
84	Yellow	17 23 08	Yellow	33	Yellow
85	Brown	09	Brown	40	Brown
86	Green	10	Green	41	Green
89	White	20	White	43	White

Boning Knives

For Chicken Meat

For Beef Meat

Pointed edge for chicken meat cooking, and straight edge for beef meat cooking. Available in carbon steel or stainless steel.

Unit Per Pc

For Beef Meat			For Chicken Meat		
CODE	Blade Material	Blade Length mm	CODE	Blade Material	Blade Length mm
17 23 11	Carbon Steel	150	17 23 13	Carbon Steel	150
12	Stainless Steel	150	14	Stainless Steel	150

Butchers Knife

Available in carbon steel blade or stainless steel blade with a wood handle.

Unit Per Pc.

Carbon Steel		Stainless Steel	
CODE	Blade Length mm	CODE	Blade Length mm
17 23 21	210	17 23 25	240
22	240		
23	270		
24	300		

Frozen Meat Knife

Designed specially for cutting frozen meat. Sharp edged carbon steel blade.

17 23 26	Knife for frozen meat, carbon steel, blade length 230 mm	Pc.

Bread Knife

Stainless steel serrated blade with plastic handle.

Unit Per Pc.

CODE	Handle	Blade Length mm
17 23 34	Plastic	203
35	"	300
36	"	255

Fruit Knife

Stainless steel blade with a wooden handle.

17 23 42	Fruit knife stainless steel, blade length 95 mm	Pc.

Bar Knife

Stainless steel knife with a pointed snout end.

17 23 44	Bar knife stainless steel, blade length 120 mm	Pc.

Small Knives

Superior

Standard

Carbon steel or stainless steel blade with a wood handle. Both blades are 120 mm in length and are designed for multipurpose use.

Unit Per Pc.

Carbon Steel		Stainless Steel	
CODE	Class	CODE	Class
17 23 46	Standard	17 23 48	Superior
47	Superior		

Grapefruit Knife

Stainless steel blade with a wooden handle.

17 23 50	Grapefruit knife, stainless steel, blade length 90 mm	Pc.

Decorating Knife

Carbon steel blade with a wooden handle. One side is notched and the other side of the blade is edged.

17 23 52	Decorating knife, carbon steel, blade length 85 mm	Pc.

Cheese Knives

Stainless steel blade with a wooden handle. Available in 3 types.

With two prong

Off-set

Large

Unit Per Pc.

CODE	17 23 56	17 23 57	17 23 58
Blade Length mm	105	100	180
Remark	With two prong	Off-set	Large

Paring Knife

Stainless steel blade with a wooden handle.

Unit Per Pc.

CODE	Blade Length	CODE	Blade Length
17 23 60	70 mm	17 23 61	80 mm

Cleavers

Carbon steel heavy duty blade for cutting meat, bones, etc.

Unit Per Pc.

CODE	Blade Length	CODE	Blade Length
17 23 15	150 mm	17 23 17	210 mm
16	180 mm	18	250 mm

with Long Handle

Carbon steel heavy duty blade for cutting meat or bones. 250 mm blade length and 900 mm overall length.

17 23 19	Cleaver with long handle, carbon steel, blade length 250 mm	Pc.

Slicers

Ham Slicer

Stainless steel blade with a wooden handle.

Unit Per Pc.

CODE	Blade Length	CODE	Blade Length
17 23 27	260 mm	17 23 28	300 mm

English Slicer (Salmon Slicer)

Carbon steel blade with a wooden handle and sometime used as salmon slicer.

Unit Per Pc.

CODE	17 23 30	17 23 31
Blade Length mm	300	360

Hotel Slicer

Carbon steel blade with a wooden handle.

Unit Per Pc.

CODE	Blade Length	CODE	Blade Length
17 23 37	240 mm	17 23 39	300 mm
38	270 mm		

11. Peelers & Scalers

Potato Peelers

Carbon steel blade with a frame or wooden handle.

Grip Type Frame Handle Wood Handle

Unit Per Pc.

CODE	Handle	Length mm	
17 23 62	Frame	Overall	145
63	Wood	Blade	65
64	Plastic	Blade	65
65	Plastic Grip Type	Overall	145

Corers

Apple Corer

Stainless steel corer with a plastic handle. Used mainly for fruit dressing.

Japanese Style Western Style

17 23 66	Apple corer Japanese style length 180 mm	Pc.
67	" Western style length 185 mm	"

Olive Corer

Punch like olive kernel remover. Made of stainless steel.

17 23 68	Olive corer, stainless steel, overall length 190 mm	Pc.

Fish Shears

To be used for cutting fish fins, tail, etc. The center part can be used as bottle opener.

17 23 70	Fish shears overall length 200 mm	Pr.

Fish Scalers

For scaling and cleaning fish prior to boiling or frying.

17 23 72	Fish scaler, overall length 190 mm	Pc.

Bone Tweezers

Stainless steel made tweezers for pulling bones from fish before cooking.

Unit Per Pr.

CODE	Overall Length mm	CODE	Overall Length mm
17 23 74	105	17 23 75	120

Poultry Secateurs

Stainless Steel

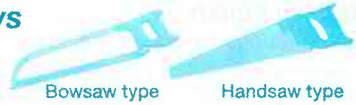
Stainless steel made poultry secateur with a volute spring.

17 23 76	Poultry secateur, stainless steel L 250 mm	Pr.

12. Butcher's Gear

Butcher's Saws

For cutting meat, bones, etc. Available in bowsaw and handsaw types.



Bowsaw type Handsaw type

Unit Per Pc.

CODE	Description	Blade Length mm
17 23 81	Butcher's Bowsaw complete with bow & blade	460
17 23 82	Above spare blade only	460
17 23 83	Butcher's Handsaw	450

Meat Hooks

Made of galv. iron or stainless steel. Available in swivel and non-swivel types.

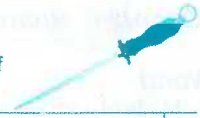
Swivel Non-Swivel

Unit Per Pc.

CODE	Length	Material	Type
17 23 86	180 mm	Galv. Iron	Non-Swivel
87	180 "	Stainless Steel	"
88	210 "	"	"
89	300 "	Galv. Iron	Swivel

Butcher's Steels

For quick easy sharpening of knives. Overall length is 500 mm.



17 24 01	Butcher's steel, magnetized blade length 290 mm	Pc.

Cotton Meat Twine

A strong tasteless cotton thread to secure meat rolls, sausages, etc. Available with rolled in a ball type, or in a binder type.

Ball Type

Binder Type

Unit Per Pol. Unit Per Pc.

Ball Type		Binder Type		
CODE	Weight grm	CODE	Thread Diam. mm	Length mm
17 40 40	100	17 40 36	1.0	550
41	150	37	1.2	430
42	180	38	1.4	320
		39	1.6	280

13. Sharpening Stones

Sharpening Stones

Rough

Made of emery stone. Rough grit surface may be used wet or dry.

Unit Per Pc.

CODE	17 24 04	17 24 05
Size mm	50 × 25 × 205	75 × 50 × 205

Carborundum Finish

Made of carborundum. Fine grit surface. For best results wet surface before using.

Unit Per Pc.

CODE	Size mm
17 24 06	66 × 34 × 207
07	70 × 60 × 209
17 24 09	100 × 70 × 230

Natural Finish

A natural blue whetstone for finishing.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 24 10	66×60×205	17 24 08	70×70×220

Griddle Stones

Complete with Handle

Used for burnishing cooking griddle, range, etc. Stone size is 102x72x50 mm. Usually furnished with holder but stone can be purchased separately.

17 24 11	Griddle stone complete with handle	Set
12	Griddle stone only	Pc.

Stone Only

14. Kitchen Utensils

Cutting Boards (Chopping Boards)

Wood

Made of hard wood.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 24 21	600 × 300 × 60	17 24 25	1050 × 400 × 45
22	600 × 450 × 60	26	1200 × 400 × 60
23	750 × 350 × 60	27	1500 × 400 × 60
24	900 × 330 × 60		

Plastic

Made of white colour hard plastic. A durable board that will not scratch or deform and is easy to keep clean.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 24 31	440 × 250 × 15	17 24 35	720 × 330 × 20
32	500 × 270 × 20	36	840 × 390 × 30
33	600 × 300 × 20	37	1,200 × 450 × 40
34	600 × 300 × 30	38	1,500 × 550 × 50

Coloured Plastic Cutting Boards

For preventing cross contamination of different food groups. The Food Standards Agency suggests to use each colour of cutting board with the following foods. Red: Raw meat / Blue: Raw fish / Yellow: Cooked meat / Brown: Vegetables / Green: Salads & fruit / White – Bakery & dairy.

Unit Per Pc.

CODE	Colour	CODE	Colour	CODE	Colour
Size 450×300×12mm		Size 530×325×20mm		Size 600×400×20mm	
17 24 41	Red	17 24 46	Red	17 24 61	Red
42	Blue	47	Blue	62	Blue
43	Yellow	48	Yellow	63	Yellow
44	Brown	49	Brown	64	Brown
45	Green	50	Green	65	Green

Magnetic Knife Holders

Strong double magnet bars that will hold knives safely on the steel wall.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
17 24 51	410	17 24 53	810
52	510		

Knife Racks

Single Row

Double Row

A stainless steel made rack for storing knives safely on the wall. An opening for insertion knife blade is protected with composition rubber sheet.

Unit Per Pc.

CODE	Row	Size mm
17 24 56	Single	325 × 55 × 365
57	Double	325 × 105 × 365

Cooking Forks

Kitchen Fork

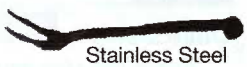
Stainless Steel fork with plastic handle. 310 mm overall length.

17 25 01	Kitchen fork, stainless steel with plastic handle 310 mm	Pc.

Cook's Forks

Available in all stainless steel or with a stainless steel blade fitted to a wooden handle.

With Wood Handle



Stainless Steel

Unit Per Pc.

CODE	Description	Overall Length mm
17 25 03	Stainless steel blade with wooden handle	420
04	All stainless steel made	410

Meat Fork

Made of a stainless steel blade with a wooden handle.

17 25 06	Meat fork, stainless steel with wooden handle overall length 300 mm	Pc.

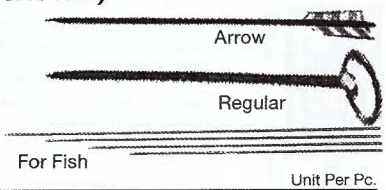
Meat Carving Sets

A set consists of a carving knife and fork. The knife has an overall length of 345 mm and the fork has an overall length of 280 mm. Both are made of stainless steel and fitted with a wood handle.

17 25 08	Meat carving knife & fork set	Set

Skewers (Brochettes)

Stainless steel skewers for grilling small pieces of meat, vegetables or fish meat.



Unit Per Pc.

Regular		Arrow		For Fish	
CODE	Length mm	CODE	Length mm	CODE	Length mm
17 25 11	150	**17 25 15**	210	**17 25 91**	450
12	180	**16**	240	**92**	480
13	210	**17**	270	**93**	510
14	240	**18**	300	**94**	540
				95	600

Bowl Scrapers

Rubber

Hard rubber scraper with a wood or plastic handle. For cleaning the bottom of pans, ovens, grill tops, etc.

Unit Per Pc.

CODE	Blade Width mm	CODE	Blade Width mm
Wood Handle		**Plastic Handle**	
17 25 21	100	**17 25 23**	80
22	120		

Silicone Rubber

Silicone rubber scraper for cleaning bowls and pans or for mixing butters and basting poultry.

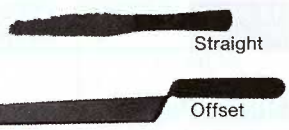
Unit Per Pc.

CODE	Length mm	CODE	Length mm
17 25 26	250	**17 25 28**	420
27	350		

Turners

Spatula Turners

The straight blade spatula is used to slice or remove pastries from pans. The offset blade is used to turn items on a frying pan. Both have stainless steel blades with wooden handles.

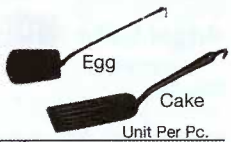


Unit Per Pc.

CODE	Type	Length mm	CODE	Type	Length mm
17 25 31	Straight	150	**17 25 35**	Straight	280
32	"	180	**36**	"	300
33	"	200	**37**	Offset	38 x 360
34	"	250			

Egg and Cake Turners

Made of stainless steel for preparing and turning eggs or other fried and baked goods.



Unit Per Pc.

CODE	For	Blade Size mm	Handle Length mm
17 25 41	Egg	75 x 90	270
42	Cake	70 x 165	200

Fish or Steak Turners

Stainless steel blade with wooden handle. Ideal when cooking steak or fish on a grill or stove.

Unit Per Pc.

CODE	For	Blade Size mm	Overall Length mm
17 25 46	Solid	75 x 170	195
47	"	76 x 200	360
48	Slotted	76 x 120	270

Stainless Steel Soup Ladles

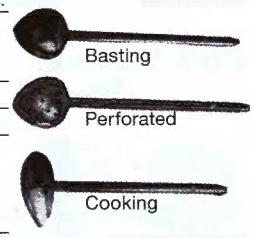
Made of stainless steel, nominal size is determined by bowl capacity and diameter.

Unit Per Pc.

CODE	Bowl		CODE	Bowl	
	Capacity cc	Diam. mm		Capacity cc	Diam. mm
17 25 51	36	52	**17 25 56**	360	115
52	90	74	**57**	540	135
53	144	85	**58**	1,000	160
54	180	95	**59**	1,800	205
55	270	105			

Stainless Steel Spoons

Stainless steel, long handle cooking spoons. Standard spoon size is 103 x 66 mm and handle length is 273 mm.



Unit Per Pc.

CODE	Type	cc	Handle Length mm
17 25 61	Basting	70	255
17 25 62	Perforated	70	255
17 25 63	Cooking	70	255
81		90	370
82		144	370
83		180	370

Skimmers

A large perforated spoon used in skimming liquids, or. Made of stainless steel.

Unit Per Pc.

CODE	Bowl Diam mm	Handle Length mm
17 25 84	115	310
85	160	350

Stainless Steel Scoops

Various types of scoops are available. The most common types are illustrated below with a list of specifications.

Unit Per Pc.

CODE	Name	Material	Scoop Size
17 25 66	Grocer Scoop	Stainless Steel	W105 x OL275 mm
67	Flour "		D135 x L210 mm
68	Utility "		L210xW130xH65 mm

Wire Whips

Whip and handle are made of stainless steel.

Unit Per Pc.

CODE	Overall Length mm	CODE	Overall Length mm
17 25 71	240	**17 25 76**	390
72	270	**77**	420
73	300	**78**	450
74	330	**79**	500
75	360	**80**	540

Egg Beaters

Stainless steel made double rotary beaters and turn gear with ebonite handle. Used for mixing cake and pancake butters and scrambled eggs.

17 25 86	Egg beater, stainless steel overall length 250 mm	Pc.

Bottle Openers

A variety of bottle opener types and sizes are listed as follows.

17 26 00	Stainless steel	100 mm	Pc.
01	"	137 mm	"
03	"	180 mm	"
17 26 02	Nickel plated with wooden handle 175 mm		Pc.

Bottle Opener & Sealers

Can be used to both open and reseal bottle caps.

17 26 06	Bottle opener & sealer	Pc.

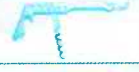
Cork Screws

Regular Type German Type Geared Lever Type

17 26 11	Cork screw, regular type	Pc.
12	" , German type	"
13	" , geared lever type	"

Hand Can Openers

Unit Per Pc.

CODE	Illustration	Name of Type	Overall Length mm
17 26 15		Waiter Knife	105
17 26 16		Economy	80
17 26 17		3 Way	130
17 26 18		Miracle	185
17 26 19		Plier	185

Edlund Table Can Openers

Heavy duty manual can opener which can be screwed or clamped to a bench. Made of a tough cast iron construction with a hardened and tempered steel knife. Two models with the respective specifications are listed below.

Knife Gear

Edlund Model	Max. Height of Can App. mm	Overall Length mm	Base Size mm
No. 2	200	320	100 x 100
No. 3	350	565	140 x 205

How to order:

17 26 21	Table can opener, Edlund No. 2 complete	Set
22	Spare knife for Edlund No. 2 can opener	Pc.
23	" gear "	"
17 26 24	Table can opener, Edlund No. 3 complete	Set
25	Spare knife for Edlund No. 3 can opener	Pc.
26	" gear "	"

15. Baker & Pastry Utensils

Pans (Mould)

Bread Pan

Bread pan with a sliding cover for the easy removal of bread after baking. Standard sizes are listed below, but other sizes are available upon request. Made of tin plate.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
With Slide Cover		Without Cover	
17 26 94	185 x 95 x 90	17 26 95	185 x 95 x 75
96	190 x 120 x 125	17 27 02	400 x 100 x 100
97	255 x 115 x 90		
98	250 x 120 x 125		
99	375 x 120 x 125		
17 27 01	400 x 100 x 100		

Tin Layer Cake Pan

Tin plate with rolled edges and loose bottom for the easy removal of the contents.

Unit Per Pc.

CODE	17 27 06	17 27 07	17 27 08
Diam. x Height mm	180 x 60	210 x 75	240 x 75

Pie Pan

A shallow, round tin plate pan for baking pies.

17 27 12	Pie pan, tin 230 mm diam.	Pc.
13	" " 250 mm "	"

Muffin Pans

Tin plate made for baking muffins. When ordering, specify if the 6 or 12-cup type is required.

Unit Per Pc.

CODE	Number of Cup	Cup Size mm	Plate Size mm
17 27 16	6	73 x 36	270 x 183
17 27 17	12	55 x 32	300 x 227

Angel Cake Pan

Aluminium made mould for cake baking.

Unit Per Pc.

CODE	Diam x Height mm	Material
17 27 21	180 x 52	Aluminium
22	210 x 63	"
23	240 x 69	"

Loaf Tins

Tin plate pan for baking any loaf shaped cakes, etc.

17 27 10	Loaf tin 210 x 112 x 65 mm	Pc.

Spring Release Cake Tins

Expanding rim with side lock. Choice of one plain base or with two extra bases, one funnel and one raised wreath.

Unit Per Pc.

CODE	Diam × Depth mm	CODE	Diam × Depth mm
17 27 26	210 × 75	17 27 27	240 × 75

Doughnut Cutters

Stainless steel doughnut cutter. 67 mm outside diameter.

17 27 28	Doughnut cutter, stainless steel. 67 mm diam.	Pc.

Moulds

Pudding Mould

Aluminium made pudding mould. Available with or without cover.

Unit Per Pc.

CODE	Cover	Size Diam. mm	cc
17 27 30	Without cover	56	110
33	"	79	220
34	"	88	290
31	"	135	-
17 27 32	With cover	175	-

Jelly Mould

Aluminium made swirled mould for jellies, etc.

70mm 134 mm 145mm

Unit Per Pc.

CODE	Diam × Depth mm	cc
17 27 36	70 × 35	86
37	134 × 70	500
38	145 × 82	1,000

Pastry Brushes

Sterilized bristles with lacquered handle. The bristles are odor free and easy to rinse.

Unit Per Pc.

Wood Handle			Plastic Handle		
CODE	Brush Type	Brush Size mm	CODE	Brush Type	Brush Size mm
17 27 41	Flat	25	17 27 44	Flat	30
42	"	50	45	"	60
17 27 43	Round	25			

Pastry Bags (Icing Bags)

Nylon or light canvas bag for spreading icing on cake.

17 27 46	Pastry bag, nylon,	350 mm length	Pc.
47	"	405 mm "	"
48	"	457 mm "	"
49	"	508 mm "	"
17 27 50	Pastry bag, canvas cloth 430 × 200 mm		"

Pastry Tube Sets

Made of stainless steel. For use with pastry bags. Assorted types of 6 and 12 piece sets are available.

Unit Per Pc.

CODE	Type	Material	Nos. of Set
17 27 54	Assorted	Stainless Steel	6 pcs
55	"	"	12 pcs

Dough Scrapers

Stainless steel made. For scraping pastry boards, baking ovens, etc.

Unit Per Pc.

CODE	17 27 58	17 27 59	17 27 60
Size mm	150 × 110	180 × 115	210 × 115

Pastry Jaggers

Stainless steel made. Overall length:180 mm, and wheel diam. 48 mm.

17 27 62	Pastry jagger, 180 mm	Pc.

Pastry Cutters, 12's Set

A set consists of twelve different sizes. Furnished as a set only. When ordering, specify if the plain or crinkled type is required.

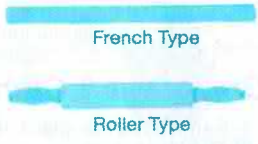
Plain Crinkled

Unit Per Pc.

CODE	17 27 66	17 27 67
Description	Plain	Crinkled

Hard Wood Rolling Pins

Made of hard, smooth finished wood. The length listed below includes the handle.



French Type

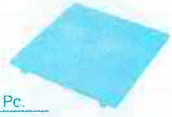
Roller Type

Unit Per Pc.

French Type		Roller Type	
CODE	Size mm	CODE	Size mm
17 27 71	L450 × D30	17 27 73	L240 × D41
72	L600 × D30	74	L380 × D85
		75	L450 × D40
		76	L550 × D60

Pastry Boards

One-piece solid, hard wood pastry board.



Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 27 78	600×450×30	17 27 80	750×750×30
79	600×600×30		

Pizza Pans

A stainless steel pan suitable for baking pizza. These pans are also excellent for baking fruit pies or any general purpose baking.

Unit Per Pc.

CODE	Diam mm	CODE	Diam mm
17 27 81	225	**17 27 84**	330
82	255	**85**	363
83	290		

Pizza Cutters

A wheel type pizza cutter.

Unit Per Pc.

CODE	Wheel Diam mm	Overall Length mm
17 27 87	65	175
88	105	240

16. Squeezers & Mashers

Lemon Squeezers

Available in various types but most common types are listed below.

Plastic Reamer

Glass Reamer

Stainless Steel Chick Type

Stainless Steel Cup

Cast Aluminium Lever

Unit Per Pc.

CODE	Type	Size
17 28 01	Plastic reamer type	110 mmϕ
02	Glass reamer type	135 mmϕ
03	Stainless steel chick type	1/4 Slice
04	Stainless steel cup type	100 mmϕ
05	Cast aluminium lever type	224 mmϕ

Grapefruit & Orange Squeezers

Same type as glass lemon squeezer but of a larger size.

17 28 06	Grapefruit/orange squeezer, glass, 185 mmϕ	Pc.

Juice Extractors

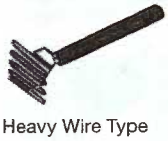
For fruits and vegetables. Made of cast aluminium.

Unit Per Pc.

CODE	Size mm
17 28 08	110 × 230 × 210
09	192 × 215 × 500

Potato Mashers

Easy tool for preparing mashed potatoes.



Heavy Wire Type

Cup Type

Unit Per Pc.

CODE	Description	Size mm
17 28 11	Heavy wire type with wooden handle	100 sq. × 270 length
17 28 12	Cup type stainless steel	80 diam × 245 length
13	"	90 width × 310 length

Vegetable Scoops & Ballers

For serving ball shaped potato or vegetable pieces. Bowls made of stainless steel with a wood handle.

Unit Per Pc.

CODE	Size mm ϕ	CODE	Size mm ϕ
17 28 21	9 × 12	**17 28 23**	21 × 24
22	15 × 18	**24**	27 × 30

Manual Lever Potato Chippers

Lever action for easy chipping. complete with 10 mm sq. stainless steel cutter which is simple to remove for cleaning. Base size 240 × 440 mm.

Unit Per Pc.

CODE	Blade Size mm	CODE	Blade Size mm
17 28 26	6 × 6	**17 28 28**	10 × 10
27	8 × 8		

Garlic Presses

Aluminium or stainless steel made garlic press for manual operation. Overall length is 150 mm.

Unit Per Pc.

CODE	Material	Overall length mm
17 28 30	Aluminium	150
31	Stainless steel	"

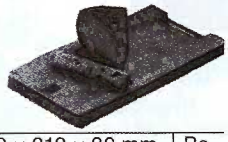
Nut Crackers

Polished cast iron or stainless steel made. 158 mm length.

17 28 32	Nut cracker, cast iron 158 mm	Pc.
33	" stainless steel 158 mm	"

Cheese Boards

Wood board for cutting cheese and bread.



17 28 36	Cheese board, wood 420 × 210 × 30 mm	Pc.
37	" wood 480 × 240 × 30 mm	"

Cheese Cutters

Available with a roller or just a stainless steel slicing wire.

Unit Per Pc.

CODE	Description	Blade Length mm
17 28 41	With Roller	100
42	Stainless twisted wire	120

Cheese Slicers

Stainless steel Norwegian type cheese slicer. 220 mm overall length and 75 mm blade width.

17 28 44	Cheese slicer, stainless steel Norwegian	Pc.

Cheese Graters

Half Round Cut

All Round Cut

4 Side Cut

Rotary

Unit Per Pc.

CODE	Description	Material	Size mm
17 28 46	Half rount cut	Tin	80 x 155
47	"	"	95 x 242
48	All round cut	"	85 x 155
49	4-side cut	Stainless steel	60 x 90 x 204
50	"	"	80 x 100 x 240
17 28 51	Rotary with fixture	Aluminium & tin	Drum diam 85

Butter Ballers

Will form butter balls within a moment. Easy to handle. Made of wood.

17 28 53	Baller butter, wood	Pr.

Egg Slicers/Wedgers/Cutters

Slicer

Wedger

Cutter

Unit Per Pc.

CODE	Name	Material	Size	Remark
17 28 56	Slicer	Plastic	100x85	Two way round or oval slicer
17 28 57	"	Stainless Steel	140x85	
17 28 58	Wedger	Plastic	210x65	Plastic body fitted with stainless wires to cut six wedges
17 28 59	Cutter	Plastic	130x60	Plastic case with stainless steel wires to cut boiled egg into flower like shape

Steak Tenderizers

Made of cast aluminium. Used for tenderizing meats prior to grilling or frying etc.

Flat Trowel

Notched Trowel

Square Hammer

Unit Per Pc.

CODE	Head Type	Overall Length mm
17 28 71	Flat trowel type	200
72	Notched trowel type	200
73	Square hammer type	247

17. Storage Containers

Stainless Steel Food Storage Containers

Stainless steel container for storing prepared foods. Handles are attached to both sides.

Unit Per Pc.

CODE	DiamxDepth mm	Ltr	CODE	DiamxDepth mm	Ltr
17 29 01	120x120	1.8	17 29 06	220x220	8.3
02	140x140	2.1	07	240x240	11.0
03	160x160	3.2	08	260x260	14.0
04	180x180	4.5	09	300x300	21.0
05	200x200	6.2	10	360x360	36.0

Soup Containers

Alumite

Made of alumite and furnished with an airtight lid to prevent condensation. Furnished with a pail type handle for easy carrying. These containers are used to keep and serve soups, etc.

Unit Per Pc.

CODE	DiamxHeight mm	Ltr	CODE	DiamxHeight mm	Ltr
17 29 11	250x160	6	17 29 14	285x234	12
12	275x181	8	15	290x260	14
13	257x230	10	16	300x305	16

Stainless Steel

Made of stainless steel and furnished with an airtight lid to prevent condensation. Furnished with a pail type handle for easy carrying. These containers are used to keep and serve soups, etc. at a buffet or some place outside of the kitchen. The 26 ltr type container has handles attached on each side of the containers.

Unit Per Pc.

CODE	DiamxHeight mm	Ltr	CODE	DiamxHeight mm	Ltr
17 29 21	180x180	4	17 29 24	270x270	15
22	210x210	7	25	300x300	20
23	240x240	10	26	330x330	26

Soup Carriers

Made of aluminium with airtight lid and pail type handle for easy carrying.

Unit Per Pc.

CODE	DiamxHeight mm	Ltr	CODE	DiamxHeight mm	Ltr
17 29 17	210 x 220	6	17 29 19	270 x 290	13
18	240 x 250	9			

Plastic Food Containers with Cover

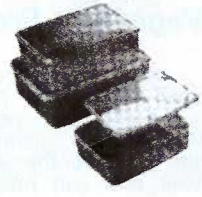
A general purpose round plastic container with cover for any type of food.

Unit Per Pc.

CODE	17 29 32	17 29 33
Diam mm	120	135

Food Containers with Sealed Cover

Made of durable polypropylene. Withstands a wide range of temperatures. Snap-on polyethylene lids designed for a tight fit. Available in many sizes but the most common sizes are listed below.



Unit Per Pc.

Rectangular			Round		
CODE	ltr	Size mm	CODE	ltr	Size mm
17 28 81	0.8	182×115× 51	17 28 86	0.42	φ130× 50
82	1.5	198×134× 67	87	0.79	φ155× 63
83	2.3	217×156× 84	88	1.5	φ185× 76
17 29 36	3.6	270×200× 85	17 29 39	1.6	φ155×130
37	5.9	310×235×105	40	2.8	φ185×145
38	9.6	355×270× 20	17 28 89	3.6	φ255× 90

Deep Type

Rectangular

Round

Unit Per Pc.

Rectangular			Round		
CODE	ltr	Size mm	CODE	ltr	Size mm
17 28 90	0.46	182× 80× 70	17 28 95	0.74	φ125× 90
91	0.9	145× 95× 90	96	1.4	φ150×110
92	1.4	170×120× 90	97	2.4	φ175×135
93	3.0	200×150×135	98	3.8	φ205×150
94	4.8	300×155×135	99	7.2	φ255×175

Plastic Food Storage Boxes

Large Size with Cover

Heavy duty polypropylene made, large size food storage box with a lid for storing and freezing various foods.

Unit Per Pc.

CODE	Outer Size mm	Inner Size mm	ltr
17 29 41	685 × 425 × 100	645 × 385 × 87	21.4
42	643 × 417 × 160	603 × 377 × 145	32.7
43	685 × 425 × 160	645 × 385 × 147	36.2

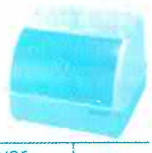
Plastic Space Saver Food Storage Containers

Heavy duty polypropylene, square shaped, tall food storage container. Has up to 60 % more usable storage space than a round container.

Unit Per Pc.

CODE	Size mm	Capacity ltr
17 29 46	380 × 275 × H530	33
47	415 × 310 × H590	45
48	465 × 355 × H655	65

Plastic Bread Bins



Made of plastic with a clear slide-up cover. Suitable for keeping sliced bread, etc.

17 29 52	Bread bin plastic, over slide cover. 350 × 285 × 202 mm	Pc.

Vegetable Preserving Bags

Made of special plastic films with micro holes for preserving the vegetables. Micro holes controls the breathing of the vegetable itself and can preserve its freshness and nutrition. Able to use repeatedly by washing. Available in three sizes, S, M & L.

Unit Per Pkt.

CODE	Description	Size	Packet
17 29 53	Vegetable Preserving Bags, S	180×220mm	5's/pkt
54	" M	220×295mm	3's/pkt
55	" L	300×400mm	2's/pkt

Food Storage Boxes

Stainless Steel

Stainless steel made lacquer finished storage box for bread, dried goods, etc. Furnished with steel straps at both ends.

17 29 56	Food storage box, stainless steel, 410 × 330 × 305 mm	Pc.

Galvanized Steel Food Storage Cans with Lid

Durable galvanized steel can with tightly fitting lid. Suitable for storing cereals, dried foods, etc.

Unit Per Pc

CODE	Size mm Diam×Height	Ltr	CODE	Size mm Diam×Height	Ltr
17 29 57	405 × 570	55	17 29 58	475 × 700	85

Storage Pails for Condiment

Polyethylene made pail for storage liquefied condiment with a tight fitting cover. A steel ball handle is attached.

Unit Per Pc.

CODE	Size mm Diam×Height	Ltr	CODE	Size mm Diam×Height	Ltr
17 29 61	204 × 220	6	17 29 63	302 × 315	20
62	255 × 280	12			

Stainless Steel Spice Containers

Drawer Type

Designed for the storage of several kinds of spices. Convenient when cooking because each drawer box has its own easy to grab handle.

Unit Per Pc.

CODE	No. of Drawers	Tier	Unit Size mm W×H×D
17 29 65	3	1	320 × 150 × 100
66	4	1	420 × 150 × 100
67	6	2	330 × 220 × 150
68	8	2	430 × 220 × 150

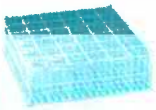
Racks

Dish Drainer Rack

Rigid heavy gauge steel wire, plastic coated.

17 29 71	Rack, dish drainer, steel wire with plastic coating. 420 × 340 × 125 mm	Pc.

Compartment Steel Wire Glass Rack



Compartmented to suit most standard size glasses. Made of heavy gauge steel wire, plastic coated.

Unit Per Pc.

CODE	Outer Size mm	Max. Glass Diam mm	For Tumbler	Pocket
17 29 72	500×250×120	73	8 oz	18's
73	500×250×155	73	10 oz	18's
17 29 74	475×315×155	69	8 oz	24's
76	475×475×135	69	10-12 oz	36's
75	475×475×155	69	8 oz	36's

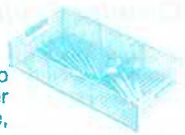
Steel Wire Tableware Rack

All purpose for cups, plates, glasses, trays, etc. Made of heavy gauge wire, plastic coated.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 29 77	500 × 250 × 120	17 29 79	475 × 475 × 130
78	475 × 315 × 130		

Steel Wire Flatware Rack



Suitable for draining water drop from knives, folks and spoons after washing. Made of heavy gauge wire, plastic coated.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 29 81	500 × 250 × 110	17 29 82	500 × 500 × 100

Steel Wire Cup Rack

Suitable for draining water drop from coffee cups, tea cups, etc. after washing. Made of heavy gauge wire, plastic coated.

Unit Per Pc.

CODE	Size mm	Pocket	For
17 29 83	475 × 475 × 80	16's	Tea, Bouillon Soup
84	475 × 475 × 80	25's	Coffee, Demitasse

Dish Washer Rack

Constructed of hard, heat resistant plastic and designed for continuous dishwasher use. A compartment rack is also available for tumblers, tea cups, etc. When ordering the compartment rack type, please specify the diameter and the height of the tumblers or cups to be used with the rack.

Open Rack | Plate & Tray Rack | Glass Rack | Cup Rack

Unit Per Pc.

CODE	Size mm	Pocket Size mm	Weight Kgs
Open Rack			
17 29 88	500 × 500 × 90	-	1.47
85	500 × 500 × 115	-	1.65
89	500 × 500 × 130	-	2.06
Plate & Tray Rack			
17 29 86	500 × 500 × 115	-	1.60
Glass Rack			
17 29 91	500 × 500 × 110	72 × 72 (36 pockets)	1.84
92	500 × 500 × 130		2.14
93	500 × 500 × 140		2.20
94	500 × 500 × 150		2.26
95	500 × 500 × 160		2.32
96	500 × 500 × 170		2.38
97	500 × 500 × 180		2.42
98	500 × 500 × 190		2.45
Cup Rack			
17 30 01	500 × 500 × 110	109 × 109 (16 pockets)	1.76
02	500 × 500 × 130		1.89
03	500 × 500 × 150		1.95
17 30 04	500 × 500 × 110	87 × 109 (20 pockets)	1.85
05	500 × 500 × 130		1.98
06	500 × 500 × 150		2.04
17 29 87	Rack for glass or tea cup with further details (Pc.)		

7TH 17

18. Japanese Style Tableware

Japanese Style China Tableware

Standard sizes and combinations of traditional style Japanese tableware. The accessories are white with floral designs painted on the sides. They are lightweight and easy to handle and stack minimizing breakage.

Unit Per Pc.

CODE	Item	Size mm Diam	Size mm Height
17 31 01	Regular Rice Bowl	119	67
02	Large Rice Bowl with Cover	155	104
03	Large Rice Bowl without Cover	155	73
04	Small Pickle Bowl	113	57
05	Large Pickle Bowl	120	70
17 31 06	Nimono Bowl	150	45
07	Soy Sauce Bowl	78	35
08	Soy Sauce Plate	L 83	W 57
09	Boiled Cup with Cover	107	70
17 31 10	Vegetable Plate	93	
11	"	110	
12	"	155	
13	"	180	
14	Sashimi Plate	L 167	W 100
15	Grilled Fish Plate	L 183	W 128
17 31 16	Green Tea Cup	83	55
18	Japanese Tea Pot	135	150

Japanese Style Plastic Tableware

Heavy duty but light weight P.P. (Polypropylene resin) tableware which resists cracking and chipping. Suitable for cleaning in dishwashers. Easy to handle and store. Lustrous colours will not fade. Acid and alkaline proof, withstands temperatures up to 120 deg. C.

Regular Rice Bowl

Large Rice Bowl with Cover

Regular Soup Bowl

Large Soup Bowl with Cover

Regular Noodle Bowl

Large Noodle Bowl

Small Bowl

Nimono Bowl

Egg Bowl

Roud Plate

Square Plate

Soy Sauce Plate

Green Tea Cup

Unit Per Pc.

CODE	Item	Size mm	
		Diam	Height
17 31 26	Regular Rice Bowl	115	60
27	Large Rice Bowl with Cover	155	68
28	Large Rice Bowl without Cover	155	75
29	Regular Soup Bowl	120	55
30	Large Soup Bowl with Cover	129	55
17 31 31	Regular Noodle Bowl	155	68
32	Large Noodle Bowl	200	75
33	Small Bowl	110	47
34	Nimono Bowl	85	30
35	Nimono Bowl	113	28
17 31 36	Egg Bowl	110	45
37	Round Plate	100	21
38	"	130	25
39	"	160	30
40	"	190	30
17 31 41	Square Plate	197×137	24
42	Soy Sauce Plate	92× 68	22
43	Green Tea Cup	97	57

19. Japanese Style Pans & Ladles

Japanese Cooking Pans

"Sukiyaki" Pan

Heavy cast iron made pans for SUKIYAKI with separate handle.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 31 51	200	**17 31 53**	260
52	240	**54**	280

"Tempura" Pan

Steel made pan for frying vegetables, fishes, etc.

Unit Per Pc.

CODE	Diam×Depth mm	Ltr	CODE	Diam×Depth mm	Ltr
17 31 55	270 × 62	1.5	**17 31 58**	360 × 89	4.0
56	300 × 63	2.0	**59**	390 × 91	6.0
57	330 × 80	3.0	**60**	420 × 106	8.0

"Yosenabe" Pan

Heavy duty aluminium made pans for Yosenabe with two looped handles.

17 32 08	Yosenabe pan, aluminium, dia 180 mm	Pc.

Aluminium Japanese "Donburi" Pan with Handle

Suitable for cooking toppings for Japanese broiled rice. Aluminium made pan with wood handle.

Unit Per Pc.

CODE	Diam × Depth mm	CODE	Diam × Depth mm
17 32 09	145 × 30	**17 32 10**	165 × 30

Omelet Frying Pans

Copper made pans with wooden handle. Designed to easily cook large, square omelets without mess.

Unit Per Pc.

CODE	Pan Size mm	CODE	Pan Size mm
17 31 61	135 × 180	**17 31 64**	180 × 225
62	150 × 195	**65**	195 × 240
63	165 × 210	**66**	210 × 255

Aluminium Boiling Pans

Heavy duty aluminium pans with handles riveted to both sides. Wooden lid sold separately.

Unit Per Pc.

CODE	Diam×Depth mm	Ltr	CODE	Diam×Depth mm	Ltr
17 31 71	300 × 140	5.4	**17 31 76**	450 × 200	19
72	350 × 150	7.6	**77**	480 × 210	24
73	360 × 170	9.0	**78**	510 × 220	32
74	390 × 180	13.0	**79**	540 × 240	36
75	420 × 190	16.0	**80**	600 × 270	49

Wooden Lids

for Aluminium Boiling Pan

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 31 86	300	**17 31 91**	450
87	350	**92**	480
88	360	**93**	510
89	390	**94**	540
90	420	**95**	600

Aluminium Boiling Pan with Handle

Heavy duty aluminium made pans with short wood handle.

Unit Per Pc.

CODE	Diam×Depth mm	Ltr	CODE	Diam×Depth mm	Ltr
17 32 01	180 × 70	1.6	**17 32 04**	240 × 90	3.7
02	200 × 75	2.0	**05**	270 × 110	5.4
03	210 × 80	2.4	**06**	300 × 120	7.6

Double Boilers

The double boiler consists of an inner and outer pan. Water is boiled in the outer pan to keep the contents of the inner pan (Sauces, Stews, Soups) warm and of a soft consistency.

Aluminium

Unit Per Pc

CODE	Outer Pan Diam. x Depth mm	Inner Pan Diam. x Depth mm	ltr
17 32 11	300 x 300	240 x 230	10
12	330 x 330	270 x 260	14
13	360 x 360	300 x 290	20

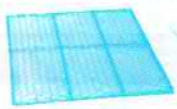
Stainless Steel

Unit Per Pc.

CODE	Outer Pan Diam. x Depth mm	Inner Pan Diam. x Depth mm	ltr
17 32 20	270 x 305	210 x 210	7
22	300 x 335	240 x 240	10
23	330 x 365	270 x 270	15
24	360 x 395	300 x 300	20
25	390 x 425	330 x 335	26

Grilling Nets

For grilling meat, fish, etc. over charcoal fire, gas or electric heaters.



Galv. Iron

Stainless Steel

Unit Per Pc.

CODE	Description	Size mm
17 32 16	Galv. iron without handle	450 x 450
17	Stainless steel without handle	270 x 210
18	Stainless steel with handle	400 x 325

Skimming Ladles

Designed for skimming soup, frying oil, etc. Shallow mesh wire net with rigid wire handle.

Unit Per Pc

Round Net		Square Net	
CODE	Net Diam. mm	CODE	Net Size mm
17 32 26	150	17 32 28	145 x 185
27	180		

Wire Skimmers

For skimming soup, etc. Stainless steel fine mesh with a wooden handle.

Unit Per Pc

CODE	17 32 31	17 32 32	17 32 33
Diam mm	180	200	250

Stainless Steel Noodle Boilers

Used to boil pasta or egg noodles instantly. Made of a stainless steel strainer with a wooden handle.

17 32 36	Noodle boiler, stainless steel strainer size D130 x H170 mm	Pc.

Net Scoop Ladles

Designed to take noodles, vegetables, pieces of fish, etc. out of water after boiling. Flat, round, stainless steel net with a wooden handle. When ordering please specify the diameter of the net required. Overall length of the ladle is 600 mm.

17 32 38	Net scoop ladle S.S 210 mm diam.	Pc.
39	Net scoop ladle S.S 240 mm diam.	"

20. Japanese Style Baskets

Bamboo Baskets

For washing rice before boiling. Available in bamboo or stainless steel made in two different designs.

Side-cut Type

Round Type

Unit Per Pc

Side-Cut			Round		
CODE	Material	LxWxH mm	CODE	Material	DiaxH mm
17 32 41	Bamboo	490x430x130	17 32 44	Bamboo	480x150
42		540x500x150	45		540x200
43		600x550x180	46		600x230
17 32 47	S. Steel	420x360x165	17 32 82	S. Steel	300x160
48		470x430x190	83		340x200
49		570x540x200	84		400x220

Deep Basket

A round deep bamboo basket for straining "Miso" bean paste or filtering water from washed vegetables, etc.

Unit Per Pc

CODE	Diam x Height mm	CODE	Diam x Height mm
17 32 51	340 x 160	17 32 53	390 x 210
52	360 x 190		

Plastic Baskets

Round Basket

A plastic made, very light strainer for vegetables, rice, etc. When ordering, specify the diameter required.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 32 56	200	17 32 60	320
57	230	61	370
58	260	62	420
59	290	63	470

Round Vegetable Basket

A round deep plastic strainer for holding fresh vegetables or fruits.

Unit Per Pc.

CODE	Diam x Depth mm	CODE	Diam x Depth mm
17 32 65	295 x 160	17 32 68	470 x 250
66	350 x 190	69	550 x 300
67	400 x 210		

Deep Square Basket

Square shaped plastic strainer. Ideal for washing vegetables for salad preparation. Deep sized and regular sized baskets are available in the following dimensions.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 32 91	230 × 300 × 10	**17 32 93**	360 × 480 × 16.5
92	290 × 390 × 13		

Stainless Steel Baskets

Round Basket

Heavy duty stainless steel round basket for straining water from vegetables after washing or boiling.

Unit Per Pc.

CODE	Dia ×Depth mm	CODE	Diam×Depth mm
17 32 71	250 × 109	**17 32 76**	375 × 150
72	275 × 118	**77**	400 × 165
73	300 × 120	**78**	430 × 180
74	330 × 122	**79**	460 × 187
75	350 × 135	**80**	500 × 220

Square Basket

Stainless steel rectangular basket with handle for rinsing.

17 32 86	Basket, stainless steel, square with handle, 355 × 300 × 150 mm	Pc.

Oval Basket

Heavy duty stainless steel oval basket for straining water from vegetables after washing or boiling.

Unit Per Pc.

CODE	L×W×D mm	Ltr	CODE	L×W×D mm	Ltr
17 32 87	445×380×145	5.4	**17 32 89**	530×520×185	14.4
88	480×470×180	9.0	**90**	605×575×200	12.6

Deep Basket for Rice

Stainless steel made deep type basket with flat bottom for washing rice before boiling.

Unit Per Pc.

CODE	Inner Diam × Depth mm	Ltr	CODE	Inner Diam × Depth mm	Ltr
17 32 95	275 × 165	5.4	**17 32 98**	350 × 215	14.4
96	300 × 180	7.2	**99**	375 × 230	18.0
97	330 × 200	9.0			

21. Japanese Style Kitchen Utensils

Japanese Cooking Knives

Fish Chopping Knife

Heat treated carbon steel blade. Cuts fish with bones into handy pieces.

Unit Per Pc.

CODE	Blade Length mm	CODE	Blade Length mm
17 33 01	120	**17 33 05**	180
02	135	**06**	195
03	150	**07**	210
04	165		

Vegetable Knife

Thin, carbon steel blade knife designed to slice vegetables easily. Please specify the blade length required.

Unit Per Pc.

CODE	Blade Length mm	CODE	Blade Length mm
17 33 11	150	**17 33 14**	195
12	165	**15**	210
13	180		

Fish Slicing Knife

Specially designed to cut thin slices of raw or prepared fish. Please specify the blade length required.

Unit Per Pc.

CODE	Blade Length mm	CODE	Blade Length mm
17 33 21	210	**17 33 23**	270
22	240	**24**	300

Disposable Bamboo Skewers

Disposable skewers for grilling pieces of chicken, meat, etc.

Unit Per Bdl

CODE	Length mm	Q'ty/ Bdl	CODE	Length mm	Q'ty/ Bdl
17 33 28	150	110's	**17 33 29**	250	1,000's
27	210	200's	**30**	280	50's

Shallow Ladles

Alumite solid or perforated bowl with a wooden handle for all purpose ladling.

Unit Per Pc.

CODE	Bowl Type	Bowl Size	Handle Length
17 33 31	Solid bowl	113 mmφ	330 mm
32	Perforated Bowl	"	"

Wooden Ladles

Made of wood and designed to work with cooked beans, stews, etc.

17 33 34	Wooden ladle, 115 × 203 mm	Pc.

Stainless Steel Shallow Ladles

Light, easy cleaning, all purpose, stainless steel ladle. Available with a solid or perforated bowl. Handle is hooked at the end making it easy to hang in the workplace within hands reach.

Unit Per Pc.

CODE	Bowl Type	Bowl Size	Handle Length
17 33 35	Solid	90 mmϕ	255 mm
36	Perforated	"	"

Rice Spatulas

A Japanese rice server for preparing, cooking and serving rice.

Unit Per Pc.

Wood		Plastic	
CODE	Length mm	CODE	Length mm
17 33 41	240	17 33 56	240
42	270	57	295
43	300	58	360
44	360	59	440
45	450	60	500
17 33 46	600	17 33 50	600
47	900		
48	1,200		

Wood Paddles (Spatula)

For mixing or stirring food in a stock pot. Following dimensions are for blade width and overall length.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 33 51	65 × 300	17 33 54	110 × 600
52	68 × 390	55	120 × 750
53	110 × 480		

Water Dippers

Dippers available are made of all plastic or with a stainless steel or aluminium cup attached to a wooden handle.

Unit Per Pc.

CODE	Material	Capacity ltr	Cup Size Diam. mm
17 33 61	Plastic	1.2	155
17 33 62	Aluminium	0.9	130
63	"	1.4	150
17 33 68	Stainless steel	0.5	120
69	"	0.8	130
64	"	1.0	140
65	"	1.4	160

Vegetable Peelers

A handy and safe peeler for radish, potatoes, etc. Stainless steel permanent blade with wooden handle.

17 33 66	Vegetable peeler, 175 mm length	Pc.

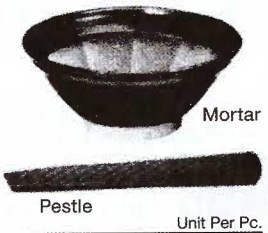
Vegetable Slice Cutter "Benliner"

A useful cutter with two different shaped blades for cutting carrots, radishes, etc. 85 mm blade length. Size : 315 x 90 mm.

17 33 67	Vegetable slice cutter, "Benliner"	Pc.

Conical Mortars & Wood Pestles

Conical shaped manual grinder for grinding pastes or dried spices and herbs. Mortar and wood pestle are furnished separately. Specify the diameter of the mortar and if the pestle is required.



Unit Per Pc.

Mortar		Pestle	
CODE	Diam. mm	CODE	Lgh. mm
17 33 71	270	17 33 74	360
72	300	75	390
73	330	76	450

Graters

All purpose grater for manual operation. Made of aluminium, copper or stainless steel.

With Grip End

Square Sheet Type

Unit Per Pc.

CODE	Material	Size mm
	With Grip End	
17 33 81	Aluminium	170 × 260
17 33 82	Copper	135 × 250
83	"	160 × 275
84	"	175 × 310
17 33 85	Stainless steel	130 × 240
86	"	150 × 270
87	"	170 × 300
	Square Sheet Type	
17 33 88	Copper	190 × 365
17 33 89	Stainless steel	190 × 335

Sushi Boards "Nuki-Ita"

A typical Japanese wooden board for preparing "Sushi" dishes prior to serving.

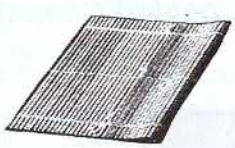
Nuki-Ita

Unit Per Pc.

CODE	Size mm	CODE	Size mm
17 33 93	480 × 330 × 60	17 33 94	600 × 295 × 55

Bamboo Sushi Rollers

Made of bamboo and specially designed to roll and prepare Japanese "Sushi" dishes. 240 x 270 mm in size.



17 33 96	Bamboo sushi roller 240 × 270 mm	Pc.

Bleached Cotton Cloths

Cotton woven rough mesh cloth for filtering. 360 mm in width and 7 mtrs in length folded in one roll.

17 33 98	Bleached cotton cloth, W 360 mm×L7 mtrs/roll	Pc.

Sushi Tubs

Wood tub for mixing sushi rice and vinegar, ingredients, etc.

Unit Per Pc

CODE	Inner Diam. × Depth mm	Ltr	CODE	Inner Diam. × Depth mm	Ltr
17 34 15	310 × 70	1.44	17 34 19	435 × 95	3.24
16	335 × 80	1.62	20	495 × 110	5.4
17	380 × 80	1.8	21	555 × 110	7.2
18	410 × 85	2.7	22	605 × 120	9.0

Japanese Style Chopsticks

Available in lacquered bamboo, plastic, or wooden disposable types. Individually wrapped chopsticks are also available upon request.

Lacquered Bamboo Round

Lacquered Bamboo Square

Plastic Square

Split Wood Disposable

CODE	Description	Length mm	Unit
17 34 01	Lacquered bamboo round	220	Pr.
02	" square	225	"
03	Plastic, square	225	"
04	Split-wood, disposable 100 pr/pkt	210	Pkt

Chopstick Cases

An individual chopstick case. Length approx. 235 mm.

17 34 07	Chopstick case, individual, 235 mm Length	Pc.

Chopstick Stands

Available in stainless steel or plastic for loose chopsticks.

Unit Per Pc.

Stainless Steel		Plastic	
CODE	D × H mm	CODE	D × H mm
17 34 08	80 × 140	17 34 09	100 × 140

Cooking Chopsticks

Long bamboo chopsticks for cooking "Tempura", etc.

17 34 11	Chopsticks cooking bamboo L 390 mm	Pr.
12	" L 450 mm	"

Stainless Steel Thermos Food Jars

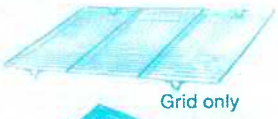
Stainless steel, simple thermos jar to keep rice, etc. warm. Outside is simulated wood.

Unit Per Pc.

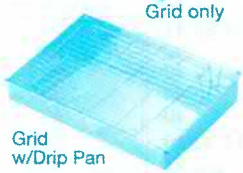
CODE	Rice Capacity ltr	Actual Capacity ltr	Temperature Degree After 6 Hours
17 34 26	3.3	8.2	78°C
27	3.9	9.8	76°C
28	4.2	10.5	80°C
29	5.7	14.2	78°C
30	7.3	18.3	80°C

Drain Grids

Designed for draining oil fried foods such as Japanese style "Tempura" dishes, etc. Can be placed on top of sheet pans in order to recover oil. Made of galvanized steel wire. Stainless steel made grid furnished with drip pan type is also available.



Grid only



Grid w/Drip Pan

Unit Per Pc.

Grid Only			Grid with Drip Pan		
CODE	Size mm	Material	CODE	Size mm	Material
17 34 46	520×370	Steel	17 34 47	375×255	Stainless steel
			48	465×315	

Green Tea Canisters

A tin green tea container with a moisture free inner lid.

Unit Per Pc.

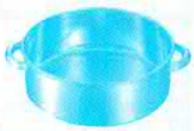
CODE	Material	Size mm	Ltr
17 34 51	Tin	ϕ110 × H190	1.8
52	"	ϕ130 × H210	2.8
17 34 53	Stainless steel	ϕ120 × H230	2.5
54	"	ϕ140 × H260	4.0

Washing Basins

Alumite or Stainless Steel

Made of alumite or stainless steel for washing or cleaning vegetables, etc.

Alumite



Stainless Steel w/Handles

Unit Per Pc.

Alumite			Stainless Steel w/Handles		
CODE	Diam×Depth mm	Ltr	CODE	Diam×Depth mm	Ltr
17 34 59	270 × 115	5.3	17 34 76	270 × 90	5.0
60	300 × 128	7.7	77	300 × 100	7.0
61	330 × 140	10.0	78	330 × 110	9.4
62	360 × 160	14.0	79	360 × 120	12
63	420 × 135	18.0	80	390 × 130	15
17 34 64	480 × 154	25.0	17 34 81	420 × 140	20
65	540 × 173	36.0	82	450 × 150	23
			83	480 × 160	29
			84	510 × 170	36
			85	550 × 180	42
			86	600 × 190	54

Plastic

Plastic made basin for general purposes.

Unit Per Pc.

CODE	Ltr	Height×Diam. mm	CODE	Ltr	Height×Diam. mm
17 34 71	11	130 × 400	17 34 74	37	190 × 570
72	16	150 × 450	75	60	280 × 600
73	24	170 × 500			

22. Chinese Style Tableware & Cooking Utensils

Chinese Style Tableware

Porcelain

Porcelain made heavy duty Chinese style tableware.

Rice Bowl

Soup Bowl

Tea Cup

Noodle Bowl

Soup Spoon

Unit Per Pc.

CODE	Item	Size mm	
		Diam	Height
17 36 01	Rice bowl	115	53
17 36 02	Soup bowl	183	60
03	"	205	60
04	"	228	60
17 36 05	Noodle bowl	193	68
17 36 06	Soup spoon	L140	
17 36 07	Tea cup	92	56

Melamine

Chinese style Melamine made plain tableware that resists cracking and chipping and is suitable for cleaning in dishwashers. Easy to handle and store, lustrous colours will not fade.

Noodle Bowl

Octagonal Plate

Small Plate

Soup Bowl

Serving Plate

Spoon

Unit Per Pc

CODE	Item	Size mm	
		Diam	Height
17 36 11	Noodle bowl	197	67
12	Large noodle bowl	205	60
13	Soup bowl	113	54
14	Octagonal plate	180	40
15	Small plate	140	25
17 36 16	Serving plate	300	40
17	"	365	50
18	"	455	65
19	Spoon	L 160	

Chinese Style Chopsticks

Plastic or bamboo made Chinese style chopsticks with flat points.

17 36 26	Chopsticks. Chinese style plastic L260 mm	Pr.
27	Chopsticks. Chinese style bamboo L260mm	"

Chinese Frying Pans

Steel (Wok)

Made of heavy steel with half round bottom. A short handle welded to the pan allows you to hold the pan while stir frying. Excellent for preparing Chinese dishes.

Unit Per Pc.

CODE	17 36 31	17 36 32	17 36 33
Diam. mm	300	330	360

Perforated

Suitable for swishing off cooking oil from Chinese food attaching over the ordinary solid type Chinese frying pan. Available material in steel or stainless steel.

Unit Per Pc.

Steel		Stainless Steel	
CODE	Diam. mm	CODE	Diam. mm
17 36 42	240	17 36 46	240
43	270	47	270
44	300	48	300
45	330		

Steel Chinese Cooking Pans

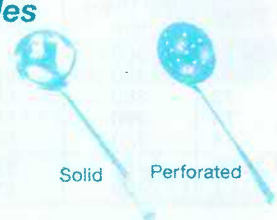
A large sized pan made of heavy steel with riveted handles at both ends. Used for cooking or frying Chinese dishes.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
17 36 36	390	17 36 39	480
37	420	40	510
38	450	41	600

Chinese Soup Ladles

Stainless or steel ladle with wooden handle for Chinese style cooking. Available in solid or perforated styles.



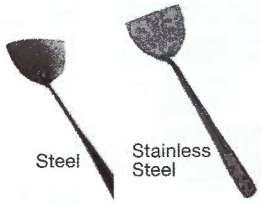
Solid Perforated

Unit Per Pc.

Stainless Steel			Steel		
CODE	Type	Diam. mm	CODE	Type	Diam. mm
17 36 51	Solid	120	17 36 49	Solid	116
52	"	130	50	"	129
			17 36 53	Perforated	120
			54	"	130

Chinese Turners

Stainless or steel ladle with wooden handle for Chinese style cooking.



Unit Per Pc.

CODE	Material	Width mm	CODE	Material	Width mm
17 36 56	Steel	120	**17 36 58**	Stainless Steel	120
57	"	130	**59**	"	130

Chinese Vegetable Knives

A wide and sharp cutting blade used for preparing large portions of vegetables for Chinese cuisine. Has a carbon steel blade and a wooden handle.

17 36 62	Chinese vegetable knife 213 mm blade length	Pc.

Chinese Cutting Boards

Made of hard wood, or plastic suitable for slicing beef and vegetables for food preparation.

Unit Per Pc.

Wood		Plastic	
CODE	D x H mm	CODE	D x H mm
17 36 66	390 x 150	**17 36 67**	400 x 100
		68	450 x 100
		69	500 x 100

Chinese Food Steamers

Bamboo

Made of bamboo and designed for preparing food by steaming. The mid sections and lid can be purchased separately. The water pan is separate order.

Unit Per Pc.

Body			Cover	
CODE	Out Diam. mm	Height mm	CODE	Out Diam. mm
17 36 71	300	55	**17 36 81**	300
72	330	55	**82**	330
73	360	55	**83**	360
74	390	55	**84**	390
75	420	55	**85**	420
17 36 76	450	55	**17 36 86**	450
77	480	55	**87**	480

Aluminium

Used for the same purposes as above but made of aluminium. The steamer body and lid can also be purchased separately. The water pan is separate order.

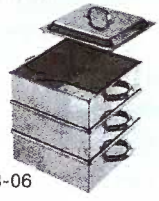
Unit Per Pc.

Body			Cover	
CODE	Diam. mm	Height mm	CODE	Diam. mm
17 36 90	450	150	**17 36 95**	450
91	480	150	**96**	480
92	510	150	**97**	510
93	600	150	**98**	600

Stainless Steel

Stainless steel made steamers for preparing steamed food. The lowest pan is for water and the rest upper pans are for food to be steamed. The steamer body and lid can be purchased separately. Furnished with lid.

17 37 01/02



17 37 03-06

Unit Per Set

CODE	Tiers	Pan Size mm	
		Food	Water
17 37 01	2	290 x 290 x 115	290 x 290 x 100
02	3	"	"
17 37 03	3	300 x 300 x 100	300 x 300 x 125
04	3	330 x 330 x 100	330 x 330 x 125
05	3	360 x 360 x 100	360 x 360 x 125
06	3	390 x 390 x 100	390 x 390 x 125

Remark: 2 tiers are composed of one water pan and one food pan.
3 tiers are composed of one water pan and two food pans.

23. Korean Style Tableware

Korean Style Stainless Steel Tableware

Korean style 18-8, polished finish, stainless steel made tableware. Durable for long time use. Easy to handle and store and the luster will not fade.

Rice Bowl with Cover

Soup Bowl

Pickle Bowl with Cover

"MIZUNA" Bowl with Cover

Soy Sauce Bowl

Noodle Bowl

Chopsticks

Spoon

Oval Platter

Gravy Bowl

Unit Per Pc.

CODE	Item	Size mm		Unit
		Diam.	Height	
17 37 51	Rice bowl with cover	115	65	Pc.
17 37 52	Soup bowl	135	53	"
17 37 53	Pickle bowl with cover	97	43	"
17 37 54	"MIZUNA" Bowl with cover	85	50	"
17 37 55	Soy sauce bowl	67	35	"
17 37 56	Noodle bowl	192	75	"
17 37 57	Oval platter	201	305	"
58	"	163	252	"
17 37 59	Gravy bowl	97		"
17 37 60	Chopsticks	L197		Pr.
17 37 61	Spoon	L 217		Pc.

24. Measuring Scales

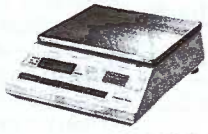
Spring Balance Scales

For weighing items in bulk. Capacity range from 200 grams to 50 kilograms. Available in metric graduation only. Plastic or steel platform trays.

Unit Per Pc.

CODE	Max. Weighing grm or kgs	CODE	Max. Weighing kgs
17 40 01	200 grm	**17 40 07**	8 kgs
02	400 grm	**08**	10 kgs
03	800 grm	**09**	12 kgs
04	1 kg	**10**	20 kgs
05	2 kgs	**11**	30 kgs
17 40 06	4 kgs	**17 40 12**	50 kgs

Portable Scales with Digital Display

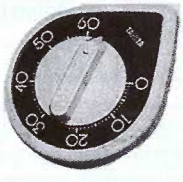


Alkaline battery powered scales with digital display. Platform size is 220 x 220 mm.

Unit Per Pc.

CODE	Max. Weighing	CODE	Max. Weighing
17 40 16	1.0 kgs	**17 40 18**	5.0 kgs
17	2.0 kgs	**19**	10.0 kgs

Alarm Timers



Available in dial type or digital type and will beep at the end of preset cycle. Can be adjusted between 1 second to 60 min. or more.

Unit Per Pc.

CODE	Type	Max. Preset Time
17 40 21	Dial	60 min.
22	Digital	99 min.

Measuring Spoon Sets

Suitable for measuring small portion of granulated or liquefied condiments. Three stainless steel spoons for measuring 2.5 cc, 5 cc and 15 cc are attached to one ring.

17 40 24	Measuring spoon set, stainless steel, 2.5/5/15 cc	Set

Measuring Cups

Stainless steel or plastic made cup for measuring liquid. Units are graduated in liters.

Unit Per Pc.

Plastic		Stainless Steel	
CODE	ltr	CODE	ltr
17 40 26	0.3	**17 40 31**	0.2
27	0.6	**32**	0.5
28	1.0	**33**	1.0
29	2.0	**34**	2.0

25. Galley Cleaning Equipment

Galley Gloves

Made from soft, elastic, thin rubber to suit galley use.

Unit Per Pc.

CODE	Size	CODE	Size
17 40 44	M	**17 40 45**	L

Oven Mitts

Heavily padded, heat reflective aluminized cloth for extra protection.

17 40 48	Oven mitt, heat protection aluminized cloth	Pr.

Hand Scourers

For removing grease and food build up; also suited for scraping dishes and scrubbing vegetables. Available in various types and materials.

Coir Steel Brass Stainless Steel

17 40 51	Hand scourer, coir small	Pc.
52	" coir large	"
53	" steel	"
54	" brass	"
55	" stainless steel	"

Sponge Cleaners

Soft, bubbled, plastic sponge for general washing and cleaning purposes.

17 40 58	Sponge cleaner, 150x100x50 mm	Pc.

Steel Wool

For cleaning and scraping stainless steel equipment and almost all other metals. 450 grm per piece.

Unit Per Pkt.

CODE	No.	CODE	No.	CODE	No.
17 40 61	3	**17 40 63**	1	**17 40 65**	00
62	2	**64**	0	**66**	000

7TH 17

Contamination Prevention Sponges

Scotch-Brite

High Durability Net Covered Sponge No. 9300

Sponge with Scrubbing Pad

Resin Fiber Sponge

Unit Per Pc.

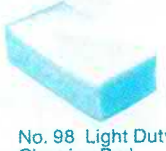
CODE	Name	Size mm	Remarks
17 40 67	High durability net covered sponge, No. 9300	80×160×20	Net covered to prevent deteriorated sponge particles fall out. HACCP International Food Safety Programmes certified.
17 40 68	Sponge with scrub-bing pad	75×115	One side resin made abrasive particles pad for scrubbing scorched surface. HACCP International Food Safety Programmes certified.
17 40 69	Resin fiber sponge	60×125	Made of tough, efficient and long lasting resin fiber. HACCP International Food Safety Programmes certified.

3M Scotch-Brite Cleaners

The Scotch-Brite brand family of scouring pads, sponges and accessories are listed below with respective specifications.

No. 96 Scouring Pad

Sponge Ace Scrubbing Sponge



No. 98 Light Duty Cleaning Pad

No. 86 Heavy Duty Commercial Scouring Pad

No. 94 Stropping Pad

No. 6472 Pad Holder

No. 6473 Pad Block

No. 482, 461 Griddle Pad Holder

Left to Right Cleaning Pad No. 8440, 8343, 8242, 8541

No. 82 Griddle Cleaning Pad
No. 46 Griddle Polishing Pad

No. 200 Griddle Screen

Specifications

3M No.	Description	Size mm
	3M Scotch Brite Hand Pad	
No. 96	General purpose commercial scouring Nylon pad, cleaning most cooking utensils, green colour	230×150
Sponge Ace S Sponge Ace L	Nylon scrubbing sponge, scrubs and cleans walls, tables and counter tops, yellow & green colours	115×75×33 150×90×33
No. 98	Light duty Nylon cleansing pad, white & yellow colours	114×152, 152×229
No. 86	Heavy duty Nylon commercial scouring pad, brown colour	158×224
No. 94	Stropping Nylon pad, cleans fryer heating tube assemblies, green colour	635×101×10
No. 6472	Pad holder ideal for reaching hard to get at areas	95×227×31
No. 6473	Pad block, useful in confined areas	95×227
No. 8440	Polyester cleaning pad, fine white colour	254×118
No. 8343	Polyester cleaning pad,medium, red colour	115×250
No. 8242	Polyester cleaning pad, coarse, blue colour	115×250
No. 8541	Polyester cleaning pad, extra coarse, brown colour	115×250
	3M Griddle Cleaning System	
No. 82	Heavy duty griddle cleaning pad with tough open web construction for high temperature use, brown colour	114×140
No. 482	Above pad holder	—
No. 46	Griddle polishing pad, for low temperature use, gray colour	100×133
No. 461	Above griddle pad holder	—
No. 200	Griddle screen, designed for heavy duty cleaning	101×139

How to order

CODE	No.	Item	Unit
17 40 71	96	Scouring Pad 230×150 mm	Pc.
17 40 72		Sponge Ace S	Pc.
73		Sponge Ace L	"
17 40 74	98	Light Duty Cleaning Pad, 114×152 mm	Pc.
70		" 152×229 mm	"
17 40 75	86	Heavy Duty Scouring Pad 158×224 mm	Pc.
76	94	Stropping Pad	"
77	6472	Pad Holder	"
78	6473	Pad Block	"
17 40 79	8440	Cleaning Pad, Fine	Pc.
80	8343	Cleaning Pad, Medium	"
81	8242	Cleaning Pad, Coarse	"
82	8541	Cleaning Pad, Ex. Coarse	"
17 40 83	82	Heavy Duty Griddle Cleaning Pad	Pc.
84	482	H. D. Griddle Cleaning Pad Holder	"
17 40 85	46	Griddle Polishing Pad	Pc.
86	461	Griddle Polishing Pad Holder	"
17 40 87	200	Griddle Screen 20's/pkt	Pkt.

Galley Boots

Leakproof rubber boots with tread soles for non-slip traction. Normally supplied in white colour.

Unit Per Pr.

CODE	Size cm.	CODE	Size cm.
17 40 91	24.0	17 40 96	26.5
92	24.5	97	27.0
93	25.0	98	28.0
94	25.5	99	29.0
95	26.0		

Kitchen Brushes

Dishwashing Brush

White bristle hair for dishwashing, general galley, and pantry use. Overall length is 270 mm.

17 41 01	Brush dishwashing	Pc.

Tumbler Brush

For cleaning glasses, cups, or other difficult to clean tableware. Made of a sponge brush with a plastic handle. A white bristle tumbler brush is also available.

17 41 03	Sponge head tumbler brush	Pc.
04	White hair tumbler brush	"

Bottle Brush

Designed for cleaning bottles, etc. where the brush has to be able to fit through narrow spaces.

Unit Per Pc.

CODE	Brush Size	Overall Length
17 41 07	50 x 100 mm	340 mm
08	75 x 140 mm	450 mm

Percolator Brush

A handy brush to clean the inside of percolator stems. Black hair, furnished with twisted wire handle and ring on the handle end.

17 41 11	Brush percolator	Pc.

Scrubbing Brushes

Bamboo "Sasara"

Bamboo bundled brush suitable for scrubbing scorched frying pans, pots, etc..

17 41 15	Scrubbing brush, bamboo, "Sasara", L 240 mm	Pc.

26. Buckets & Garbage Bags

Polycarbonate Buckets

The strongest resin made bucket from plastic category. Polycarbonate has self extinguish performance if it is kept away from the fire, and has heat resistance between -100 deg. C and +135 deg. C. Normally the bucket comes without cover. Seal type cover is separate order.

Unit Per Pc.

CODE	Diam. x Height mm	ltr	Remark
17 41 18	294 x 268	13	Bucket only
17 41 19	Seal type cover		

Buckets

Plastic

Die formed strong plastic buckets. Blue colour is the most commonly used.

Unit Per Pc.

CODE	Capacity ltr	Size mm	
		Diam.	Height
17 41 21	8	255	245
22	10	275	265
17 41 23	13	300	285
24	15	335	305

Galvanized

Made from Gauge No. 28 galvanized sheet with a reinforced base.

Unit Per Pc.

CODE	Capacity ltr	Size mm	
		Diam.	Height
17 41 26	8	250	200
27	10	280	200
17 41 28	13	305	230
29	15	315	260

Stainless Steel

Made from 18-8 stainless steel sheet for all purpose use including use with chemicals.

Cover

Bucket

Unit Per Pc.

Bucket		Cover	
CODE	ltr	CODE	For ltr
17 41 31	10	17 41 35	10
32	13	36	13
33	15	37	15
34	20	38	20

Dust Pans

Made of strong plastic or galvanized steel. Available in 3 types.

Plastic Flat

Galv.Open

Lobby

Unit Per Pc.

CODE	Description	Size mm
17 41 41	Plastic, flat	320 x 270 x 495
42	Galv. open	240 x 110 x 470
43	Galv. lobby	306 x 114 x 250

Steel Waste Receptacles
with Swing Lid

A melamine coated steel waste receptacle with free swinging lid.

Unit Per Pc.

CODE	Size mm W × D × H	ltr
17 41 44	275 × 190 × 530	19
45	365 × 255 × 595	36

Wastebaskets
(Waste Tubs)

Baskets can be furnished in plastic, fibre or galvanized, steel type.

Plastic Fibre Galvanized

Unit Per Pc.

CODE	Material	Size mm	
		Diam.	Height
17 41 46	Plastic	230	290
47	Fibre	200	240
48	"	220	300
49	Galvanized	190	240
50	"	220	290

Pedal Flip Waste Baskets

The lid will be flipped by stepping on the pedal. Made of stainless steel.

Unit Per Pc.

CODE	Diam. × Height mm	ltr
17 41 51	168 × 250	3
52	205 × 290	5
53	250 × 395	12
17 41 54	290 × 445	20
40	460 × 710	50

Pedal Flip Waste Basket with Extra Inner Bucket

Furnished an extra inner galvanized iron bucket with metal handle for easier throwing out the garbage.

17 41 55	Waste basket, pedal flip, stainless steel, with extra inner galvanized iron bucket, 12 ltr	Pc.

Plastic Garbage Cans/Pails
with Cover

For collecting any type of garbage from galley, pantry, etc. Made of strong plastic which is easy to keep clean. Three types, a large round type, rectangular base type and a pail like type are available. They are equipped with a lock tight cover to avoid odors from escaping.

Pail like

Unit Per Pc.

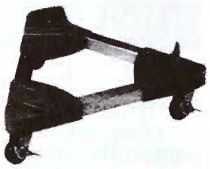
CODE	Type	Capacity ltr	Size mm
17 41 65	Rectangular Base	31.5	383 × 256 × H464
56	"	35	375 × 260 × H570
66	"	42	416 × 278 × H504
67	"	53	449 × 301 × H545
68	"	74	503 × 338 × H604
17 41 57	Pail like	22	ϕ355 × H340
58	"	25	ϕ370 × H370
17 41 59	Large Round	22	ϕ340 × H350
60	"	35	ϕ400 × H420
61	"	45	ϕ460 × H560
62	"	70	ϕ490 × H580
63	"	90	ϕ530 × H600
64	"	120	ϕ580 × H700

Garbage Containers
with Wheels

Made of durable polyethylene container with wheels for transporting waste easier.

17 41 39	Container, garbage, polyethylene, with wheels, capacity 240 ltr	Pc.

Dollies
for Garbage Can



Easy loading and handling for round garbage can due to three swivel casters. Made of steel, and rimmed frame prevents garbage can slipping off.

Unit Per Pc.

CODE	For Garbage Can		CODE	For Garbage Can	
	Diam. × Height mm	ltr		Diam. × Height mm	ltr
17 43 61	360 × 141	45	**17 43 64**	440 × 171	90
62	370 × 141	60	**65**	500 × 171	130
63	410 × 141	75			

Plastic Bags
for Garbage Disposal

Polythene bag for garbage disposal. Available in a transparent type and a black coloured type.

Unit Per Pkt.

CODE	Colour	Size mm	Shts per Pkt.
17 41 71	Transparent	250 × 350	50
72	"	320 × 380	50
73	"	520 × 600	10
74	"	650 × 850	10
75	"	800 × 900	10
17 41 69	Black	30" × 34"	50
76	"	500 × 400 × 1,300	50

Disposable Paper Bags

Bags suitable for storage and refuse disposal. Made of a strong bond ply which withstands tearing and water seepage.

17 41 77	Paper bag, resin coated, 25 ltr 370 × 650 × 125 mm	Pc.

Marine Refuse Sacks

Convenient, disposal sacks which are biodegradable and therefore in compliance with the international ban on the dumping of plastics.

* Fit conveniently into all standard sized waste bins.
* Are resistant to both water and wet waste for short periods.
* Are a natural product made of 100 % degradable material.

Unit Per Pkt.

CODE	Size mm	Shts/ Pkt	CODE	Size mm	Shts/ Pkt
Biodegradable Paper			**Biodegradable Plastic**		
17 41 79	525 × 500	50	**17 41 89**	525 × 500	50
80	700 ×1,100	50	**90**	700 ×1,100	50

Plastic Bags

Plastic Bag with Fastener

Ordinary transparent plastic bag with fastener which can be easily sealed by sliding over the bag opening between thumb and forefinger. Helps prevent the articles inside from becoming damp and dusty.

Unit Per Pkt.

CODE	Width × Depth mm	Per Pkt	CODE	Width × Depth mm	Per Pkt
17 41 81	85 × 120	200's	**17 41 85**	170 × 240	100's
82	100 × 140	"	**86**	200 × 280	"
83	120 × 170	100's	**87**	240 × 340	"
84	140 × 200	"	**88**	280 × 400	"

Plastic Bag for Food Preservation

Transparent plastic bag for preserving meats, fishes or vegetables individually. No fastener is furnished.

Unit Per Pkt.

CODE	W × L mm	Per Pkt	CODE	W × L mm	Per Pkt
17 41 91	100 × 190	100's	**17 41 96**	200 × 300	100's
92	120 × 230	"	**97**	230 × 340	"
93	130 × 250	"	**98**	260 × 380	"
94	150 × 250	"	**99**	280 × 410	"
95	180 × 270	"			

27. Foils & Roll Papers

Cooking Foil

Thin aluminium foil sheet for wrapping foods for cooking and refrigerator storage. Each roll has a serrated cutter attached to cut sheets of foil to the required length.

17 42 01	Aluminium cooking foil	300 mm × 25 mtr	Pc.
02	"	450 mm × 30 mtr	"
03	"	450 mm × 150 mtr	"

Cellophane Wrapping Foil

A thin cellophane foil for wrapping any type of food for refrigerator storage. Will keep the food fresh and prevent it from odor when storing. Each packet is equipped with a self cutter.

Unit Per Pc.

CODE	Width × Length mm × mtr	CODE	Width × Length mm × mtr
17 42 06	300 × 20	**17 42 08**	450 × 50
07	300 × 50	**05**	450 × 500
		09	450 × 600

Wax Paper

Wax paper for keeping food, especially in refrigerators, without damaging freshness, taste, cleanliness and the vitamin content of the food. Each packet is equipped with a self cutter.

17 42 11	Wax paper, 300 mm × 20 mtr	Pc.

Cooking Paper

Made from pulp and used for keeping raw meat or raw fish more fresh by wrapping. Also applicable for draining oil from fried foods laying under, or filtering soup.

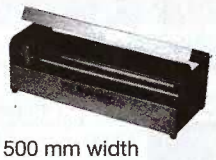
Unit Per Pc.

CODE	W × L	Unit
17 42 12	300 mm × 20 mtr	Rol
17 42 13	265 mm × 240 mm × 80 cuts/Rol	2 Rol/Pkt
14	380 mm × 240 mm × 75 cuts/Rol	"

Foil Dispensers

Dispenser for plastic wrap and aluminum foil. Stores easily and tangle-free food wrapping by sharp blade cutter furnished on the edge of the dispenser. Holds up to 300 mm width or 500 mm width foil.

300 mm width



500 mm width

Unit Per Pc.

CODE	For Foil Width mm	Size mm	Material
17 43 71	300	364×238×162	Plastic
72	500	555×210×175	Stainless steel

Grease Proof Papers

Paraffin waxed paper for wrapping greasy food-stuffs.

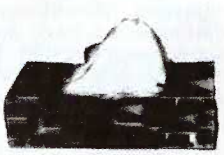
17 42 15	Grease proof paper 764 × 1,070 mm 100's/pkt	Pkt.

Teflon Baking Sheets

Made of very thin teflon sheet with thickness approx. 75μ. Suitable for use in baking to prevent sticking bread or cake over the bake pan.

Size mm	Sheet	10 sheets/Pkt.
280 × 240	**17 42 16**	**17 42 26**
385 × 300	**17**	**27**
495 × 350	**18**	**28**

Tissue Paper



Economy size tissue paper. 200 shts of folded tissue, ready to take out, in one box. Size : 120 x 252 x 82 mm.

17 42 20	Tissue paper economy size	Box

7TH 17

Paper Towels

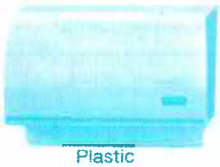
Fold Type Paper Towel

Single fold type disposable paper towel. Sheet size is 230 mm length x 220 mm width, packed in 100 shts.

17 42 23	Paper towel, single fold 220 x 230 mm, 100's/pkt	Pkt.

Dispenser for Fold Type Paper Towel

Strong plastic or stainless steel made container for folded paper towels. Towel size is 230 x 220 mm.



Plastic

Stainless Steel

Unit Per Pc.

Plastic			Stainless Steel		
CODE	Size mm	Capacity	CODE	Size mm	Capacity
17 42 24	250x145x138	300's	17 42 29	261x135x135	300's
			30	296x140x320	600's

Roll Type Paper Towel

Separated into easy tear sections with perforated lines.

CODE	Paper towel, rolled	Unit
17 42 31	W200 mm x L137 mtr, 12's/C/S	C/S
17 42 34	W280 mm x L11 mtr	Rol
17 42 32	W280 mm x L14 mtr	Rol
17 42 33	W228 mm x L17.6 mtr , 2 Rols/Pkt	Pkt.

Holder for Roll Type Paper Towel

Plastic holder for rolled paper towel.

17 42 36	Holder for paper towel rolled plastic 200 mm	Pc.
17 42 37	Holder for paper towel rolled plastic 280 mm	"

Ecologo Mark Product

The EcoLogo program is one of North America's most respected environmental leadership certification programs. To earn the EcoLogo mark, tissue products must demonstrate significantly reduced environmental impact among five key lifecycle based criteria: resource consumption, energy consumption, wastewater quality, aquatic toxicity and solid waste.

Fold Type Paper Towels

Trifold Paper Towel with signature "Absorbency Pockets" that absorb a lot of water fast, for superior hand drying. Designed to increase 27% in water absorption and reduce waste in your work place (about 40% of post-consumer waste). Available in Economic type and Standard type, differences are thickness and basis weight (GSM). Meet EPA standard and are FSC-Certified

Unit Per Box

CODE	Type	W x L	Sht/box
17 42 38	Economic	196 x 240 mm	250
39	Standard		

Roll Type Paper Towels

Roll Paper Towel with signature "Absorbency Pockets" which designed to increase 27% in water absorption and reduce waste in your work place. (about 40% of post-consumer waste).

With high capacity in one dispensing enables to reduce maintenance time, run-outs complaints. Available in Economic type and Standard type, differences are thickness and basis weight (GSM). Meet EPA standard and are FSC-Certified.

Unit Per Box

CODE	Type	W x L	Roll/box
17 42 40	Economic	200 mm x 180 mtr	6
48		200 mm x 300 mtr	
17 42 49	Standard	200 mm x 160 mtr	6
50		200 mm x 180 mtr	

Paper Towel Dispensers for Ecologo Paper Towel

Fold Type

Roll Type

Unit Per Pc.

CODE	Type	Capacity	Size (mm)
17 42 54	Fold Type	500 sheets	333 x 384 x 145
55	Roll Type	Up to 300 mtr/roll	321 x 259 x 410
59	Roll Type	Up to180 mtr/roll	321 x 180 x 340

Toilet Paper

A soft, economy size paper. 100 rolls in one case.

Unit Per Pc.

CODE	Number of Plies	Size		Contents	Unit
		Width mm	Length mtr		
17 42 41	1	114	45	100's	C/S
17 42 42	2	114	32.5	4's	Pkt
44	2	"	"	100's	C/S
43	2	"	"	120's	"

Toilet Paper Holders

17 42 45 Metal 17 42 46 Stainless Steel 17 42 47 Plastic

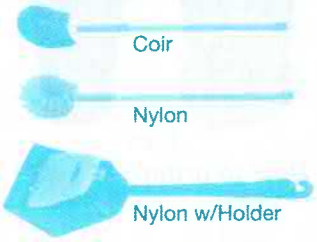
Unit Per Pc.

CODE	Specification
17 42 45	Metal paper holder, 132 x 90 mm
17 42 46	S. Steel paper holder, 130 x 75 mm
17 42 47	Plastic paper holder, 140 x 70 mm

28. Cabin Cleaning Equipment

Toilet Brushes

Sanitary bowl brushes shaped to clean easily under the toilet rim.



17 42 51	Toilet brush, coir	Pc.
52	" nylon	"
53	" nylon with holder	Set

Toilet Plungers
(Plumber's Friends · Force Cups)

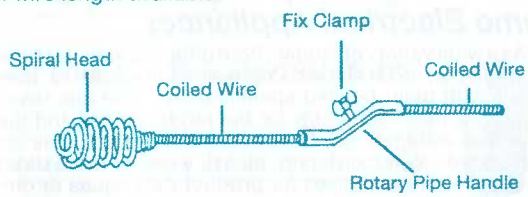
A rubber cup with plastic handle for general use. Available two types for western style water closet or Japanese style water closet.

Unit Per Pc.

CODE	For Water Closet	Cup Diam. mm
17 42 56	Japanese style	130
57	"	160
17 42 58	Western style	165

Snake Wire Pipe Cleaners

Ideal for use on clogged pipes, etc. A snake like flexible coiled non-corrosive 6 mm diam. steel wire with 17 mm diam. spiral head will remove any obstacles. Two sizes of wire length available.



17 42 61	Pipe cleaner, 6mmϕ × 5 Mtr	Pc.
62	" , 6mmϕ x 10 Mtr	"

Hand Snaps

Made of soft white yarn, and used for cleaning or wiping as duster.

17 42 65	Hand snap	Pc.

Yacht Mops

Made of soft white yarn and fastened to the handle end. Length overall is 1,580 mm.

17 42 71	Yacht mop complete	Pc.
72	Replaceable head for yacht mop	"

Spring Clamp Mops

Quick-way type spring clamp eliminates cutting or untangling. Merely slide off the old mop head and slide on the new one, takes just seconds.

17 42 75	Mop complete with spring clamp handle	Pc.
76	Spring clamp mop handle only	"
77	Spring clamp mop head only	"

Wringer Mop Buckets

A handy foot pedal device to wring out the mop without bending over. The size is 330 x 340 x 280 mm made of hard plastic with a steel wringer frame.

17 42 80	Wringer mop bucket	Pc.

Floor Wipers

Large mop to sweep dust or wipe up water from floors. Furnished with long handle.

Unit Per Pc.

CODE	17 42 86	17 42 87	17 42 88	17 42 89
Mop Width	240 mm	400 mm	540 mm	860 mm

Rubber Squeegees

Designed for squeezing water off windows, glasses, cabin floors, etc. Available in 3 different blade widths. All types furnished with a 1,200 mm plastic handle.

Unit Per Pc.

CODE	17 42 91	17 42 92	17 42 93
Blade Width	330 mm	400 mm	480 mm

Refill Blades for Squeegee

Unit Per Pc.

CODE	17 42 90	17 42 94	17 42 95
For Blade Width	330 mm	400 mm	480 mm

Sponge Mops
with Spring Handle

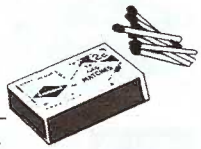
Designed for cleaning galleys and accommodations. To rinse the mop, simply wet the sponge and press the spring lever handle. Sponge width is 180 mm.

17 42 96	Sponge mop with spring handle	Pc.
97	Spare sponge for sponge mop	"

29. Smoking Goods

Safety Matches

Contains 12 small boxes in one packet and 100 packets per carton.



17 43 01	Match, safety, 12's/pkt	Pkt.

Economy Safety Match

King size economical match box for domestic use. One box contains about 900 sticks.

17 43 03	Match, safety economy	Box

Ash Trays

Available in various types from various materials. Most common types are shown below.

Glass Round

Plastic Plain

Plastic Ronson

China Plain

S.S. Plain

S.S w/Cover

S.S. Non Slip

S.S Divide & Drop

Unit Per Pc.

CODE	Description	Diam. mm
17 43 11	Glass round, small	160
12	Glass round, large	185
17 43 13	Plastic plain	145
20	"	180
17 43 14	Plastic Ronson individual	99
17 43 15	China plain	160
17 43 16	Stainless steel plain	160
17 43 17	Stainless steel with cover	160
21	"	200
17 43 18	Stainless steel non slip (Rubber pad)	154
22	"	190
17 43 19	Stainless steel divide & drop	120

Ash Stands

From among various types, the most common types of stainless steel models are shown.

Pedestal

Funnel

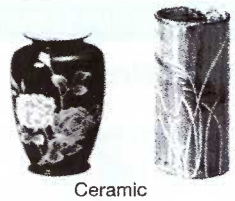
17 43 25	Pedestal type ash stand, stainless steel, D 260 x H 535 mm	Pc.
17 43 26	Funnel type ash stand, stainless steel, D 280 x H 500 mm	"

30. Flower Vases

Flower Vases

Available in many types of many sizes and materials. When ordering , please specify type, material and size.

Glass



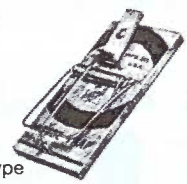
Ceramic

How to order : 17 - 43 - 31

Flower vase, material x type x size

31. Rat Traps, Fly Swatters

Rat Traps



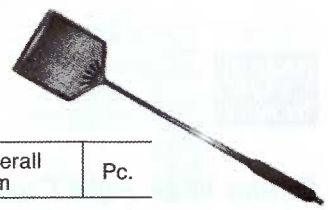
Sling Type

Cage type

17 43 51	Rat trap sling type	Pc.
52	Rat trap cage type	"

Fly Swatters

Handle and frame made of plastic with a metal net. Overall length is 550 mm.



17 43 56	Fly swatter overall length 500 mm	Pc.

32. Electrical Cooking Appliances

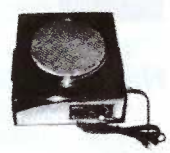
Home Electrical Appliances

As a wide variety of models from different manufacturers are available, it is almost impossible to code all these models with their detailed specifications. For this reason coding has been done only for the model names and their respective voltages. In some cases the capacity has also been coded. When ordering, please write for more details or ask our representatives for product catalogues or other information.

Electric Hot Plates

Element Covered

An electric warmer or portable buffet range. Element is covered by steel plate with natural mica as a protector.



Unit Per Pc.

CODE	Watt	Voltage	CODE	Watt	Voltage
17 45 01	600 W	110 V	**17 45 03**	1,200 W	220 V
02	1,200 W	"			

Electric Cordless Kettles

A cordless electric pot for boiling water by swivel type power base. The pot can be removed and carried for serving hot water from the base.

Unit Per Pc.

CODE	Capacity	Voltage	CODE	Capacity	Voltage
17 45 04	1.5 Ltr	110V	**17 45 08**	1.5 Ltr	220 V
05	1.7 Ltr	"	**09**	1.7 Ltr	"

Electric Kettles

Unit Per Pc.

CODE	Capacity	Voltage
17 45 11	2.5 Ltr	110 V
12	3.5 "	"
17 45 13	2.1 Ltr	220 V
14	3.5 "	"

Electric Thermo Pots

Unit Per Pc.

CODE	Capacity	Voltage
17 45 21	2.2 Ltr	110 V
22	2.4 "	"
25	3.0 "	"
27	4.0 "	"
28	5.0 "	"
17 45 23	2.2 Ltr	220 V
24	2.4 "	"
26	3.0 "	"
29	3.8 "	"

Electric Coffee Makers

Unit Per Set

CODE	Cups	Voltage	CODE	Cups	Voltage
17 45 31	4	110 V	**17 45 34**	4	220 V
16	5	"	**37**	5	"
17	6	"	**38**	6	"
32	8	"	**35**	8	"
18	10	"	**39**	10	"
17 45 33	12	110 V	**17 45 36**	12	220V
19	40	"	**40**	40	"

Spare Decanters

for Electric Coffee Maker

Unit Per Pc.

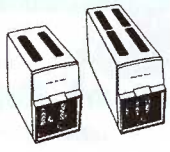
CODE	Cup Size	CODE	Cup Size
17 45 41	4	**17 45 42**	8
67	5	**69**	10
68	6	**43**	12

Electric Coffee Percolators

Unit Per Pc.

CODE	Cups	Voltage	CODE	Cups	Voltage
17 45 46	7	110 V	**17 45 47**	7	220V

Auto-Elect. Toasters



Automatic pop-up toaster. 2 slice or 4 slice toasters available in 110 or 220 V power capacity. When ordering, please specify the toaster type and voltage required.

Unit Per Pc.

CODE	Slice	Voltage	CODE	Slice	Voltage
17 45 51	2	110 V	**17 45 53**	2	220V
52	4	"	**54**	4	"

Electric Oven Toasters

Unit Per Pc.

CODE	Capacity	Voltage
17 45 55	850 W	110 V
56	1,000 W	"
17 45 57	850 W	220 V
58	1,000 W	"

Electric Blenders

Unit Per Set

CODE	Capacity	Voltage
17 45 60	0.7 Ltr	110 V
61	1.0 "	"
65	1.2 "	"
62	1.4 "	"
66	1.9 "	"
17 45 63	1.0 Ltr	220 V
64	1.4 "	"

Elect. Juicers & Blenders

Unit Per Set

CODE	Voltage	CODE	Voltage
17 45 71	110 V	**17 45 72**	220 V

Portable Universal Cooking Mixers

A quick and efficient portable cooking mixer suitable for preparing cake mix or making butter, soup, and sauce. This mixer also shreds and slices food with the use of interchangeable blade attachments, increasing the range of jobs one can do.

Specifications

Bowl Capacity	6.7 Ltrs
Mixing	Unique Revolving Action
R.P.M.	140-640 r.p.m.
Size	343.5 (H) × 274 (W) × 410 (D) mm
Weight	6.9 kgs
Standard Accessories	S. Steel Mixing Bowl 6.7 Ltrs Whipper Whipper Wire (3 pcs) Aluminium Beater

When ordering, please specify the following points.

1) Bowl capacity, 6.7 ltr
2) Power source voltage, volt
3) Functions, if required specially.
4) Manufacturer's name
5) Model name

Unit Per Set

CODE	Voltage	CODE	Voltage
17 45 76	AC 110 V	**17 45 77**	AC 220 V

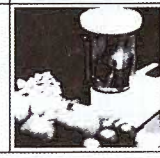
Optional Attachment

for Universal Cooking Mixer

How to order : CODE

NAME of ATTACHMENT for universal mixer with MANUFACTURER'S NAME and MODEL

Unit Per Pc.

CODE	Attachment	Illustration	Description
17 45 78	Liquidiser		1.2 ltr capacity of reinforced plastic goblet. Suitable for liquidizing, emulsifying, making purees, pulverizing, etc.

Unit Per Pc.

CODE	Attachment	Illustration	Description
17 45 79	Mincer		For mincing. Supplied with cutters for fine or coarse mincing.
17 45 80	Slicer		For slicing vegetables. Furnished with 4 kinds of cutter plates.
17 45 81	Sausage Filler		To be used with mincer which is separately supplied. For making sausages
17 45 82	Cream Maker		For making delicious fresh cream or home-made ice cream.
17 45 84	Can Opener		For opening cans of any shape without leaving a jagged edge.

Electric Table Griddles

Unit Per Set

CODE	Voltage
17 45 91	110 V
17 45 92	220 V

Electric Grill Pans

For grilling, boiling or steaming foods. Provided with transparent glass lid.

Unit Per Set

CODE	Voltage
17 45 93	110 V
17 45 94	220 V

Electric Thermo Jars

Soup Jar

For keeping soups or potage hot by adjustable digital thermostat.

Unit Per Pc.

CODE	Voltage	Capacity
17 45 98	110 V	4.5 ltr
96	"	8.0 "
17 45 97	220 V	8.0 ltr

Rice Jar

For keeping cooked rice hot. No boiling mechanism furnished.

Unit Per Pc.

CODE	Voltage	Capacity
17 45 85	110 V	4 ltr
86	"	6 "
87	"	8 "
17 46 88	220 V	4 ltr
89	"	6 "
90	"	8 "

Electric Rice Cookers/ Steamers

Unit Per Set

CODE	Capacity	Cups	CODE	Capacity	Cups
110 V AC			220 V AC		
17 46 01	0.6 ltr	3.5	17 46 11	0.6 ltr	3.5
02	1.0 "	5.5	12	1.0 "	5.5
03	1.5 "	8.5	13	1.5 "	8.5
04	1.8 "	10.0	14	1.8 "	10.0
05	2.8 "	15.0	15	2.8 "	15.0
17 46 07	3.6 ltr	20.0	17 46 17	3.6 ltr	20.0
06	4.0 "	22.0	16	4.0 "	22.0

Elec. Rice Cookers/ Warmers

Unit Per Set

CODE	Capacity Volume	Voltage	CODE	Capacity Volume	Voltage
17 46 21	1.0 ltr	110 V	17 46 24	1.0 ltr	220 V
22	1.8 "	"	25	1.8 "	"
23	2.2 "	"	26	2.2 "	"
29	2.7 "	"	30	2.7 "	"
27	3.6 "	"	28	3.6 "	"

33. Home Electrical Appliances

Electric Refrigerators

Unit Per Set

CODE	Capacity Volume	Voltage	CODE	Capacity Volume	Voltage
17 46 31	48 ltr	110 V	17 46 41	48 ltr	220 V
32	70 "	"	42	70 "	"
33	100 "	"	43	100 "	"
34	140 "	"	44	140 "	"
35	170 "	"	45	170 "	"
17 46 36	200 ltr	110 V	17 46 46	200 ltr	220 V
37	230 "	"	47	230 "	"
38	260 "	"	48	260 "	"
39	300 "	"	49	300 "	"

Chest Freezers

A cabinet type freezer for bulk storage of frozen items at proper storage temperatures with upper lockable lid.

Unit Per Set

CODE	Capacity Volume	Dimension mm (W x D x H)
	110 V AC	
17 46 50	100 ltr	568 x 560 x 845
51	150 "	760 x 560 x 845
52	200 "	980 x 560 x 845
53	300 "	1,055 x 560 x 845
	220 V AC	
17 46 54	100 ltr	568 x 560 x 845
55	150 "	760 x 560 x 845
58	200 "	980 x 560 x 845
59	300 "	1,055 x 560 x 845

Ice Cube Makers

Unit Per Set

CODE	Voltage	CODE	Voltage
17 46 56	110 V	**17 46 57**	220 V

Water Fountains

Unit Per Set

CODE	Voltage	CODE	Voltage
17 46 61	110 V	**17 46 62**	220 V

Dish Washing Machines

Unit PerSet.

CODE	Voltage	CODE	Voltage
17 46 66	110 V	**17 46 67**	220 V

Electric Vacuum Cleaners

Unit Per Set

CODE	Voltage	CODE	Voltage
17 46 71	110 V	**17 46 72**	220 V

Handy Vacuum Cleaners Cyclone Type

(Centrifugal Separation)

The turbofan mounted on the head rotate and inhale floor dust powerfully. Dust extraction capacity: 0.3 ltr,. Weight : approx. 1.3 kgs.

Unit Per Pc.

CODE	Voltage	CODE	Voltage
17 46 83	110 V	**17 46 84**	220 V

Carpet Shampoo Cleaners

Unit Per Set

CODE	Voltage	CODE	Voltage
17 46 76	110 V	**17 46 77**	220 V

Electric Floor Polishers

Unit Per Set

CODE	Voltage	CODE	Voltage
17 46 81	110 V	**17 46 82**	220 V

Electric Washing Machines

Twin-Tubs

Unit Per Set

CODE	Voltage	CODE	Voltage
17 47 01	110 V	**17 47 02**	220 V

Full Automatic

Unit Per Set

CODE	Voltage	CODE	Voltage
17 47 06	110 V	**17 47 07**	220 V

Front Loading Type

Unit Per Set

CODE	Voltage	CODE	Voltage
17 47 08	110 V	**17 47 09**	220 V

Electric Laundry Dryers

Unit Per Set

CODE	Voltage	CODE	Voltage
17 47 11	110 V	**17 47 12**	220 V

Electric Pressing Irons

Unit Per Pc.

CODE	Type	Voltage	CODE	Type	Voltage
17 47 21	Dry	110	**17 47 23**	Dry	220
22	Steam/Dry	110	**24**	Steam/Dry	220

Cordless Type

A cordless free style steam/dry iron with detachable water tank, which enables smooth natural movement in any direction.

Unit Per Pc.

CODE	Voltage	CODE	Voltage
17 47 25	110 V	**17 47 26**	220 V

Ironing Tables

Ironing table with folding tubular steel support legs. The size of the table is about 1,310 mm x 400 mm with an adjustable height of 700 – 860 mm.

17 47 28	Ironing table, 1,310 x 410 mm height adjustable	Pc.

Electric Portable Sewing Machines

Unit Per Set

CODE	Voltage	CODE	Voltage
17 47 31	110 V	**17 47 32**	220 V

Needles and Threads for Sewing Machine

Unit Per Pkt. — Unit Per Rol

Sewing Needle			Sewing Thread	
CODE	Needle Size	Pkt	CODE	Thread Length
17 47 41	9	10's	**17 47 51**	100 mtr
42	11	"	**52**	200 "
43	14	"	**53**	500 "
44	16	"	**54**	1,000 "
45	18	"		

Cabin Fans

Table

Wall

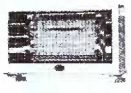
Unit Per Set

CODE	Type	Voltage	CODE	Type	Voltage
17 47 61	Table	110	**17 47 63**	Table	220
62	Wall	"	**64**	Wall	"

Electric Heaters

Portable Heater

Suitable for spot heating, such as small cabin. Furnished with dual heat setting selector and humidifier.



Unit Per Set

CODE	Voltage	CODE	Voltage
17 47 71	110 V	**17 47 72**	220 V

Fan Heater

Suitable for spot heating, such as small cabin. More safety than the conventional bare heat element type heater and the furnace's fan will produce heated and efficient air.

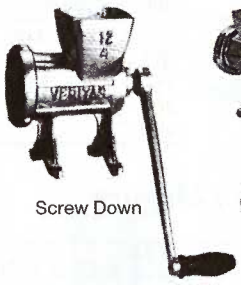
Unit Per Set

CODE	Voltage	CODE	Voltage
17 47 75	110 V	**17 47 76**	220 V

34. Cooking Machines

Manual Meat Grinders (Meat Mincers)

This meat grinder fits easily to tables or counters by clamp or screws. Operated manually by rotating the grinder handle.



Screw Down

Clamp

Unit Per Pc.

CODE	Model No.	Outer Size mm	Plate Diam. mm	Knife Across Flats mm	Remark
17 50 01	5-A	210× 81×255	53	46	Clamp type
02	10-A	300×107×300	69	61	"
03	12-A	300×119×168	69	61	Screw down
04	22	265×142×183	80	72	"
05	32	325×170×215	100	91	"

Meat Grinder Attachments

Spare knives and plates are available in various sizes for the aforementioned meat grinder.

Knife

Plate

Unit Per Pc.

Knife

CODE	Model No.	Across Flat mm	CODE	Model No.	Across Flat mm
17 50 06	5-A	46	**17 50 09**	22	72
07	10-A	61	**10**	32	91
08	12-A	61			

Plate

CODE	Model No.	Diam. mm	CODE	Model No.	Diam. mm
17 50 11	5-A	53	**17 50 14**	22	80
12	10-A	69	**15**	32	100
13	12-A	69			

Electric Meat Grinders

An electric motor driven meat mincing machine. The grinding fixture on this machine is covered by a tin plate for safety. A stainless steel feed pan, a wooden stomper, and a cutting knife and plate are provided with the unit.

Unit Per Pc.

CODE	Voltage	Mince Capacity kg per10 min.	Watt	Size mm W	D	H
17 50 23	110	10	95	310	165	385
17 50 24	110	12	300	480	180	360
25	220	"	"	"	"	"
17 50 26	220	25	750	580	240	430

Auto-Electric Ham Slicers

Electric ham/meat slicer. The slicing thickness can be adjusted easily by turning a gauge screw. Makes about 3,200 slices per hour.

Dimensions :

Depth: 520 mm, Height: 520 mm,

Width: 460 mm, Weight: 61 kgs

Unit Per Set

CODE	Voltage	CODE	Voltage
17 50 31	110 V	**17 50 32**	220 V

Electric Coffee Mills

This mill will grind approximately 800 grm of coffee beans per minute. The rotating burs can be adjusted by dial to vary the granule size. Supplied complete with a 1 kg plastic hopper.

Unit Per Set

CODE	**17 50 42**	**17 50 43**
Volt	AC 110 V	AC 220 V
Grinding Capacity	800 grm/min.	
Watt	640	
Hz	50 / 60	
R.P.M.	1400 / 1680	
Amp	9.0 / 8.2	
Size mm	W330 x D200 x H570	
Weight kg	15	

Electric Water Boilers

The body is made of stainless steel to keep clean water. One-touch temperature control system and automatic water supply system serves desirable hot water at any time. Available in two shapes, square and round type, and the square type is suitable for wall mounting. A water level gauge and a thermometer are furnished at the prominent position on the tank. Please ask to your local dealers for more details.

Square Type

Round Type

Unit Per Set

CODE	Water Capacity	Size mm W x D x H	Wattage	Voltage	Weight kgs
Square Type					
17 50 71	10 Ltr	310x190x430	1 kW	AC 220/110V	10
72	20 Ltr	301x 90x515	2 kW	1/3 Ph	11
Round Type					
17 50 73	10 Ltr	240x240x460	1 kW	AC 220/110V	5
74	20 Ltr	300x300x520	2 kW	1/3 Ph	6

Portable Gas Cooking Stoves

An economical, highly efficient portable gas cooking stove. A portable gas stove is fueled by a self-contained canister of butane fuel. The butane fuel is separate order.

Butane Fuel

Unit Per Pc.

CODE	Head Output	Size mm WxDxH	Weight
17 50 78	3 kW	336 x 270 x 100	1.6 kgs
17 50 79	Butane fuel	68 diam x 198 h	250 grm

Microwave Ovens

Time saving automatic cooking oven by microwave feeding system. Available in various capacity and functions by each model. Please ask more information through local distributor.

Unit Per Pc.

CODE	Capacity Volume	Voltage	CODE	Capacity Volume	Voltage
17 50 90	17 Ltr	110 V	**17 50 95**	17 Ltr	220 V
91	20 "	"	**96**	20 "	"
92	23 "	"	**97**	23 "	"
93	28 "	"	**98**	28 "	"
94	34 "	"	**99**	34 "	"

Universal Kitchen Machines

A heavy duty electric mixer with a wide variety of applications. Different mixer attachments allow you to prepare different kinds of foods through fine cutting, stirring, mixing, or mincing. The mixer can operate in four speeds and is designed so that all the ingredients in the bowl are mixed evenly.

Furnished with a meat chopper, mixing bowl, wire whip, flat beater, and anchor hook as standard accessories. When ordering, please specify the power source capacity required.

Standard Accessories

Wire Whip

Anchor Hook

Flat Beater

Mixing Bowl

Meat Chopper

17 51 01	Universal kitchen machine 1) Electric source 2) Capacity	Set

Electric Cooking Range

Cast iron hob with heavy duty hotplate. Each hotplate is individually governed by a rotary switch. Oven controlled by direct acting thermostat with reinforced drop down door. All stainless steel finish, and oven has removable shelf hanger and easy clean chamber.

Various manufacturers and brands are available from around the world, and products from one of famous manufacturers are listed for your reference. Please ask for further information with brochures of various models from local manufacturers or suppliers when ordering.

How to order: 17 - 51 - 21

Cooking range, electric

1) *Voltage*
2) *Number of hotplates and electric capacity*
3) *Number of ovens and electric capacity*
4) *Size (If space is limited)*

Unit Per Set

CODE		17 51 22
Numbers of Hot Plate		3
Usable Oven Capacity		W: 600 x D: 530 x H: 325 mm
Oven Shelf Size mm		650 x 530
Oven Rating (kW)		5.5
Hob Burner Rating (kW)		10.5
Standard Electric Supply		400-415V3 ~ N/50 Hz
Dimensions mm	W	900
	D	850
	H	900
Weight (kgs)		227

Electric Cooking Oven

Double hinged door with long-lasting heavy duty hinges. Oven controlled by direct acting thermostat. Stainless steel exterior finish allows easier cleaning, and oven has removable shelf hangers and easy clean chamber.

Various manufacturers and brands are available from around the world, and products from one of famous manufacturers are listed for your reference. Please ask for further information with brochures of various models from local manufacturers or suppliers when ordering.

How to order: 17 - 51 - 40

Cooking oven, electric

1) *Voltage*
2) *Number of tier*
3) *Oven capacity Size*
4) *Size (If space is limited)*

Unit Per Set

CODE	17 51 42	17 51 43
Numbers of Tier	Single	Double
Oven Rating (kW)	5.5	11 (5.5x2)
Usable Oven Capacity W x D x H mm	650x530x325	650x530x325
Oven Shelf Size W x D mm	650x530	650x530
Standard Electric Supply	400-415V3 ~ N/50 Hz	
Electric Connection Requirement	1 Phase	1 Phase (x2)

(to be continued)

Unit Per Set

CODE		17 51 42	17 51 43
Dimensions mm	W	900	900
	D	850	850
	H	900	1,740
Weight (kgs)		150	150

Electric Boiling Table

Cast iron hob with heavy-duty hotplates. Each hotplate is controlled by individual rotary control. All stainless steel exterior allows easier cleaning, and oven has removable shelf hangers and easy clean chamber.

Various manufacturers and brands are available from around the world, and products from one of famous manufacturers are listed for your reference. Please ask for further information with brochures of various models from local manufacturers or suppliers when ordering.

How to order: 17 - 51 - 50

Boiling table, electric

1) *Voltage*
2) *Number of boiling table*
3) *Size (If space is limited)*

Unit Per Set

CODE		17 51 51
Numbers of Boiling Table		3
Electric Rating (kW)		10.5
Standard Electric Supply		400-415V3 ~ N/50 Hz
Dimensions mm	W	900
	D	850
	H	900
Weight (kgs)		150

Electric Fryer

A wide range of single, double and twin pan options are available. High power elements with rapid recovery time give high volume output. Oil lasts longer as sediment zone with lift-out strainer prevents build-up of carbon and debris. Electronically controlled operating thermostat with overriding safety thermostat. Power on and operational temperature indicator, basket straining support bar.

Various manufacturers and brands are available from around the world, and products from one of famous manufacturers are listed for your reference. Please ask for further information with brochures of various models from local manufacturers or suppliers when ordering.

How to order: 17 - 51 - 61

Fryer, electric

1) *Voltage*
2) *Oil capacity (ltr)*
3) *Electric capacity (kW)*
4) *Size (If space is limited)*

Unit Per Set

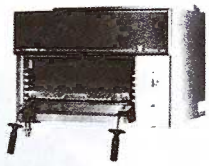
CODE	17 51 62	17 51 63	17 51 64
Number of Pan Fryer	1	1	2
Oven Capacity (ltr)	15	24	30 (15x2)
Hourly Chip Output (kgs)	27	54	54 (27x2)
Electric Rating (kW)	17.7	35.75	35.4

(to be continued)

Unit Per Set

CODE		17 51 62	17 51 63	17 51 64
Standard Electric Supply		400-415V3 ~ N/50 Hz		
Dimensions mm	W	300	600	600
	D	850	850	850
	H	900	900	900
Weight (kgs)		64	92	116

Electric Steakhouse Grill



Designed to be wall mounted or positioned upon legs on a suitable working surface. Stainless steel exterior with easy clean interior linings, oil collector moves with brander.

Various manufacturers and brands are available from around the world, and products from one of famous manufacturers are listed for your reference. Please ask for further information with brochures of various models from local manufacturers or suppliers when ordering.

How to order: 17 - 51 - 70

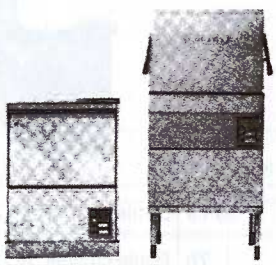
Steakhouse grill, electric
1) Voltage
2) Electric capacity (kW)
3) Size (If space is limited)

Unit Per Set

CODE		17 51 71	17 51 72	17 51 73	17 51 74
Electric Rating (kW)		3	4	5.5	7.5
Standard Electric Supply		230V ~ 50 Hz			400-415V3 ~ N/50 Hz
Dimensions mm	W	580	785	700	900
	D	330	330	540	540
	H	325	325	500	500
Weight (kgs)		29	31	49	77

Dish Washers for Marine Use

Suitable for washing dishware, glassware, and cutlery. Available in various types such as the corner type, straight type, and front open type. However, the most popular type is the undercounter, or free standing front door type (shown in the illustration). When ordering, please specify the points listed below:



Undercounter Front Door

Free Standing Front Door

How to order: 17 - 51 - 81

1) Name of machine
2) Voltage
3) Type
4) Used with hot water or cold water
5) Washing capacity (Rack/hour)
6) Size (If space is limited)
7) Further details if any

For example

17 51 81	Electric dish washer. AC 220V, 3Φ phase undercounter for use with hot water, max height: 1,000 mm	Set

Standard rack size is 502 x 502 mm, but it depends on the model. For a standard space rack, please refer to code 17-29-85 and so on.

35. Large Volume Laundry Machines

7TH 17

Washer Extractors

Front Load

Various manufacturers and brands are available from around the world, and products from one of famous manufacturers are listed for your reference. Please ask for further information with brochures of various models from local manufacturers or suppliers when ordering.

How to order: CODE

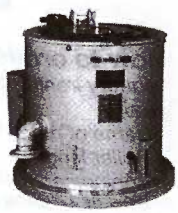
Washer extractor, front load, 110V or 220V with further details:
1) Name of brand
2) Washing capacity (kg)
3) Size (If space is limited)

Unit Per Set

CODE	Voltage	CODE	Voltage
17 55 20	110 V	17 55 22	220 V

Washing Capacity (kgs)		7.5	8.5	10.5	13	18	25	33
Drum Capacity (ltr)		75	85	105	130	180	250	330
Revolution (r.p.m.)		528	528	494	494	471	446	427
Motor (kW at 60 Hz)		0.55	0.9	0.9	1.3	1.3	2.0	2.2
Electric Consumption (kW)		0.1	0.136	0.14	0.17	0.177	0.38	0.52
Outer Dimensions mm	W	660	660	720	720	750	830	910
	D	690	730	705	790	880	955	1,040
	H	1,115	1,115	1,200	1,200	1,325	1,410	1,445
Weight (kgs)		130	136	160	175	228	287	330

Laundry Extractors for Marine Use



This marine use extractor is a high performance machine offering fast, guaranteed stability in water extraction. The stainless steel construction eliminates the problem of stubborn corrosion at sea.

When ordering, please specify the points listed below:

How to order: CODE

Laundry extractor, 110V or 220V with further details:
1) Name of machine, 2)Dry cloth capacity, 3)Size (If space is limited)

Example of Order

Laundry extractor, AC 220V, 3 phase, 60 Hz, 0.75 kw, Dry cloth capacity: 15 kgs, Maximum height: 1,200 mm

Unit Per Set

CODE	Voltage	CODE	Voltage
17 55 21	110 V	17 55 23	220 V

Tumble Dryers

Various manufacturers and brands are available from around the world, and products from one of famous manufacturers are listed for your reference. Please ask for further information with brochures of various models from local manufacturers or suppliers when ordering.

How to order: CODE

Tumble dryer, 110V or 220V with further details:
1) Name of brand
2) Drying capacity (kgs or lbs)
3) Size (If space is limited)

Unit Per Set

CODE	Voltage	CODE	Voltage
17 55 40	110 V	**17 55 42**	220 V

Drying Capacity (kgs)		5.5	11	16	13.5	23
Drum Capacity (ltr)		130	250	349	286	528
Motor (kW at 60 Hz)		0.2	0.5	0.5	0.37	0.37
Electric Consumption at 60 Hz		5.5	0.75	0.9	0.32	0.8
Outer Dimensions mm	W	595	790	790	710	960
	D	735	900	1,120	1,120	1,180
	H	850	1,740	1,740	1,880	1,995
Weight (kgs)		51	185	204	220	332

Laundry Ironing Machines

for Marine Use

Designed for ocean-going vessels with large laundry capacity. The operation of the machine is very simple, and large installation space is not necessary.

How to order: CODE

Laundry ironing machine, 110V or 220V with further details:
1) Name of machine
2) Roller length
3) Ironing capacity
4) Size (If space is limited)

Example of Order

Laundry ironing machine,
AC 220V
3 phase
60 Hz
0.2 Kw
Roller length: 1,450 mm
Ironing capacity: 20-30 sht/hour
Width: Up to 1,950 mm

Unit Per Set

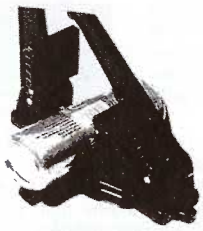
CODE	Voltage	CODE	Voltage
17 55 61	110 V	**17 55 62**	220 V

36. Garbage Disposers

Can Crushers (Can Compactors)

Units designed to crush cans before recycling or disposal. Electric or manually operated models are available.

Machines of various capacities are available. When ordering, please specify the model name, the capacity (number of cans crushed per hour), and the dimensions of the machine if space is limited.



Manual

Electrical

Unit Per Set

Manual Operation		Electrical Operation	
CODE	Material	CODE	Voltage
17 55 71	Steel	**17 55 73**	AC 110 V
		74	AC 220 V

Bottle Crushers
(Glass Compactors)

Unit designed to crush bottles for storage before recycling or disposal. Machines of various capacities are available.

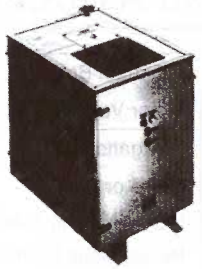
When ordering, please specify the capacity (number of bottles crushed per hour), the model name, and the dimensions of the machine if space is limited.

17 55 75	Bottle crusher, AC 110 V with further details	Set
76	Bottle crusher, AC 220 V with further details	"

Refuse Disposers

High powered disposer which pulverizes all types of marine refuse into small pieces for disposal. Use of this kind of equipment is necessary for compliance with the MARPOL 1973/78 ANNEX V regulation which states that the disposal of refuse will only be permitted in areas 3 nautical miles or more from shore and when the refuse has been broken down into particles capable of passing through an opening 25 mm or less in size.

Machines of various capacities are available. When ordering, please specify the model name, the capacity of refuse disposed required, and the dimensions of the unit if space is limited.



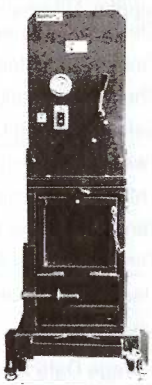
17 55 81	Refuse disposer, AC 110 V with further details	Set
82	Refuse disposer, AC 220 V with further details	"

Garbage Compactors

An efficient, mobile compactor essential for marine use. It compacts refuse into small, easy to accommodate packages, drastically reducing the need to dump refuse at sea. A hydraulic pump unit creates high compaction forces at low amperage.

The machine cubes general wastes, bales paper, cardboard, bags, and light weight mixed wastes, and boxes organic waste. The inner and outer cabinet linings are made of stainless steel to resist corrosion.

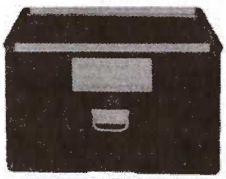
Machines of various capacities are available. When ordering, please specify the model name, the capacity (volume of refuse), and the dimensions of the machine if space is limited.



17 55 84	Garbage compactor, AC 110 V with further details	Set
85	Garbage compactor, AC 220 V with further details	"

Accessories for Garbage Compactor

Bag



Cube

Box

Bale

CODE	Name	Capacity of Garbage	Unit
17 55 86	Bag	100 - 150 lbs	Pc.
87	Cube	40 - 75 "	"
88	Box	100 - 150 "	"
89	Bale	100 lbs	"

Full Name of Abbreviations

A	AED	Automated External Defibrillator
	AIS	Automatic Identification System
	ARPA	Automatic Radar Plotting Aid
	ASCII	American Standard Code for Inforamation Interchange
B	BC	Bulk Carrier
	B/L	Bill of Lading
C	CFS	Container Freight Station
	CG(R)T	Compensated Gross (Registered) Tonnage
	CIF	Cost, Insurance and Freight
	CRT	Cathode Ray Tube
D	DSC	Digital Selective Calling
	D/W	Deadweight Tonnage
E	ECDIS	Electronic Chart Display and Information System
	EDI	Electronic Data Interchange
	EDIFACT	Electronic Data Interchange for Administration Commerce and Transport
	EHS	Extremely Hazardous Substances
	ENC	Electronic Navigation Charts
	EPDM	Ethylene Propylene Diene Rubber
	EPIRB	Emergency Position-Indication Radio Beacon
F	FEU	Forty Foot Equivalent Unit
	FOB	Free on Board
	FPSO	Floating Production, Storage and Offloading unit
	FRP	Fiber Reinforced Plastic
	FSO	Floating Storage and Offloading unit
G	GPM	Gallon Per Minute
	GPS	Global Positioning System
	G/T	Gross Tonnage
H	Hazmat	Hazardous Material
	HS	Hazardous Substances
I	IGS	Inert Gas System
	INMARSAT	International Maritime Satellite Organization
L	LC	Liquid Crystal
	L/C	Letter of Credit
	LCD	Liquid Crystal Display
	LEL	Low Explosive Limit
	LNG	Liquefied Natural Gas
	LPG	Liquefied Petroleum Gas
	LRIT	Long Range Identification and Tracking System
M	MBF	Minimum Breaking Force
	M/V	Motor Vessel
N	NAVTEX	Navigation Telex
	NBR	Nitrile or Buna N Rubber
	NiMH	Nickel-Metal Hydride (Cells)
	N/T	Net Tonnage
O	OBO	Ore/Bulk/Oil Carrier
	ODA	Official Development Assistance
	OL	Over Limit Alarm
P	PCC	Pure Car Carrier
	PPM	Parts Per Million
	PSA	Port Security Assessment
R	RFI	Radio Frequency Interface
	RO/RO	Roll on/Roll off
S	SART	Search and Rescue Rader Transponder
	SBM	Single Buoy Mooring
	SBT	Segrated Ballast Tank
	SCBA	Self-Contained Breathing Apparatus
	Sea-NACCS	Nippon Automated Cargo Clearance System
	SPM	Single-Point Mooring
	STEL	Short Term Explosure Limit
	SWL	Safety Working Load
T	TEU	Twenty Foot Equivalent Unit
	TFT	Thin Film Transistor
	TSE	Terminal Server Edition
	TWA	Time-Weighted Average
U	UAT	User Acceptance Testing
	UV	Ultraviolet
V	VDR	Voyage Data Recorder
	VHF	Very High Frequency
	VLBC	Very Large Bulk Carrier
	VLCC	Very Large Crude (Oil) Carrier
	VSO	Vessel Security Officer
W	WMD	Weapons of Mass Destruction
	W.O.G.	Water-Oil-Gas
	WS	New Worldwide Tanker Nominal Freight Scale
	WWF	World Wide Fund for Nature

19
CLOTHING

Gloves

P. 19-1

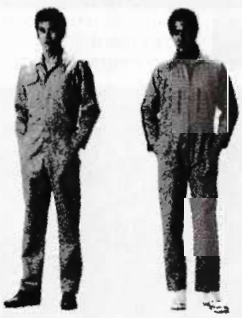
Boots &
Shoes

P. 19-2 ~ 5

Rain Suits

P. 19-5

Working
Cloths



P. 19-6 ~ 9

Cotton Working Gloves

Woven from cotton thread and machine knitted, fitting smooth to the hands. One Size fits all.

Ordinary

Rubber Coated Palm

Non Slip Dots

19 01 01 04	Gloves, cotton working ordinary "	Doz Pr.
19 01 02 03	Gloves, cotton working rubber coated palm Gloves, cotton working non slip dots	Pr. "
19 01 05 14	Gloves, cotton, working, heavier, 600 grm " , 750 grm	Doz "

Vinyl Leather Winter Gloves

Vinyl leather with warm acrylic pile lining on cotton back. Elastic wrist band. M and L Sizes only.

19 01 06 07	Gloves, winter, vinyl leather, Size M " Size L	Pr. "

Woolen Winter Gloves

Durable knit blend of acrylic and woolen yarn. Suitable for work on deck in cold conditions.

19 01 08	Gloves, woolen, winter	Pr.

Leather Palm Working Gloves

For heavy duty work on deck and in the engine room. Fits soft and loose to the hands.

19 01 09 11	Gloves, working, leather palm "	Doz Pr.

Calf Skin Working Gloves

Made from soft calf skin leather and furnished in suitable designs for all industrial uses.

19 01 12	Gloves, working, calf hide, soft	Pr.

Leather Gauntlet Gloves

With safety cuff for general heavy work.

19 01 13	Gloves, leather, gauntlet	Pr.

Aramid Fibre Gloves

Knitted from Aramid Fibre with high breaking strength, impact resistance, cut resistance, heat resistance and chemical resistance.

19 01 15	Gloves, aramid fibre	Pr.

Natural Rubber Gloves

For general industrial use.

19 01 21 22	Gloves, rubber, natural, short " long	Pr. "

Plastic Gloves Oil/Acid Resistant

Made from oil and chemical resistant plastic with flannel cloth inside to absorb sweat. Ideal for tank work, etc.

19 01 31	Gloves, plastic, oil/acid resistant, short	Pr.
32	Gloves, plastic, oil/acid resistant, long	"

Disposable Gloves

Made of polythene and suitable for temporary light duty job.

19 01 35	Disposal gloves, plastic, 100 prs/pkt	Pkt

Latex Free Gloves

Latex can cause allergic reactions from the material's proteins. Latex free gloves, such as nitrile, vinyl and poly, can help prevent from latex sensitivities or allergies.

19 01 36	Gloves, latex free	Pr.

Gloves for Razor Wire Installation

A heavy duty armoured leather gloves for installation of razor wire. Free Size.

19 01 41	Gloves, armoured, for razor wire installation	Pr.

Shoe Sizes Equivalent Table by Number

U.K.	U.S.A.	Europe	Japan (cm)
5	5.5	37	23.5
5.5	6	38	24
6	6.5	39	24.5
6.5	7	40	25
7	7.5	41	25.5
7.5	8	42	26
8	8.5	43	26.5
8.5	9	44	27
9	9.5	45	27.5
9.5	10	46	28
10	10.5	47	28.5
10.5	11	48	29
11	11.5	49	29.5
11.5	12	50	30
12	12.5	51	30.5
12.5	13	52	31
13	13.5	53	31.5
13.5	14	54	32

Rubber Boots

Waterproof rubber construction with cloth lining. Nominal Size is the length from heel to toe.

Short Boots

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
6.5	19 11 11	7	19 11 41	40	19 11 71	25	19 02 01
7	12	7.5	42	41	72	25.5	09
7.5	13	8	43	42	73	26	02
8	14	8.5	44	43	74	26.5	10
8.5	15	9	45	44	75	27	03
9	19 11 16	9.5	19 11 46	45	19 11 76	27.5	19 11 01
9.5	17	10	47	46	77	28	19 02 04
10	18	10.5	48	47	78	28.5	19 11 02
10.5	19	11	49	48	79	29	19 02 05
11	20	11.5	50	49	80	29.5	19 11 03
11.5	19 11 21	12	19 11 51	50	19 11 81	30	19 02 06
12.5	22	13	52	52	82	31	07
13.5	23	14	53	54	83	32	08

Long Boots

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
6.5	19 11 25	7	19 11 55	40	19 11 85	25	19 02 11
7	26	7.5	56	41	86	25.5	19
7.5	27	8	57	42	87	26	12
8	28	8.5	58	43	88	26.5	20
8.5	29	9	59	44	89	27	13
9	19 11 30	9.5	19 11 60	45	19 11 90	27.5	19 11 04
9.5	31	10	61	46	91	28	19 02 14
10	32	10.5	62	47	92	28.5	19 11 05
10.5	33	11	63	48	93	29	19 02 15
11	34	11.5	64	49	94	29.5	19 11 06
11.5	19 11 35	12	19 11 65	50	19 11 95	30	19 02 16
12.5	36	13	66	52	96	31	17
13.5	37	14	67	54	97	32	18

Steel-Toe Rubber Boots

Complete waterproof rubber outside lining. Steel-toe provides protection on the job. Completely lined with cotton knit.

Short Boots

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 12 01	6	19 12 15	38	19 12 31	24	19 02 21
6	02	6.5	16	39	32	24.5	28
6.5	03	7	17	40	33	25	22
7	04	7.5	18	41	34	25.5	29
7.5	19 12 05	8	19 12 19	42	19 12 35	26	19 02 23
8	06	8.5	20	43	36	26.5	30
8.5	07	9	21	44	37	27	24
9	08	9.5	22	45	38	27.5	19 12 46
9.5	09	10	23	46	39	28	19 02 25
10	19 12 10	10.5	19 12 24	47	19 12 40	28.5	19 12 47
10.5	11	11	25	48	41	29	19 02 26
11	12	11.5	26	49	42	29.5	19 12 48
11.5	13	12	27	50	43	30	19 02 27

Long Boots

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 12 51	6	19 12 65	38	19 12 81	24	19 02 31
6	52	6.5	66	39	82	24.5	38
6.5	53	7	67	40	83	25	32
7	54	7.5	68	41	84	25.5	39
7.5	55	8	69	42	85	26	33
8	19 12 56	8.5	19 12 70	43	19 12 86	26.5	19 02 40
8.5	57	9	71	44	87	27	34
9	58	9.5	72	45	88	27.5	19 12 96
9.5	59	10	73	46	89	28	19 02 35
10	60	10.5	74	47	90	28.5	19 12 97
10.5	19 12 61	11	19 12 75	48	19 12 91	29	19 02 36
11	62	11.5	76	49	92	29.5	19 12 98
11.5	63	12	77	50	93	30	19 02 37

Safety Work Boots

Cow Hide

Steel toe working boots made from cow hide with non slip rubber sole and deep crepe tread.

Without Steel Toe

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 13 01	6	19 13 15	38	19 13 31	24	19 02 41
6	02	6.5	16	39	32	24.5	42
6.5	03	7	17	40	33	25	43
7	04	7.5	18	41	34	25.5	44
7.5	05	8	19	42	35	26	45
8	19 13 06	8.5	19 13 20	43	19 13 36	26.5	19 02 46
8.5	07	9	21	44	37	27	47
9	08	9.5	22	45	38	27.5	48
9.5	09	10	23	46	39	28	49
10	10	10.5	24	47	40	28.5	19 13 46
10.5	19 13 11	11	19 13 25	48	19 13 41	29	19 02 50
11	12	11.5	26	49	42	29.5	19 13 47
11.5	13	12	27	50	43	30	48

(to be continued)

With Steel Toe

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 13 51	6	19 13 65	38	19 13 81	24	19 02 51
6	52	6.5	66	39	82	24.5	52
6.5	53	7	67	40	83	25	53
7	54	7.5	68	41	84	25.5	54
7.5	55	8	69	42	85	26	55
8	19 13 56	8.5	19 13 70	43	19 13 86	26.5	19 02 56
8.5	57	9	71	44	87	27	57
9	58	9.5	72	45	88	27.5	58
9.5	59	10	73	46	89	28	59
10	60	10.5	74	47	90	28.5	19 13 96
10.5	19 13 61	11	19 13 75	48	19 13 91	29	19 02 60
11	62	11.5	76	49	92	29.5	19 13 97
11.5	63	12	77	50	93	30	98

Boots and Shoes

Oil/Acid Resistant

Cow hide steel toe boots or shoes with oil and acid resistant rubber tread.

Boots

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 14 01	6	19 14 15	38	19 14 31	24	19 02 61
6	02	6.5	16	39	32	24.5	62
6.5	03	7	17	40	33	25	63
7	04	7.5	18	41	34	25.5	64
7.5	05	8	19	42	35	26	65
8	19 14 06	8.5	19 14 20	43	19 14 36	26.5	19 02 66
8.5	07	9	21	44	37	27	67
9	08	9.5	22	45	38	27.5	68
9.5	09	10	23	46	39	28	69
10	10	10.5	24	47	40	28.5	19 14 46
10.5	19 14 11	11	19 14 25	48	19 14 41	29	19 02 70
11	12	11.5	26	49	42	29.5	19 14 47
11.5	13	12	27	50	43	30	48

Shoes

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 14 51	6	19 14 65	38	19 14 81	24	19 02 71
6	52	6.5	66	39	82	24.5	72
6.5	53	7	67	40	83	25	73
7	54	7.5	68	41	84	25.5	74
7.5	55	8	69	42	85	26	75
8	19 14 56	8.5	19 14 70	43	19 14 86	26.5	19 02 76
8.5	57	9	71	44	87	27	77
9	19 14 58	9.5	19 14 72	45	19 14 88	27.5	19 02 78
9.5	59	10	73	46	89	28	79
10	60	10.5	74	47	90	28.5	19 14 96
10.5	61	11	75	48	91	29	19 02 80
11	62	11.5	76	49	92	29.5	19 14 97
11.5	19 14 63	12	19 14 77	50	19 14 93	30	19 14 98

(to be continued)

Winter Boots

One piece, molded vinyl, pull-on boots. Looks like fine leather, but is completely water proof with textured vinyl sole and warm polyester pile lining.

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 15 01	6	19 15 15	38	19 15 31	24	19 02 81
6	02	6.5	16	39	32	24.5	82
6.5	03	7	17	40	33	25	83
7	04	7.5	18	41	34	25.5	84
7.5	05	8	19	42	35	26	85
8	19 15 06	8.5	19 15 20	43	19 15 36	26.5	19 02 86
8.5	07	9	21	44	37	27	87
9	08	9.5	22	45	38	27.5	88
9.5	09	10	23	46	39	28	89
10	10	10.5	24	47	40	28.5	91
10.5	19 15 11	11	19 15 25	48	19 15 41	29	19 02 90
11	12	11.5	26	49	42	29.5	92
11.5	13	12	27	50	43	30	93

Safety Work Shoes

Made from cow hide and has a non slip anti-oil rubber sole with deep crepe tread. Available with or without steel toe.

Without Steel Toe

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 16 01	6	19 16 16	38	19 16 31	24	19 03 01
6	02	6.5	17	39	32	24.5	02
6.5	03	7	18	40	33	25	03
7	04	7.5	19	41	34	25.5	04
7.5	05	8	20	42	35	26	05
8	19 16 06	8.5	19 16 21	43	19 16 36	26.5	19 03 06
8.5	07	9	22	44	37	27	07
9	08	9.5	23	45	38	27.5	08
9.5	09	10	24	46	39	28	09
10	10	10.5	25	47	40	28.5	25
10.5	19 16 11	11	19 16 26	48	19 16 41	29	19 03 10

(to be continued)

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
11	19 16 12	11.5	19 16 27	49	19 16 42	29.5	19 03 26
11.5	13	12	28	50	43	30	27
12.5	14	13	29	52	44	31	28
13.5	15	14	30	54	45	32	29

With Steel Toe

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
			—			23.5	19 03 11
5.5	19 16 51	6	19 16 66	38	19 16 81	24	12
6	52	6.5	67	39	82	24.5	13
6.5	53	7	68	40	83	25	14
7	54	7.5	69	41	84	25.5	15
7.5	19 16 55	8	19 16 70	42	19 16 85	26	19 03 16
8	56	8.5	71	43	86	26.5	17
8.5	57	9	72	44	87	27	18
9	58	9.5	73	45	88	27.5	19
9.5	59	10	74	46	89	28	20
10	19 16 60	10.5	19 16 75	47	19 16 90	28.5	19 03 30
10.5	61	11	76	48	91	29	21
11	62	11.5	77	49	92	29.5	19 16 46
11.5	63	12	78	50	93	30	19 03 22
12.5	64	13	79	52	94	31	23
13.5	19 16 65	14	19 16 80	54	19 16 95	32	19 03 24

Boots and Shoes
Anti-Electro-Static

Steel toe anti-electro-static boots/ shoes that insulate the wearer from the ground current.

Boots

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 17 01	6	19 17 15	38	19 17 31	24	19 03 31
6	02	6.5	16	39	32	24.5	32
6.5	03	7	17	40	33	25	33
7	04	7.5	18	41	34	25.5	34
7.5	05	8	19	42	35	26	35
8	19 17 06	8.5	19 17 20	43	19 17 36	26.5	19 03 36
8.5	07	9	21	44	37	27	37
9	08	9.5	22	45	38	27.5	38
9.5	09	10	23	46	39	28	39
10	10	10.5	24	47	40	28.5	51
10.5	19 17 11	11	19 17 25	48	19 17 41	29	19 03 40
11	12	11.5	26	49	42	29.5	52
11.5	13	12	27	50	43	30	53

Shoes

Unit Per Pr.

U.K.		U.S.A.		Europe		Japan (cm)	
Size	CODE	Size	CODE	Size	CODE	Size	CODE
5.5	19 17 51	6	19 17 65	38	19 17 81	24	19 03 41
6	52	6.5	66	39	82	24.5	42
6.5	53	7	67	40	83	25	43
7	54	7.5	68	41	84	25.5	44
7.5	55	8	69	42	85	26	45
8	19 17 56	8.5	19 17 70	43	19 17 86	26.5	19 03 46
8.5	57	9	71	44	87	27	47
9	58	9.5	72	45	88	27.5	48
9.5	59	10	73	46	89	28	49
10	60	10.5	74	47	90	28.5	54
10.5	19 17 61	11	19 17 75	48	19 17 91	29	19 03 50
11	62	11.5	76	49	92	29.5	55
11.5	63	12	77	50	93	30	56

Steel Toe Sneakers

A slip-on sneakers with steel toe, designed with comfortable, durable to reduce weight and promote flexibility.

Unit Per Pr.

CODE	Size cm	CODE	Size cm
19 03 61	24	19 03 66	26.5
62	24.5	67	27
63	25	68	28
64	25.5	69	29
65	26	70	30

Safety Working Shoes
for Winter

A safety working shoes with steel toe suitable for walking in cold climate. The sole is fitted with Aluminium sheet and insole is covered with boa to keep inner of shoes warm.

Unit Per Pr.

CODE	Size cm	CODE	Size cm
19 03 71	25	19 03 74	28
72	26	75	29
73	27		

Offshore Safety Boots
Antistatic, Acid-, oil-, and alkali-resistant European Safety Footwear Protection Type: S3

Antistatic boot with energy absorbing heel, lace up with side zip fastening for easy on/off. Loop in tongue to feed lace through. Aluminum toecap and anti-perforation midsole; non-metallic ballistic Pro Flex. Outlast® lining and thermal insulation regulate temperature.

Lining insulates up to -20°C (-4°F). Acid-, oil-, and alkali-resistant, dual density PU-rubber sole. Outer sole resists heat up to 300°C (572°F). Colour: Black.

Unit Per Pr.

CODE	Size			CODE	Size		
	EU	UK	USA		EU	UK	USA
19 03 76	38	5	6	**19 03 91**	43	9	10
77	39	6	7	**92**	44	10	11
78	40	6.5	7.5	**93**	45	10.5	11.5
79	41	7	8	**94**	46	11	12
80	42	8	9	**95**	47	12	13

Name of Mfr: Scandia Gear, Product Code: 25208
S3: 200 joule toecap protection. Closed seat region (fully enclosed heel). Antistatic properties. Energy absorption of seat region. Water penetration and water absorption resistance. Sole penetration resistance. Cleated outsole.

Cotton Working Socks

Woven from cotton thread and machine knitted. One Size fits all.

19 03 81	Socks, cotton, working, free Size	Doz

Winter Working Socks

Made of acrylic thick pile fabric suitable for cold climate. Free Size and standard colour is dark blue.

19 03 83	Socks, acrylic pile fabric, for winter, free Size	Pr.

Thermal Socks

Made of 45% Merino wool, 45% acrylic, 10% polyamide, and comfortable terry inside. Ergonomic design for reliable support and fit. Excellent heat regulation. Colour: Navy.

Unit Per Pr.

CODE	Size		
	EU	UK	USA
19 03 88	35 / 38	3 / 5	4 / 6
89	39 / 42	6 / 8	7 / 9
90	43 / 46	9 / 11	10 /12

Disposable Shoe Covers

Vinyl made transparent disposable shoe covers to help keep both shoes and floor clean and dry. Canvas material is also available.

Vinyl

Canvas

Unit Per Pr.

CODE	Size	CODE	Size
Vinyl		**Canvas**	
19 03 85	M (23.5-25.5 cm)	**19 03 87**	L: 30 cm×14.5 cm
86	L (26-28 cm)		

Rainwear Size Table

Size Symbol	Men's Size cm		
	Height	Chest	Waist
SS	150 - 155	72 - 80	66 - 74
S	155 - 160	78 - 86	66 - 74
M	160 - 165	84 - 92	72 - 82
L	165 - 170	90 - 98	78 - 88
LL	170 - 175	96 - 104	86 - 96
XXL (3L)	175 - 185	102 - 110	94 - 104
4L	- Over above -		

Clothing Size Mnemonic Symbol

L	=	L		
LL	=	XL	=	2L
LLL	=	XXL	=	3L
LLLL	=	XXXL	=	4L

Rain Suits with Hood

3 pcs comprised of the jacket, trouser and hood outfit. Made of flexible cloth lined rubber, vinyl or nylon. They are all fully water proof and resist aging and abrasion. Available in blue or black.

Unit Per Set

Vinyl		Nylon	
CODE	Size	CODE	Size
19 04 01	M	**19 04 06**	M
02	L	**07**	L
03	LL	**08**	LL
		09	XXL (3L)

Cloth Lined Rubber	
CODE	Size
19 04 11	M
12	L
13	LL
14	XXL (3L)
15	4L

Rain Coats with Hood

A long one piece raincoat with hood. Available in rubber, vinyl and cloth lined rubber.

Unit Per Pc.

Vinyl		Rubber	
CODE	Size	CODE	Size
19 04 21	M	**19 04 26**	M
22	L	**27**	L
23	LL	**28**	LL
		29	XXL (3L)

Cloth Lined Rubber	
CODE	Size
19 04 31	M
32	L
33	LL
34	XXL (3L)

Coloured Rain Suits with Hood

High visibility yellow or orange coloured and waterproof raingear.

Unit Per Set

CODE	Size	CODE	Size
Yellow Coloured		**Orange Coloured**	
19 04 36	M	**19 04 41**	M
37	L	**42**	L
38	LL	**43**	LL
39	XXL (3L)	**44**	XXL (3L)

Rain Hats

Made of vinyl film, dark blue coloured, 3 Sizes available.

19 04 61	Rain hat,	Size M	Pc.
62	"	Size L	"
63	"	Size LL	"

Straw Hats

Straw made hats which provides a comfortable shelter against heavy sunshine during work on deck, etc.

19 04 71	Straw hat	Pc.

Baseball Caps

A soft baseball style cap with single brim. Made of Cotton or Polyester, and free Size. Available colour Navy Blue, Red or Black. Please specify material and colour when ordering.

Unit Per Pc.

CODE	Material	CODE	Material
19 04 76	Cotton	**19 04 77**	Polyester

Boilersuits (Coveralls)

One piece coverall wear for general working. Made of 100% cotton or cotton polyester mixed.

Button Type

Fastner Type

Unit Per Pc.

Button Type

CODE	Size	CODE	Size	CODE	Size
White		**Grey**		**Khaki**	
19 05 01	M	**19 05 11**	M	**19 05 21**	M
02	L	**12**	L	**22**	L
03	LL	**13**	LL	**23**	LL
04	XXL	**14**	XXL	**24**	XXL
05	4L	**15**	4L	**25**	4L
Blue		**Orange**			
19 05 06	M	**19 05 16**	M		
07	L	**17**	L		
08	LL	**18**	LL		
09	XXL	**19**	XXL		
10	4L	**20**	4L		

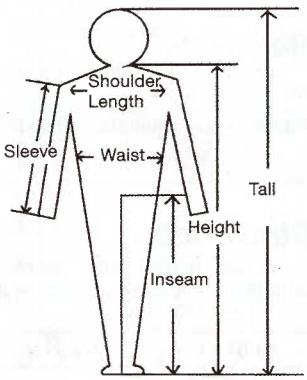
Fastner Type

CODE	Size	CODE	Size	CODE	Size
White		**Grey**		**Khaki**	
19 05 41	M	**19 05 51**	M	**19 05 61**	M
42	L	**52**	L	**62**	L
43	LL	**53**	LL	**63**	LL
44	XXL	**54**	XXL	**64**	XXL
45	4L	**55**	4L	**65**	4L
Blue		**Orange**			
19 05 46	M	**19 05 56**	M		
47	L	**57**	L		
48	LL	**58**	LL		
49	XXL	**59**	XXL		
50	4L	**60**	4L		

Boilersuits Size Table for Asian

Symbol Size	Tall	Height	Sleeve
S	160	135	51
M	165	142	53
L	170	148	55
LL	175	155	57
XXL (3L)	180	162	59
4L	185	168	61

Symbol Size	Waist	Shoulder Length	Inseam
S	88	44	64
M	92	46	68
L	96	48	72
LL	100	50	76
XXL (3L)	105	52	80
4L	110	54	84



Wear Size Table for European

European Size	Nominal Size	Height cm	Chest cm	Waist cm
44	XS	170 - 176	84 - 88	72 - 76
46	S	170 - 176	88 - 92	76 - 80
48		176 - 182	92 - 96	80 - 84
50	M	176 - 182	96 - 100	84 - 88
52		176 - 182	100 - 104	88 - 92
54	L	182 - 188	104 - 108	92 - 96
56		182 - 188	108 - 112	96 - 100
58	XL	182 - 188	112 - 116	100 - 104
60		188 - 194	116 - 120	104 - 108
62	XXL	188 - 194	120 - 124	108 - 112
64		188 - 194	124 - 128	112 - 116
-	XXXL	188 - 194	128 - 136	116 - 124

Clothing Size Mnemonic Symbol

L	=	L		
LL	=	XL	=	2L
LLL	=	XXL	=	3L
LLLL	=	XXXL	=	4L

Disposable Boilersuits

Made of specially woven polypropylene fibers. Suitable for use by engineers, inspectors, painters and others in dirty work areas. Can be laundered and reused several times.

Unit Per Pc.

CODE	Size	CODE	Size
19 05 67	M	**19 05 70**	XXL (3L)
68	L	**66**	XXXL (4L)
69	LL		

Fire Retardant Boilersuits

Made of fire resistant artificial fibre, or fire resistant treated cotton.

Unit Per Pc.

CODE	Size	CODE	Size
19 05 71	M	**19 05 73**	LL
72	L	**74**	XXL (3L)

Anti-electro-static Boilersuits

Suitable for wear when conditions are likely to produce static electricity.

Unit Per Pc.

CODE	Size	CODE	Size
19 05 75	M	**19 05 77**	LL
76	L	**78**	XXL (3L)

Undressed Uniforms

Undressed uniform for use by officer. 65% Tetoron, 35% Rayon with anti electro static properties.

Unit Per Pc.

Long Sleeve Jacket		Short Sleeve Jacket		Trousers	
CODE	Size	CODE	Size	CODE	Size
19 05 81	M	**19 05 86**	M	**19 05 91**	M
82	L	**87**	L	**92**	L
83	LL	**88**	LL	**93**	LL
84	LLL	**89**	LLL	**94**	LLL

Refrigerator Coats & Trousers

These so called "half coats" and trousers are either manufactured with nylon or cotton material and covered inside with artificial fur in order to produce a warm and sheltering coat and trousers for persons entering refrigerating chambers, standing watch in cold climates, etc. Available in dark green and blue only.

CODE	Size	CODE	Size
Nylon		**Cotton**	
Coat			Unit Per Pc.
19 06 01	M	**19 06 06**	M
02	L	**07**	L
03	LL	**08**	LL
04	XXL (3L)	**09**	XXL (3L)
05	4L	**10**	4L
Trousers			Unit Per Pr.
19 06 16	M	**19 06 26**	M
17	L	**27**	L
18	LL	**28**	LL
19	XXL (3L)	**29**	XXL (3L)
20	4L	**30**	4L

Parkas

A winter windbreaker half-coat, made of nylon or a similar synthetic fabric; polyester inner lining. Hood is trimmed with acrylic simulated fur.

Unit Per Pc.

CODE	Size	CODE	Size
19 06 11	M	**19 06 14**	XXL (3L)
12	L	**15**	XXXL (4L)
13	LL		

Winter Use Boilersuits

Insulated for protection from extreme cold when working outdoors in winter, in refrigerated areas, etc.

Unit Per Pc.

CODE	Size	CODE	Size
19 06 21	M	**19 06 24**	XXL (3L)
22	L	**25**	XXXL (4L)
23	LL		

Winter Caps

For protecting the head from cold wind. Available made of knit or leather.

Pointed Crown Knit

Fullface Knit

Leather

19 06 31	Winter cap, pointed crown, knit	Pc.
32	Winter cap, fullface, knit	"
33	Winter cap, leather	"

Neck Warmers

A knitted tubular neck warmer to protect neck from getting chilly. It is free Size and reversible. Please specify if any specific colour is required.

19 06 36	Warmer, neck, knitted	Pc.

Winter Jackets & Trousers

Anti-electro-static

A winter windbreaker jacket and trousers with anti-electro-static process. Available colour in Beige, Navy Blue or Green. Please specify the Size with requested colour when ordering.

Jackets Unit Per Pc.

CODE	Size	Shoulder cm.	Chest cm.
19 06 41	M	48	123
42	L	50	127
43	LL	52	131
44	XXL (3L)	54	135
45	XXXL (4L)	56	139

Trousers Unit Per Pc.

CODE	Size	Waist cm.	Inseam cm.
19 06 46	M	79 - 85	73
47	L	85 - 90	73
48	LL	90 - 100	73
49	XXL (3L)	100 - 110	73
50	XXXL (4L)	110 - 120	73

Winter Hooded Jackets & Trousers

A windbreaker jacket and trousers furnished with hood. Made of polyester and light and durable under cold weather. Available colour in Beige, Navy Blue or Green. Please specify the Size with required colour when ordering.

Jackets Unit Per Pc.

CODE	Size	Shoulder cm.	Chest cm.
19 06 51	M	50	126
52	L	52	130
53	LL	54	134
54	XXL (3L)	56	138
55	XXXL (4L)	58	142

Trousers Unit Per Pr.

CODE	Size	Waist cm.	Inseam cm.
19 06 56	M	73 - 80	76
57	L	80 - 88	76
58	LL	88 - 95	76
59	XXL (3L)	95 - 105	76
60	XXXL (4L)	105 - 115	76

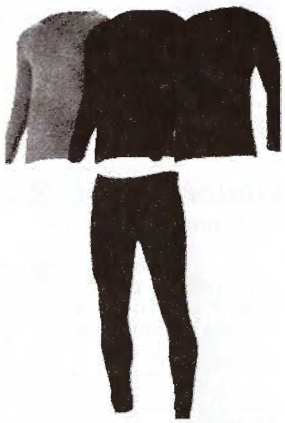
Winter Inner Suits

Made of quilt to protect from extreme cold temperatures by wearing under working suits or boilersuits.

Unit Per Pc.

CODE	Size	Applicable	
		Height cm.	Weight kgs
19 06 61	M	167	55
62	L	172	60
63	LL	177	65
64	XXL (3L)	182	70
65	XXXL (4L)	187	75

Moisture Absorption Heating Inner Suits



Newly developed light and thin innerwear but with high innerwear insulation characteristic. Made from mixture of Acryl, Polyester and Rayon.

Available colour: White, Black or Grey.

Unit Per Set

CODE	Size
19 06 66	M
67	L
68	LL
19 06 69	XXL (3L)
70	XXXL (4L)

Long Johns

A cotton or cotton-polyester blended fabric underwear for cold weather. Normally supplied in set with long sleeve shirt and long under pants.

Unit Per Set

CODE	Size	CODE	Size
Coloured		White	
19 06 71	M	19 06 76	M
72	L	77	L
73	LL	78	LL
74	XXL (3L)	79	XXL (3L)
75	XXXL(4L)	80	XXXL(4L)

Seamen's Sweaters

A military type round neck woolen sweater with patches on shoulders and elbows. Normally supplied in Navy Blue colour.

Unit Per Pc.

CODE	Neck Size	Height cm	CODE	Neck Size	Height cm
19 06 81	36	160	19 06 84	42	175
82	38	165	85	44	180
83	40	170	86	46	190

Working Jackets & Trousers

Made from cotton and suitable for light duty work. Please specify required colour when ordering.

Jackets

Unit Per Pc.

CODE		Size	Chest cm.	Sleeve cm.
Grey	Khaki			
19 07 01	19 07 06	M	108	55
02	07	L	112	57
03	08	LL	116	59
04	09	XXL(3L)	120	61

Trousers

Unit Per Pr.

CODE		Waist cm.	Inseam cm.
Grey	Khaki		
19 07 11	19 07 21	79	76
12	22	82	76
13	23	85	76
14	24	88	76
15	25	90	73
19 07 16	19 07 26	95	73

Working Jackets & Trousers
Anti-electro-static

Made of 65% polyester and 35% cotton blended. Suitable to wear on working around an electrostatic discharge but not preferable. Available in Beige or Navy Blue colours.

Jackets

Unit Per Pc.

CODE		Size	Chest cm.	Sleeve cm.
Beige	Navy Blue			
19 07 31	19 07 36	M	108	55
32	37	L	112	57
33	38	LL	116	59
34	39	XXL (3L)	120	61

Trousers

Unit Per Pr.

CODE		Waist cm.	Inseam cm.
Beige	Navy Blue		
19 07 41	19 07 51	79	76
42	52	82	76
43	53	85	76
44	54	88	76
45	55	90	73
19 07 46	19 07 56	95	73

Working Jackets & Trousers
Summer Use

Made from cotton and suitable for light duty work, especially in summer season. Please specify required colour when ordering.

Jackets - Half Sleeves

Unit Per Pc.

CODE		Size	Chest cm.
Grey	**Khaki**		
19 07 61	**19 07 66**	M	105
62	**67**	L	110
63	**68**	LL	115
64	**69**	XXL (3L)	120

Trousers

Unit Per Pr.

CODE		Waist cm.	Inseam cm.
Grey	**Khaki**		
19 07 71	**19 07 81**	79	76
72	**82**	82	76
73	**83**	85	76
74	**84**	88	76
75	**85**	90	76
19 07 76	**19 07 86**	95	73

Boilersuits Half-sleeved

Made of 100% cotton, and suitable to use in summer season.

Unit Per Pc.

CODE	Size	CODE	Size
19 07 90	M	**19 07 95**	M
91	L	**96**	L
92	LL	**97**	LL
93	XXL (3L)	**98**	XXL (3L)
94	XXXL(4L)	**99**	XXXL(4L)

Working Jackets & Trousers for Extreme Cold Climate

Suitable for working in extreme cold climate or freezing room. Made of Thinsulate insulation material covered with 100% polyester outer and nap raised tricot inner, with sealability and heat retaining characteristics. Available two patterns of colour, Orange or Blue.

Jackets

Unit Per Pc.

CODE		Size	Shoulder cm.	Chest cm.
Orange	**Blue**			
19 08 01	**19 08 11**	M	50	120
02	**12**	L	52	125
03	**13**	LL	54	130
04	**14**	XXL (3L)	56	135
05	**15**	4L	58	140

Trousers

Unit Per Pr.

CODE		Size	Waist cm.	Inseam cm.
Orange	**Blue**			
19 08 06	**19 08 16**	M	72 - 80	75
07	**17**	L	80 - 88	75
08	**18**	LL	88 - 101	75
09	**19**	XXL (3L)	101 - 114	75
10	**20**	4L	114 - 127	75

Size table for Extreme Cold Climate Working Jacket

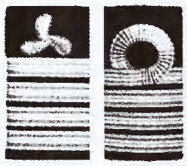
Size	M	L	LL	XXL	4L
Length of One's Dress	80	82	84	86	86
Breadth of One's Shoulder	50	52	54	56	58
Length of Sleeve	59	61	63	65	67
Chest Measurement	120	125	130	135	140

Size Table for Extreme Cold Climate Working Trousers

Size	M	L	LL	XXL	4L
Waist	72 - 80	80 - 88	88 - 101	101 - 114	114 - 127
Inside Leg Measurement	75	75	75	75	75

Stripes (Epaulettes)

An epaulet with insignia of rank of ship's officers to be fastened to the shoulders. The image is only for reference purpose and actual pattern of rank differ by each company. Sold in pair.



Unit Per Pr.

CODE	Rank	CODE	Rank
19 10 11	2nd El. Engineer	**19 10 26**	Cook/Steward
12	2nd Engineer	**27**	El. Engineer
13	2nd Officer	**28**	Gas Engineer
14	3rd Engineer	**29**	Master
15	3rd Officer	**30**	Mechanic
19 10 16	4th Engineer	**19 10 31**	Messman
17	4th Officer	**32**	Motorman
18	Able Seaman	**33**	Oiler
19	Boat Officer	**34**	Ordinary Seaman
20	Bosun	**35**	Pumpman
19 10 21	Chief El. Engineer	**19 10 36**	Steward
22	Chief Engineer	**37**	Stewardess
23	Chief Officer	**38**	Waitress
24	Chief Steward	**39**	Wiper
25	Cook		

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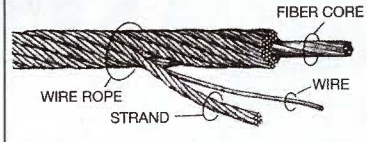
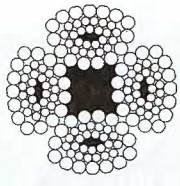
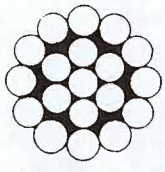
ROPE & HAWSERS

Synthetic Mooring Rope P. 21-1 ~ 18	Mooring Links & Shackles P. 21-18 ~ 20
Synthetic Miscellaneous Rope P. 21-20 ~ 23	Steel Wire Rope  P. 21-23 ~ 31
Non Rotating Wire Rope  P. 21-31 ~ 38	Stainless Steel Wire Rope  P. 21-38 ~ 41

Requirement of Certificate

Please mention on your request for Ropes and Hawsers, if you require a Certificate for each ropes, and specify which type of certificate: Class / Factory / Manufacturer, etc.

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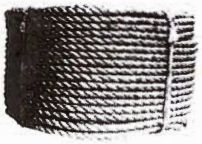
671118	21-22
671119	21-22
671120	21-22
671121	21-22
671122	21-22
671123	21-22
671124	21-22
671125	21-22
671126	21-22
671127	21-22
671128	21-22
671129	21-22
671130	21-22
671131	21-22
671151	21-22
671152	21-22
671153	21-22
671154	21-22
671155	21-22
671156	21-22
671157	21-22
671158	21-22
671159	21-22
671160	21-22
671161	21-22
671162	21-22
671163	21-22
671164	21-22
671165	21-22
671166	21-22
671167	21-22
671168	21-22
671169	21-22
671170	21-22
671171	21-22
671172	21-22
671173	21-22
671174	21-22
671175	21-22
671176	21-22
671177	21-22
671178	21-22
671179	21-22
671180	21-22
671181	21-22

Marine Rope

Please pay special attention to the following matters when ordering ropes.

1. Breaking strength is a guide line only, based upon the rope size.
2. Specifications are based on tests of new, unused ropes of current manufacture.
3. Once a rope is put into service, it is continuously deteriorating.
4. Manila rope will deteriorate in storage even under ideal conditions.
5. All weights shown in this catalogue are approximate net rope weights.

3-Strand Manila Rope



A heavy duty all purpose rope. It provides the necessary tensile strength for safe operations. When ordering, please indicate the correct circumference or diameter of the rope to avoid misdeliveries.

How to order: CODE

Manila rope, 3-strand, DIAM x LENGTH

Unit Per C/L

200mtrs/110fms Manila Rope				Breaking Strength kN	220mtrs/120fms Manila Rope			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 01 01	1	8	9.40	4.61	21 01 51	1	8	10.34
02	1-1/8	9	11.89	5.79	52	1-1/8	9	13.08
03	1-1/4	10	14.68	7.06	53	1-1/4	10	16.15
04	1-1/2	12	21.14	9.9	54	1-1/2	12	23.22
05	1-3/4	14	28.77	13.1	55	1-3/4	14	31.65
21 01 06	2	16	37.58	10.9	21 01 56	2	16	41.34
07	2-1/4	18	47.56	21.0	57	2-1/4	18	52.32
08	2-1/2	20	58.72	25.6	58	2-1/2	20	64.59
09	2-3/4	22	71.05	30.5	59	2-3/4	22	78.16
10	3	24	84.56	35.9	60	3	24	93.02
21 01 11	3-1/4	26	99.24	41.6	21 01 61	3-1/4	26	109.16
12	3-1/2	28	115.10	47.0	62	3-1/2	28	126.61
13	3-3/4	30	132.12	54.3	63	3-3/4	30	145.33
14	4	32	144.32	61.2	64	4	32	158.75

3-Strand Polypropylene Mono-Filament Rope

A useful rope for the marine field. This light rope, (gravity 1:091 to water) is stronger than a comparable manila rope, is non water absorbent, non slipping, and provides good flexibility and high durability. A manufacturer's certificate can be provided with the rope if required.

How to order: CODE

Polypro monofilament rope, 3-strand, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms Polypro Mono-Filament				Breaking Strength kN	200 mtrs/120 fms Polypro Mono-Filament			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 02 01	1	8	6.0	8.53	21 02 51	1	8	6.6
02	1-1/8	9	7.6	11.8	52	1-1/8	9	8.4
03	1-1/4	10	9.0	12.8	53	1-1/4	10	9.9
04	1-1/2	12	13.5	18.4	54	1-1/2	12	14.9
05	1-3/4	14	18.2	24.6	55	1-3/4	14	20.0
21 02 06	2	16	23.8	31.5	21 02 56	2	16	26.2
07	2-1/4	18	30.1	39.1	57	2-1/4	18	33.1
08	2-1/2	20	37.1	47.9	58	2-1/2	20	40.8
09	2-3/4	22	45.0	56.7	59	2-3/4	22	49.5
10	3	24	53.5	66.5	60	3	24	58.9
21 02 11	3-1/4	26	62.7	77.2	21 02 61	3-1/4	26	69.0
12	3-1/2	28	72.8	88.7	62	3-1/2	28	80.1
13	3-3/4	30	83.5	108	63	3-3/4	30	91.9
14	4	32	95.0	127	64	4	32	104.0
15	4-1/4	34	107	142	65	4-1/4	34	118.0
21 02 16	4-1/2	36	120	157	21 02 66	4-1/2	36	132.0
17	4-3/4	37	134	171	67	4-3/4	37	147.0
18	5	40	148	191	68	5	40	163.0

8-Strand Polypropylene Mono-Filament Hawser

Often called a cross or square rope. Suited well for use as a mooring rope because it does not kink, slip, absorb water, and is easy to handle.

Supplied in standard cut lengths of 200 mtr/110 fathoms or 220 mtr/120 fathoms. Ropes of other lengths must be made to order.

When ordering, please specify whether eyes should be spliced on one or both ends of the rope, and if the eyes should be covered with canvas or leather.

Manufacturers certificate is attached to each rope. Lloyd's, ABS, and NK certificates are available upon request.

How to order: CODE

Hawser, polypropylene monofilament, 8-strand, DIAM x LENGTH

Mooring hawsers will be normally supplied with standard size of eye-splice at both ends.

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	200 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 03 01	6	48	202	277	21 03 51	6	48	222
02	6-1/4	50	222	296	52	6-1/4	50	244
03	6-1/2	52	240	321	53	6-1/2	52	264
04	6-7/8	55	268	355	54	6-7/8	55	295
05	7	56	276	367	55	7	56	304
21 03 06	7-1/2	60	323	418	21 03 56	7-1/2	60	355
07	8	65	360	471	57	8	65	396
08	8-1/2	68	405	526	58	8-1/2	68	446
09	8-11/16	70	435	556	59	8-11/16	70	479
10	9	73	455	600	60	9	73	500
21 03 11	9-1/4	75	499	632	21 03 61	9-1/4	75	549
12	9-1/2	77	525	664	62	9-1/2	77	578
13	9-7/8	80	560	712	63	9-7/8	80	616
14	10	81	583	728	64	10	81	641
15	10-1/2	85	641	797	65	10-1/2	85	705
21 03 16	11-1/8	90	719	886	21 03 66	11-1/8	90	791
17	11-3/4	95	800	979	67	11-3/4	95	880
18	12	97	836	1,010	68	12	97	920
19	12-3/8	100	888	1,079	69	12-3/8	100	977
20	13	104	967	1,157	70	13	104	1,064
21 03 21	13-5/8	110	1,084	1,275	21 03 71	13-5/8	110	1,192
22	14	113	1,144	1,344	72	14	113	1,258
23	14-7/8	120	1,282	1,500	73	14-7/8	120	1,410
24	15	121	1,303	1,520	74	15	121	1,433

8-Strand Polypropylene Split-Film Hawsers

Known as a cross braided or square hawser. This rope is unique as a mooring hawser because it does not kink, slip, or absorb water, is durable and easy to handle.

When ordering, please indicate if one or both ends of the rope should be eye spliced and covered with canvas or leather.

Also, please specify if a manufacturer's certificate will be required.

How to order: CODE

Hawser, polypropylene split-film, 8-strand, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 04 01	6	48	202	267	21 04 51	6	48	222
02	6-1/4	50	222	288	52	6-1/4	50	244
03	6-1/2	52	240	309	53	6-1/2	52	264
04	6-7/8	55	268	345	54	6-7/8	55	295
05	7	56	276	353	55	7	56	304
21 04 06	7-1/2	60	313	404	21 04 56	7-1/2	60	344
07	8	65	360	457	57	8	65	396
08	8-1/2	68	406	500	58	8-1/2	68	446
09	8-11/16	70	435	530	59	8-11/16	70	479
10	9	73	455	574	60	9	73	500

(to be continued)

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 04 11	9-1/4	75	499	605	**21 04 61**	9-1/4	75	549
12	9-1/2	77	524	637	**62**	9-1/2	77	577
13	9-7/8	80	560	686	**63**	9-7/8	80	616
14	10	81	568	706	**64**	10	81	625
15	10-1/2	85	630	775	**65**	10-1/2	85	693
21 04 16	11-1/8	90	715	866	**21 04 66**	11-1/8	90	787
17	11-3/4	95	790	965	**67**	11-3/4	95	869
18	12	97	815	1,000	**68**	12	97	897
19	12-3/8	100	880	1,059	**69**	12-3/8	100	968

3-Strand Nylon Rope

Made of continuous filament while yarn woven into a three strand rope. The fibres are elastic, moisture proof, and highly abrasion resistant. Standard coil length is 200 or 220 mtr. Ropes of other lengths must be made to order.

How to order: CODE

Nylon rope, 3-strand, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 05 01	1	8	7.7	14.7	**21 05 51**	1	8	8.5
02	1-1/8	9	9.8	17.7	**52**	1-1/8	9	10.8
03	1-1/4	10	12.1	21.6	**53**	1-1/4	10	13.3
04	1-1/2	12	17.7	29.4	**54**	1-1/2	12	19.5
05	1-3/4	14	24.1	39.2	**55**	1-3/4	14	26.5
21 05 06	2	16	31.0	50.0	**21 05 56**	2	16	34.1
07	2-1/4	18	39.2	61.8	**57**	2-1/4	18	43.1
08	2-1/2	20	48.5	75.5	**58**	2-1/2	20	53.4
09	2-3/4	22	58.5	90.2	**59**	2-3/4	22	64.4
10	3	24	69.9	108	**60**	3	24	76.9
21 05 11	3-1/4	26	81.6	123	**21 05 61**	3-1/4	26	89.8
12	3-1/2	28	95.9	139	**62**	3-1/2	28	105
13	3-3/4	30	109	162	**63**	3-3/4	30	120
14	4	32	124	181	**64**	4	32	136
15	4-1/4	34	140	206	**65**	4-1/4	34	154
21 05 16	4-1/2	36	157	226	**21 05 66**	4-1/2	36	173
17	4-3/4	38	175	255	**67**	4-3/4	38	193
18	5	40	194	275	**68**	5	40	213

8-Strand Nylon Hawsers

Designed for sea berth mooring, towing, and other heavy duty jobs. This rope will not kink and is highly durable.

When ordering, please Indicate the number of eye spilces and if a canvas or leather cover is required for the eyes. Also, please indicate if a certificate is required.

How to order: CODE

Hawser, nylon, 8-strand, DIAM x LENGTH

Mooring hawsers will be normally supplied with standard size of eye-spilce at both ends.

Unit Per C/L

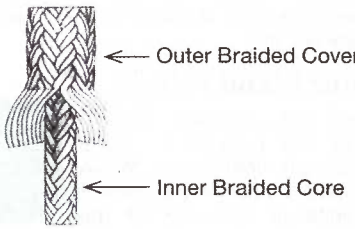
200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 06 01	6	48	281	382	**21 06 51**	6	48	309
02	6-1/4	50	304	422	**52**	6-1/4	50	334
03	6-1/2	52	330	451	**53**	6-1/2	52	363
04	6-7/8	55	368	500	**54**	6-7/8	55	405
05	7	56	382	508	**55**	7	56	420
21 06 06	7-1/2	60	438	588	**21 06 56**	7-1/2	60	482
07	8	65	513	687	**57**	8	65	564
08	8-1/2	68	563	745	**58**	8-1/2	68	619
09	8-11/16	70	596	785	**59**	8-11/16	70	656
10	9	73	648	834	**60**	9	73	713
21 06 11	9-1/4	75	683	902	**21 06 61**	9-1/4	75	751
12	9-1/2	77	721	951	**62**	9-1/2	77	793
13	9-7/8	80	777	1,030	**63**	9-7/8	80	855
14	10	81	796	1,049	**64**	10	81	876
15	10-1/2	85	874	1,147	**65**	10-1/2	85	961
21 06 16	11-1/8	90	980	1,275	**21 06 66**	11-1/8	90	1,078
17	11-3/4	95	1,092	1,412	**67**	11-3/4	95	1,201
18	12	97	1,138	1,461	**68**	12	97	1,252
19	12-3/8	100	1,210	1,549	**69**	12-3/8	100	1,331
20	13	104	1,309	1,667	**70**	13	104	1,440
21 06 21	13-5/8	110	1,464	1,844	**21 06 71**	13-5/8	110	1,610
22	14	113	1,545	1,942	**72**	14	113	1,700
23	14-7/8	120	1,742	2,167	**73**	14-7/8	120	1,916
24	15	121	1,771	2,206	**74**	15	121	1,948

Double Braided Hawsers

Rope construction designed with a braided inner core which is covered with another braided outer sheath. Usually made of nylon, polypropylene multifilament, and polyester, or a combination of those materials.

The rope can be provided with either a nylon or polypropylene inner core and a polyester outer sheath. Standard length of the coil is 200 or 220 mtr. When ordering, please specify the coil length and the material brand required.

The Illustration of Double Braided Construction



Features of Double Braided Hawsers

* 30% higher breaking strength than the 3 or 8 strand rope.
* 30% less stretching/elongation than the 3 or 8 strand ropes.
* Superior abrasion resistance.
* High flexibility and easy handling.
* Splices easily.

Outer Braided Cover : Nylon
Inner Braided Core : Nylon

How to order: CODE

Hawser, nylon, double braided, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 07 01	5	40	208	373	**21 07 31**	5	40	229
02	5-1/4	42	227	405	**32**	5-1/4	42	250
03	5-5/8	45	261	460	**33**	5-5/8	45	287
04	6-1/4	50	320	559	**34**	6-1/4	50	352
05	6-7/8	55	386	669	**35**	6-7/8	55	425
21 07 06	7-1/2	60	459	787	**21 07 36**	7-1/2	60	505
07	8	65	538	917	**37**	8	65	592
08	8-11/16	70	624	1,049	**38**	8-11/16	70	686
09	9-1/4	75	723	1,216	**39**	9-1/4	75	795
10	9-7/8	80	824	1,373	**40**	9-7/8	80	906
21 07 11	10-1/2	85	924	1,530	**21 07 41**	10-1/2	85	1,106
12	11-1/8	90	1,037	1,716	**42**	11-1/8	90	1,141
13	11-3/4	95	1,157	1,902	**43**	11-3/4	95	1,273
14	12-3/8	100	1,279	2,108	**44**	12-3/8	100	1,407

Outer Braided Cover : Polypropylene
Inner Braided Core : Polypropylene

How to order: CODE

Hawser, polypropylene multifilament, double braided, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 08 01	5	40	165	228	**21 08 31**	5	40	182
02	5-1/4	42	181	249	**32**	5-1/4	42	199
03	5-5/8	45	208	284	**33**	5-5/8	45	229
04	6-1/4	50	257	346	**34**	6-1/4	50	283
05	6-7/8	55	310	416	**35**	6-7/8	55	341
21 08 06	7-1/2	60	370	490	**21 08 36**	7-1/2	60	407
07	8	65	429	573	**37**	8	65	472
08	8-11/16	70	505	662	**38**	8-11/16	70	556
09	9-1/4	75	577	748	**39**	9-1/4	75	635
10	9-7/8	80	658	849	**40**	9-7/8	80	724
21 08 11	10-1/2	85	739	948	**21 08 41**	10-1/2	85	813
12	11-1/8	90	837	1,059	**42**	11-1/8	90	921
13	11-3/4	95	920	1,157	**43**	11-3/4	95	1,012
14	12-3/8	100	1,028	1,294	**44**	12-3/8	100	1,131

Outer Braided Cover : Polyester (Tetoron)
Inner Braided Core : Nylon

How to order: CODE

Hawser, polyester/nylon, double braided, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 09 01	5	40	243	385	**21 09 31**	5	40	267
02	5-1/4	42	268	423	**32**	5-1/4	42	295
03	5-5/8	45	308	482	**33**	5-5/8	45	339
04	6-1/4	50	380	589	**34**	6-1/4	50	418
05	6-7/8	55	460	706	**35**	6-7/8	55	506
21 09 06	7-1/2	60	547	834	**21 09 36**	7-1/2	60	602
07	8	65	642	970	**37**	8	65	706
08	8-11/16	70	745	1,118	**38**	8-11/16	70	820
09	9-1/4	75	855	1,275	**39**	9-1/4	75	941
10	9-7/8	80	973	1,442	**40**	9-7/8	80	1,070
21 09 11	10-1/2	85	1,098	1,618	**21 09 41**	10-1/2	85	1,208
12	11-1/8	90	1,231	1,804	**42**	11-1/8	90	1,354
13	11-3/4	95	1,372	2,000	**43**	11-3/4	95	1,509
14	12-3/8	100	1,520	2,167	**44**	12-3/8	100	1,672

High Performance Mooring Rope

8-Strand Dan Line Super Polypropylene Rope

The durability of this rope does not decrease as the strength of the load is increased. It is suitable to use for high tension work loads, for mooring, or as a towing line.

* 30 % higher breaking strength than polypropylene.
* Light weight: with a specific gravity of 0.91, it will float in water.
* Will become elongated when necessary to absorb shocks.
* Has superior abrasion resistance.

How to order: CODE

Hawser, polypropylene, Dan-Line Super, 8-strand, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms				Breaking Strength kN	220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil		CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 10 01	5	40	152	229	**21 10 26**	5	40	167
02	5-1/4	42	167	253	**27**	5-1/4	42	184
03	5-5/8	45	191	288	**28**	5-5/8	45	210
04	6	48	218	326	**29**	6	48	240
05	6-1/4	50	236	352	**30**	6-1/4	50	260
21 10 06	6-1/2	52	256	379	**21 10 31**	6-1/2	52	282
07	6-7/8	55	286	422	**32**	6-7/8	55	315
08	7	56	296	436	**33**	7	56	326
09	7-1/2	60	340	497	**34**	7-1/2	60	374
10	8	65	399	579	**35**	8	65	439
21 10 11	8-1/2	68	437	631	**21 10 36**	8-1/2	68	481
12	8-11/16	70	463	667	**37**	8-11/16	70	509
13	9	73	504	721	**38**	9	73	554
14	9-1/4	75	531	760	**39**	9-1/4	75	584
15	9-7/8	80	605	859	**40**	9-7/8	80	666
21 10 16	10	81	620	880	**21 10 41**	10	81	682
17	10-1/2	85	683	964	**42**	10-1/2	85	751
18	11-1/8	90	765	1,069	**43**	11-1/8	90	842
19	11-3/4	95	853	1,187	**44**	11-3/4	95	938
20	12-3/8	100	945	1,314	**45**	12-3/8	100	1,040
21 10 21	13-5/8	110	1,140	1,579	**21 10 46**	13-5/8	110	1,254
22	14-7/8	120	1,360	1,853	**47**	14-7/8	120	1,496

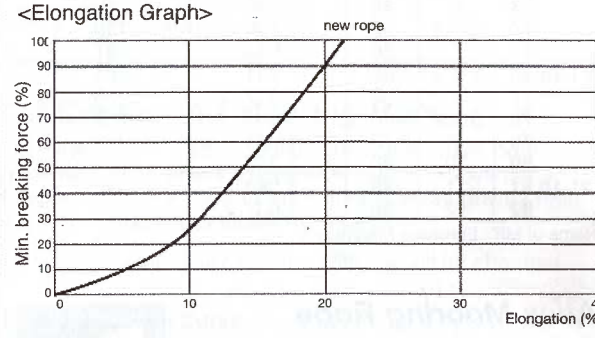
* 3-strand ropes available if required.

Tipto-Eight® 8-Strand Mooring Rope

Tipto®Eight is based on specially developed "Tipto®Eight"-high tenacity yarns which provide excellent resistance to UV rays and abrasion as well as having a higher breaking load than normal polypropylene 8-strand rope. Tipto®Eight floats with a specific gravity of 0.93. The standard length is 220 mtr per coil.

* Specific Gravity : 0.93
* Construction : 8-strand
* UV-Resistance : Very Good
* TCLL Value : 70.7%
* Abrasion Resistance : Very Good
* Colour : Yellow
* Chemical Resistance : Good
* Marker Yarn : Orange
* Melting Point : approx. 140°C
* Water Absorption : 0%

<Elongation Graph>



How to order: CODE

Mooring rope, Tipto®Eight, 8-strand, DIAM x LENGTH

Unit Per C/L

CODE	Circ. Inch	Diam. mm	Breaking Strength kN	Weight/ 100 mtr kgs
21 10 54	5	40	269	75.6
55	5-1/2	44	321	92.4
56	6	48	378	109
57	6-1/2	52	441	128
58	7	56	508	149
21 10 59	7-1/2	60	578	171
60	8	64	651	194
61	8-1/2	68	731	220
62	9	72	814	246
63	10	80	992	305
21 10 64	11	88	1,180	369
65	12	96	1,400	438

Name of Mfr. : Lankhorst Ropes

Karat® Maxi Plus Mooring Rope 8-strand

Karat® Maxi Plus is a new rope replacing Karat® Maxi, and has the same properties but offer the higher MBL and much better abrasion resistance. Karat® Maxi Plus has the following performance features, *Highest strength of the conventional permanently floating mooring ropes, *High abrasion resistance, *No loss of strength when wet,

*High energy absorption, *Very low snap-back effect, *Manufactured acc. to ISO and OCIMF, *EStalon™ is a polyester/polypropylene melt mixture, *Eurolefin™ in the outer yarn.

When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced.

Specifications

* Melting Point	: 185°C
* Spec, Gravity	: 0.99
* Water Absorption	: 0%
* Reduction of MBL when wet	: 0%
* Bending Ratio, Dynamic ISO 3730	: 9:1
* Elongation, new rope	: 18%
* Elongation broken-in ropes (15-20 operations)	: 11%
* On request: Larger diameter, different colour, 12-strand	

How to order: CODE

Mooring rope, Karat® maxi plus, 8-strand, DIAM x LENGTH

Unit Per C/L

CODE	Circ. Inch	Diam. mm	Breaking Strength kN	Weight/ 100 mtr kgs
21 10 71	5	40	344	80
72	5-1/2	44	411	97
73	6	48	483	115
74	6-1/2	52	560	136
75	7	56	644	157
21 10 76	7-1/2	60	731	181
77	8	64	827	206
78	8-1/2	68	927	232
79	9	72	1,033	260
80	10	80	1,243	321
21 10 81	11	88	1,384	389
82	12	96	1,637	463

Name of Mfr.: Eurorope Marine A/S

Atlas Mooring Rope 6-Strand Cross-laid

Atlas rope is a synthetic fiber rope formed from 100 % nylon monofilament and continuous filament yarns. It has a greater tendency to elongate than steel ropes and therefore is less susceptible to breakage from shock tension strain. Also, compared to steel ropes, it requires much less maintenance and is considerably lighter and easier to handle, facilitating rapid mooring.

Atlas rope is generally easy to handle and can be spliced easily allowing for any type adjustment or moderation to be done on board. This rope has excellent resistance to abrasion and will become more flexible and easier to handle with extensive use. Standard length is 220 mtr. When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced. Relative density: 1.14.

How to order: CODE

Mooring rope, Atlas, 6-strand cross-laid, DIAM x LENGTH

Unit Per C/L

220 mtr/110 fms			Weight kgs/mtr	Breaking Strength	
CODE	Size				
	Cir Ich	Diam. mm		kN	tf
21 11 01	5	40	1.00	304.1	31.0
02	5-1/2	44	1.25	412.0	42.0
03	6	48	1.48	490.5	50.0
04	6-1/2	52	1.61	529.7	54.0
05	7	56	2.00	652.4	66.5

(to be continued)

Unit Per C/L

220 mtr/110 fms			Weight kgs/mtr	Breaking Strength	
CODE	Size				
	Cir Ich	Diam. mm		kN	tf
21 11 06	7-3/4	62	2.35	775.0	79.0
07	8	64	2.45	794.6	81.0
08	8-1/2	68	2.80	922.1	94.0
09	8-3/4	70	3.10	1,010.4	103.0

Karat® WinchlineTM 6-Strand Mooring Rope

Combined the unique characteristics of the high strength Karat®-fibre with a 6-strand "wire rope" lay. The outer layer of each strand comprises a special combination of Nylon monofilaments and Nylon multifilaments. This rope is specially designed to be used on self-tensioning winches. Special characteristics are high resistance to deformation due to compact lay - no crushing or jamming on winch, high abrasion resistance and low elongation, excellent fatigue properties. When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced.

Specifications

* Melting Point	: 250°C
* Spec, Gravity	: 1.1
* Water Absorption	: 2%
* Reduction of MBL when wet	: 1%
* Bending Ratio, Dynamic ISO 3730	: 12:1
* Elongation, new rope	: 25%
* Elongation, broken-in ropes (15-20 operations)	: 18%

How to order: CODE

Mooring rope, Karat® winchline™, 6-strand, DIAM x LENGTH

Unit Per C/L

CODE	Size		Breaking Strength kN	Weight/ 100 mtr kgs
	Circ. Inch	Diam. mm		
21 11 11	5	40	324	104
12	5-1/2	44	412	121
13	6	48	491	144
14	6-1/2	52	530	169
15	7	56	657	197
21 11 16	7-1/2	60	706	225
17	8	64	804	257
18	8-1/2	68	922	290
19	9	72	1,059	325
20	10	80	1,236	401

Name of Mfr.: Eurorope Marine A/S

Buoyant Winchline™ 6-Strand Mooring Rope

A unique fibre rope with a 6-strand "wire rope lay". The outer layer of each strand comprises a special combination of Nylon monofilaments and PP multifilaments. Buoyant Winchline™ is designed to be permanently floating and to be used on selftensioning winches. Special characteristics are light weight (floats), high resistance to deformation, no crushing or jamming on winch, high abrasion resistance, excellent fatigue properties giving longer lifetime, high strength which gives better safety, and maintenance free.

When ordering, please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced.

Specifications

* Melting Point	:	250/165°C
* Spec, Gravity	:	0.99
* Water Absorption	:	2%
* Reduction of MBL when wet	:	1%
* Bending Ratio, Dynamic ISO 3730	:	12:1
* Elongation, new rope	:	23%
* Elongation, broken-in ropes (15-20 operations)	:	15%

How to order: CODE

Mooring rope, Buoyant winchline™, 6-strand, DIAM x LENGTH

Unit Per C/L

CODE	Size		Breaking Strength kN	Weight/100 mtr kgs
	Circ. Inch	Diam. mm		
21 11 85	5	40	308	99
86	5-1/2	44	391	115
87	6	48	466	137
88	6-1/2	52	503	162
89	7	56	625	187
21 11 90	7-1/2	60	671	214
91	8	64	764	244
92	8-1/2	68	876	276
93	9	72	1,007	309
94	10	80	1,174	381

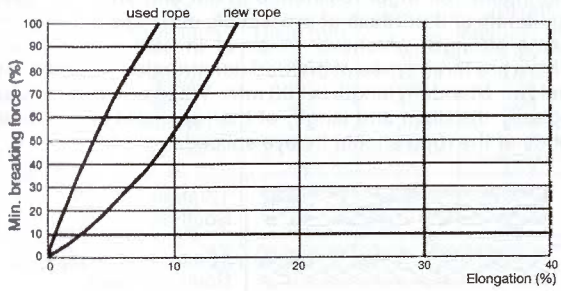
Name of Mfr.: Eurorope Marine A/S

Tipto®Winchline 7-strand Fibre Mooring Rope

A dedicated floating winchline, developed especially to be used on single drum, self-tensioning winches. The load-bearing 7-strand core combines high strength and low elongation. The non-load-bearing braided jacket provides protection to the core (longer life-time) and increases crew-safety by minimizing the risk of snap-back. The smooth operation of the vessel is increased by the ease of handling of the rope due to its low weight and the floating characteristic of the rope. Standard length is 220 mtr per coil. When ordering please specify the diam and length of the rope and if one or both ends of the rope should be eye spliced.

Specifications

Specific Gravity	0.93:	Construction	7-strand +jacket
UV-resistance	Very good		
Abrasion Resistance	Very good	TCLL Value	70.7%
Chemical Resistance	Good	Colour	Yellow
Elongation	See graph	Marker Yarn	Orange
Melting Point	Approx. 140°C	Water-absorption	0%
		On Request	Larger Diameter



How to order: CODE

Mooring rope, Tipto®winchline, 7-strand, DIAM x LENGTH, LENGTH OF SPLICE if necessary

Unit Per C/L

CODE	Nominal Size		Min. Breaking Force (kN)	Weight kgs/ 100 mtr
	Circ. (Inch)	Diam mm		
21 17 73	4-1/2	36	248	74
74	5-1/4	42	340	98
75	5-3/4	46	425	115
90	6	48	472	125
76	6-1/4	50	512	133
21 17 77	6-3/4	54	598	150
91	7	56	640	160
78	7-1/4	58	682	167
92	7-1/2	60	730	184
93	7-3/4	62	780	190
21 17 79	8	64	850	203
80	8-1/2	68	934	221
94	8-11/16	70	990	240
81	9-1/4	74	1,100	256
82	10	80	1,270	355
21 17 83	10-1/4	82	1,350	380
95	10-1/2	84	1,420	395

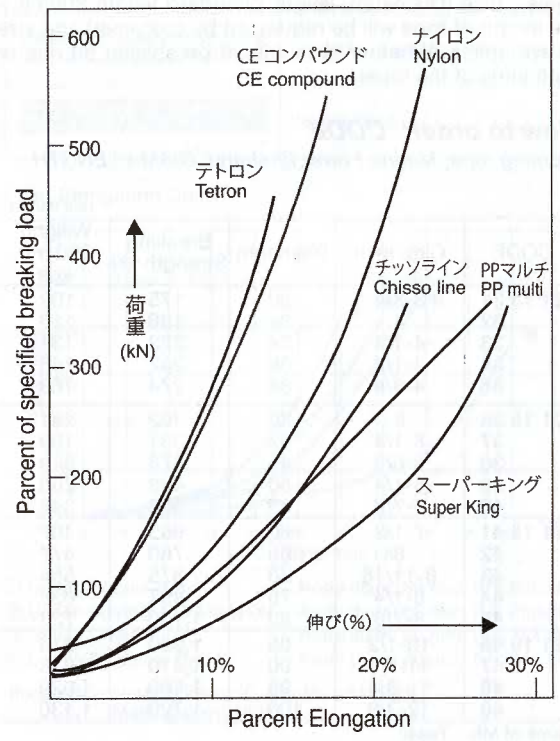
Name of Mfr.: Lankhorst Ropes

CE Compound Mooring Rope

Newly developed mooring rope, made from complex material, which offers excellent abrasion resistance and fatigue resistance. Due to the lighter specific gravity than water, will float and is easier to handle.

N.K. (Nippon Kaiji Kyokai) certificate will be attached.

Load Elongation Curve

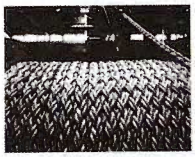


Unit Per C/L

CODE	Size		Weight/200 mtr kgs	Medium Strength kN
	Circ. Inch	Diam mm		
21 15 01	3-3/4	30	104	140
02	4	32	119	158
03	4-3/8	35	141	185
04	5	40	185	246
05	5-5/8	45	234	306
21 15 06	6	48	266	352
07	6-1/4	50	288	375
08	7	55	349	458
09	7-1/2	60	415	522
10	8	65	487	607
21 15 11	8-11/16	70	566	706
12	9-1/4	75	649	818
13	10	80	739	917
14	10-1/2	85	834	1,044
15	11-1/18	90	935	1,148
21 15 16	11-3/4	95	1,042	1,272
17	12-3/8	100	1,155	1,410
18	13-3/4	110	1,398	1,666
19	15	120	1,664	1,991

Name of Mfr.: Obama Rope Mfg.

Marine Power 12-Strand Mooring Rope



Made by combination of polyester multi-filament and special polypropylene mono-filament which braided with 6 pairs of two strands together. The braided surface is smoother than conventional 8-strand rope makes more better durability in abrasion.

The 12 strands rope produced 20% higher tensile strength than conventional 8-strand of rope and longer pitch about 1.5 times than strander diameter makes excellent characteristics in handling.

Ordering can be made by indicate clearly the following items ; Size (Diameter), length (Standard length 200mtr – the length of rope will be requested by customer) and size of eye-splice (Whether eyes should be spliced on one or both ends of the rope).

How to order: CODE

Mooring rope, Marine Power,12-strand, DIAM x LENGTH

Unit Per C/L

CODE	Circ. Inch	Diam mm	Breaking Strength kN	Weight/ 200 mtr kgs
21 15 31	3-3/4	30	175	102
32	4	32	198	116
33	4-1/4	34	222	131
34	4-1/2	36	247	146
35	4-3/4	38	274	163
21 15 36	5	40	302	181
37	5-1/4	42	331	199
38	5-5/8	45	378	229
39	6-1/4	50	462	283
40	6-7/8	55	553	342
21 15 41	7-1/2	60	653	407
42	8	65	760	477
43	8-11/16	70	875	554
44	9-1/4	75	997	636
45	9-7/8	80	1,130	723
21 15 46	10-1/2	85	1,260	816
47	11-1/8	90	1,410	915
48	11-3/4	95	1,560	1,020
49	12-3/8	100	1,720	1,130

Name of Mfr.: Tesac

Mooring Rope 8-Strand "Marine-Combi-Rope"

Made by mixing of polyester multi-filament (White color) and special polypropylene mono-filament (Orange color) which braided with 8 pairs of strands together. By the mixing of these two elements makes well balanced in floating, abrasion and cost saving.

The color of white polyester and orange of polypropylene mono-filament can be seen clearly in the water. One of the most stronger rope among water-floating product in 8-strand rope category.

Ordering can be made by indicate clearly the following items; Size (Diameter), length (Standard length 200mtr-the length of rope will be requested by customer) and size of eye-splice (Whether eyes should be spliced on one or both ends of the rope).

How to order: CODE

Mooring rope, Marine-Combi Rope, 8-strand, DIAM x LENGTH

Unit Per C/L

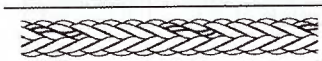
CODE	Size		Minimum Breaking Strength kN	Weight / 200 mtr kgs
	Circ. Inch	Diam mm		
21 15 51	5	40	246	181
52	5-5/8	45	308	229
53	6-1/4	50	376	283
54	6-7/8	55	451	342
55	7-1/2	60	532	407
21 15 56	8	65	619	477
57	8-11/16	70	713	554
58	9-1/4	75	813	636
59	9-7/8	80	919	723
60	10-1/2	85	1,030	816
21 15 61	11-1/8	90	1,150	915
62	11-3/4	95	1,270	1,020
63	12-3/8	100	1,400	1,130
64	13-5/8	110	1,680	1,370
65	14-7/8	120	1,990	1,630

Name of Mfr.: Tesac

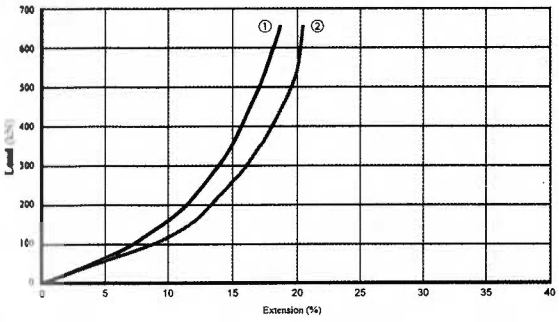
Mooring Rope

Polypropylene/Polyester Composite Rope "Bell Mix Rope"

A composite rope with Polypropylene and Polyester with the following remarkable characteristics ; Low elastic elongation, stronger resistance to cut and abrasion, easy to handle and process of eye-splice, etc. The rope keeps same strength whichever in air or in sea, and it floats. There are three types of braided construction as illustrated below. Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

	12-strand (2 × 6) Southern Cross
	12-strand (1 × 12) Southern Braid

Load Elongation Curve



① Bell Mix Southern Braid (1×12)
Rope diam. 60 mm, B/S 660 kN

② Bell Mix Southern Cross (2×6)
Rope diam. 60 mm, B/S 653 kN

Properties: Melting Point
Polypropylene 163°C , Polyester 240°C

12-strand (2 × 6) Southern Cross

How to order: CODE

Mooring rope, Polypropylene / Polyester composite, Bell Mix, 12-strand Southern Cross, DIAM X LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size		B/S kN	Weight kgs/200 mtr
	Circ. Inch	Diam mm		
21 15 81	5	40	305	183
82	5-5/8	45	382	232
83	6-1/4	50	467	286
84	6-7/8	55	559	346
85	7-1/2	60	660	412
21 15 86	8	65	763	483
87	8-11/16	70	884	560
88	9-1/4	75	1.010	643
89	9-7/8	80	1.140	731

Name of Mfr.: NAROC ROPE TECH.

12-strand (1 × 12) Southern Braid

How to order: CODE

Mooring rope, Polypropylene / Polyester composite, Bell Mix, 12-strand Southern Braid, DIAM X LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size		B/S kN	Weight kgs/200 mtr
	Circ. Inch	Diam mm		
21 15 91	5	40	305	183
92	5-5/8	45	382	232
93	6-1/4	50	467	286
94	6-7/8	55	559	346
95	7-1/2	60	660	412
21 15 96	8	65	763	483
97	8-11/16	70	884	560
98	9-1/4	75	1,010	643
99	9-7/8	80	1,140	731

Name of Mfr.: NAROC ROPE TECH.

Mooring Rope Size Guide to Ship's Weight for Bell Mix (Polypropylene / Polyester Composite Rope)

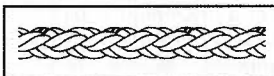
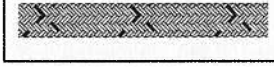
Ship's Type and Weight	Kind of Rope and Size
Chemical Tanker (12,000 t - 33,000 t) Products Carrier (45,000 t - 47,000 t)	Southern cross (2 x 6) 55 mm - 65 mm dia Southern braid (1×12) 55 mm - 65 mm dia.
Cape Size Bulk Carrier (180,000 t - 207,000 t)	Southern cross (2×6) 70 mm - 75 mm dia Southern braid (1×12) 70 mm - 75 mm dia.
Panamax Size Bulk Carrier (76,000 t - 82,000 t)	Southern cross (2×6) 70 mm dia Southern braid (1×12) 70 mm dia
Pure Car Carrier (6,400 TEU)	Southern cross (2×6) 75 mm dia. Southern braid (1×12) 75 mm dia.

Remark:
This information is suggested by NAROC ROPE TECH., and please acknowledge that the actual applications in your ships case will be different depending on the ship structure, ship designing department, and the condition of the port of call.

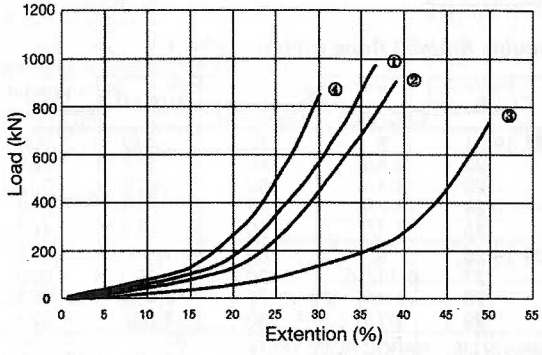
Mooring Ropes

High Strength Nylon "Unilon"

Compared to former nylon ropes, Unilon rope produces 30% higher strength, providing substantially better service life. It keeps softness even after long period of operation, and keeps endurance to direct ray, inclement climate, and cold climate. Available three types of construction as illustrated below. Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

	8-strand (2 x 4) Cross
	12-strand (2 x 6) Southern Cross
	Doubel Braided

Load Elongation Curve



① Unilon Double Braid — Rope diam. 60 mm. B/S 958 kN
② Unilon Southern Cross (2×6) — Rope diam. 60 mm. B/S 890 kN
③ Unilon Cross (2×4) — Rope diam. 60 mm. B/S 754 kN
④ UnimixG Doubel Braid — Rope diam. 60 mm, B/S 835 kN

Properties: Union (UnimixG), Gravity 1.14 (1.21),
Melting point 180°C

8-strand (2 × 4) Cross

How to order: CODE

Mooring rope, high strength Nylon, Unilon, 8-strand cross, DIAM × LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size		B/S kN	Weight kgs/200 mtr
	Circ. Inch	Diam mm		
21 19 01	5	40	353	191
02	5-5/8	45	440	244
03	6-1/4	50	538	302
04	6-7/8	55	647	367
05	7-1/2	60	754	438
21 19 06	8	65	877	506
07	8-11/16	70	1,020	596
08	9-1/4	75	1,160	680
09	9-7/8	80	1,310	770

Name of Mfr.: NAROC ROPE TECH.

12-strand (2 × 6) Southern Cross

How to order: CODE

Mooring rope, high strength Nylon, Unilon, 12-strand southern cross, DIAM × LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size		B/S kN	Weight kgs/200 mtr
	Circ. Inch	Diam mm		
21 19 11	5	40	417	200
12	5-5/8	45	519	253
13	6-1/4	50	635	313
14	6-7/8	55	763	378
15	7-1/2	60	890	450
21 19 16	8	65	1,040	528
17	8-11/16	70	1,200	613
18	9-1/4	75	1,370	703
19	9-7/8	80	1,540	800

Name of Mfr.: NAROC ROPE TECH.

Double Braided

How to order: CODE

Mooring rope, high strength Nylon, Unilon, double braided, DIAM × LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Double Braided Rope Unilon

Unit Per C/L

CODE	Size		B/S kN	Weight kgs/200 mtr
	Circ. Inch	Diam mm		
21 19 21	5	40	449	206
22	5-5/8	45	557	261
23	6-1/4	50	679	322
24	6-7/8	55	814	389
25	7-1/2	60	958	463
21 19 26	8	65	1,120	543
27	8-11/16	70	1,290	630
28	9-1/4	75	1,490	723
29	9-7/8	80	1,660	823

Name of Mfr.: NAROC ROPE TECH.

How to order: CODE

Mooring rope, low extension Nylon UnilonG and Polyester, double braided, DIAM × LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Double Braided Rope UnimixG

Unit Per C/L

CODE	Size		B/S kN	Weight kgs/200 mtr
	Circ. Inch	Diam mm		
21 19 31	5	40	385	221
32	5-5/8	45	482	279
33	6-1/4	50	589	344
34	6-7/8	55	707	416
35	7-1/2	60	835	495
21 19 36	8	65	971	581
37	8-11/16	70	1,120	674
38	9-1/4	75	1,270	774
39	9-7/8	80	1,440	881

Name of Mfr.: NAROC ROPE TECH.

Mooring Rope Size Guide to Ship's Weight for Unilon

(High Strength Nylon Rope)

Ship's Type and Weight	Kind of Rope and Size
Cape Size bulk Carrier (180,000 t - 207,000 t)	Double braided 65mm - 70 mm dia Cross (2 × 4) 70 mm - 75 mm dia
Panamax Size Bulk Carrier (76,000 t - 82,000 t)	Southern Cross (2 x 6) 65 mm– 70 mm dia
Pure Car Carrier (7,500 TEU)	Double braided 75 mm dia Southern Cross (2 x 6) 75 mm dia
Container Ship (20,000 TEU)	Souther cross (2 × 6) 80 mm dia Double braied 80 mm dia
Container Ship (5,980 TEU)	Southern cross (2 × 6) 75 mm dia Double braided 70 mm dia - 75 mm dia
Container Ship (1,800 - 2,400 TEU)	Double braided 60 mm - 65 mm dia

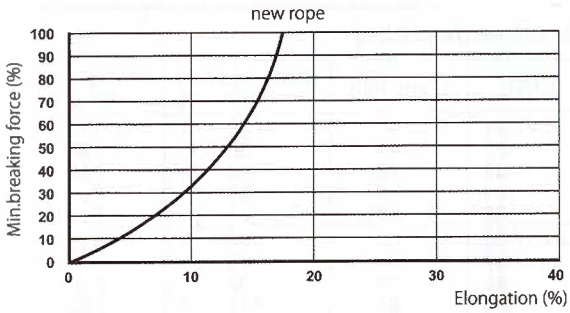
Remark:
This information is suggested by NAROC ROPE TECH., and please acknowledge that the actual applications in your ships case will be different depending on the ship structure, ship designing department, and the condition of the port of call.

Mooring Line 8-strand Eurofloat® Premium

A floating high performance rope constructed from high strength polypropylene and polyester yarns. Produced under the latest EN, ISO standards and complies with the OCIMF recommendations. The floating characteristic makes it a safe rope to work with and the high TCLL value ensures an excellent fatigue resistance. Standard length is 220 mtr per coil.

Specifications

Specific Gravity	0.98 (Floating)	Construction	8-strand plated
UV-resistance	Good		
Abrasion Resistance	Very good	TCLL Value	75.1%
Chemical Resistance	Good	Colour	White
Elongation	See graph	Marker Yarn	Two green markers
Melting Point	Approx. 165°C/ 265°C	Water-absorption	0.1%



Unit Per C/L

CODE	Circ. Inches	Diam. mm	M.B.F. (kN)	Weight kgs/100 mtr
21 16 85	4	32	207	53
86	4-1/2	36	259	67
87	5	40	324	85
88	5-1/2	44	377	99
89	6	48	456	120
21 16 90	6-1/2	52	534	141
91	7	56	613	162
92	7-1/2	60	701	188
93	8	64	799	216
94	8-1/2	68	900	245
21 16 95	9	72	1,000	275
96	9-1/2	76	1,098	305
97	10	80	1,205	339
98	11	88	1,470	411
99	12	96	1,735	490

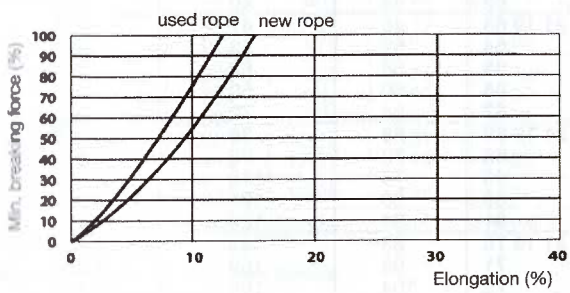
Name of Mfr.: Lankhorst Ropes

Euroflex® 8-strand Plaited Fibre Mooring Rope

An excellent mooring- and towing rope with higher strength AND smaller diameter resulting in an easy, light weighted rope, with a very good abrasion resistance and no lost of strength in wet condition. Standard length is 220 mtr per coil. This in combination with a perfect TCLL value (79.6%) and a high energy absorption make this rope one of the best ropes available today. OCIMF recommended rope.

Specifications

Specific Gravity	1.14	Construction	8-strand plated
UV-resistance	Good		
Abrasion Resistance	Very good	Colour	White
Chemical Resistance	Good	Marker Yarn	Yellow
Elongation	See graph	Water-absorption	< 0.5%
Melting Point	Approx. 165°C/ 265°C		



How to order: CODE

Mooring rope, Euroflex, 8-strand, DIAM x LENGTH, LENGTH OF SPLICE, if necessary

Unit Per C/L

CODE	Nominal Size		Min. Breaking Force (kN)	Weight kgs/200 mtr
	Circ. Inch	Diam mm		
21 17 51	5	40	411	102
52	5-1/2	44	493	124
53	6	48	583	148
54	6-1/2	52	680	173
55	7	56	784	201
21 17 56	7-1/2	60	896	231
57	8	64	1,010	263
58	8-1/2	68	1,140	296
59	9	72	1,270	332
60	9-1/2	76	1,410	370
21 17 61	10	80	1,550	411
62	11	88	1,870	497
63	12	96	2,210	590
64	13	104	2,570	689
65	14	112	2,970	803
21 17 66	15	120	3,380	923
67	16	128	3,830	1,050
68	17	136	4,300	1,187
69	18	144	4,800	1,334

Name of Mfr.: Lankhorst Ropes

Nika-Cord® 8 Strand Rope

Constructed using double twisted yarns of NIKA-steel® fibers, a special melt mixture of high quality European raw materials (Polypropylene, High Density Polyethylene, UV stabilizer and other improving elements).

They exhibit much higher tenacity and abrasion resistance than most conventional monofilament and flat Polypropylene and Polyolefin fibers.

The double twisting process offers improved performance in dynamic and shock loading conditions while maximizing the resistance against internal and external abrasion.

Constructed according to ISO 10572 and they comply with the latest regulations and recommendations of OCIMF for the safe mooring of tankers.

Applications: Mooring, Anchoring, Messenger Lines, Tow Lines, Tails

* Specific gravity : 0.92 (Floating)
* Melting point : 165 °C
* Elongation at breaking : 18%
* Chemical resistance to alkali : Good
* Chemical resistance to organic solvent : Excellent
* Chemical resistance to acid : Excellent
* Strength loss in NaOH and H_2SO_4 in high concentration and temperature

8-strands (4X2)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kgs (220 m)
21 17 13	28	14.5	78
14	32	18.5	101
27	36	23.0	128
01	40	27.9	158
02	44	33.3	194
21 17 03	48	39.2	229
04	52	45.7	268
05	56	52.4	312
06	60	59.4	359
07	64	67.0	407

(to be continued)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kgs (220 m)
21 17 28	68	75.3	462
08	72	83.6	515
29	76	92.5	576
09	80	101.5	638
30	84	111.4	704
21 17 10	88	121.3	772
11	96	142.7	915
12	104	165.2	1,090

Name of Mfr.: Katradis Marine Ropes Industry SA

Nikaforce® Polypropylene Mooring Rope

NIKAFORCE® ropes exhibit:

- Exceptional strength to weight ratio
- High breaking load exceeding Cordage Institute specification CI 1901 and EN ISO 10572*1 specs.
- High abrasion resistance
- U.V. stabilization to 160 KLY (Suitable for Florida, U.S.A. & Dubai, UAE sunshine).
- High shock & dynamic load absorption, with filaments of equal thickness and tensile strength.
- Electronically controlled even load distribution.
- Ease of handling.

*1 EN ISO 10572 has replaced EN 14687 standard

Only virgin bright white European raw materials used. Filament tensile strength exceeds EN and ISO specifications. Recommended working load limit: 20% of the minimum breaking load. Approved by ABS, B.V., L.R.S., G.L.

Ropes are also according to the latest regulations and recommendations of OCIMF for the safe mooring of tankers.

Ordering can be made by indicating clearly the following items; Preferable number of strands (8-strands, 12 strands or 24 strands), Size (Diameter), Length (Standard length 220 mtr – the length of rope will be specified by customer) and size of eye-splice (Whether eyes should be spliced on one or both ends of the rope).

Applications : Mooring, Anchoring, Towing, Tails.
Melting Point : 165°C
Elongation at Breaking : 15%
Specific Gravity : 0.92 (Floating)

12-strands (12X1)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kgs (220 m)
21 17 15	40	31	158
16	44	38	194
17	48	44	229
18	52	50	268
19	56	57	312
21 17 20	60	64	359
21	64	73	407
22	72	92	515
23	80	111	638
24	88	130	772
21 17 25	96	153	915
26	104	174	1,090

Name of Mfr.: Katradis Marine Ropes Industry SA

24-strands (12X2)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kgs (220 m)
21 17 31	40	31	158
32	44	38	194
33	48	44	229
34	52	50	268
35	56	57	312
21 17 36	60	64	359
37	64	73	407
38	72	92	515
39	80	111	638
40	88	130	772
21 17 41	96	153	915
42	104	174	1,090

Name of Mfr.: Katradis Marine Ropes Industry SA

Improved Mixed "NIKASTEEL®" 12/24 Strand Rope, Polyester/NIKA STEEL Combination

Constructed using specially twisted yarns of NIKA-Steel® fibers with High Tenacity Polyester fibers (in a 60% - 40% w/w combination respectively) in the outer layers of the strand. Each strand is composed of mixed NIKA-Steel®/ HT Polyester yarns in the outer layers and NIKA-Steel® yarns in the core layer.

Their mechanically balanced structure, accordant to EN ISO 10556, protects the strands' outer layers against abrasion while achieving high breaking strengths.

Produced according to international standards such as EN ISO 10556.

Comply with the latest regulations and recommendations of OCIMF for the safe mooring of tankers.

APPLICATIONS: MOORING – ANCHORING – TAILS

Specific gravity: 0.99 (Floating)
Average Polyester w/w percentage: 25%
Melting point: 165°C (NIKA-STEEL®) / 265°C (PES)
Elongation at breaking: 15%-18%
Chemical resistance to ALKALI: VERY GOOD
Chemical resistance to ORGANIC SOLVENT: VERY GOOD
Chemical resistance to ACID: EXCELLENT.
Strength loss in NaOH and H_2SO_4 in high concentration and temperature

12-strands (12X1)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kgs (220 m)
21 19 58	28	17.5	90
59	32	23	130
60	36	28	146
61	40	34	174
62	44	40	211
21 19 63	48	47	253
64	52	53	299
65	56	62	342
66	60	69	396
67	64	79	458
21 19 89	68	88	515
68	72	98	572
90	76	110	638
69	80	121	706
91	84	132	774
21 19 70	88	144	842
71	96	169	1,020
72	104	196	1,177

Name of Mfr.: Katradis Marine Ropes Industry SA

24-strands (12X2)

Unit Per C/L

CODE	Diam. mm	Breaking Load Tons	Weight kgs (220 m)
21 19 74	28	17.5	90
75	32	23	130
76	36	28	146
77	40	34	174
78	44	40	211
21 19 79	48	47	253
80	52	53	299
81	56	62	342
82	60	69	396
83	64	79	458
21 19 92	68	88	515
84	72	98	572
93	76	110	638
85	80	121	706
94	84	132	774
21 19 86	88	144	842
87	96	169	1,020
88	104	196	1,177

Name of Mfr.: Katradis Marine Ropes Industry SA

Mooring Rope "Timm Master 8"

Timm Master 8 has moored over 6,000 vessels worldwide, has a class leading strength-to-weight ratio and excellent UV resistance. This 8-strand mixed composition floating rope combines mixed polyolefin Timm Signal B5 yarn and high tenacity polyester. A reliable, flexible, low torque and tough mooring rope suitable for all ship types.

The product holds DNV GL type approval and has a standard length of 220m, with 1.8m PES protected eye both ends.

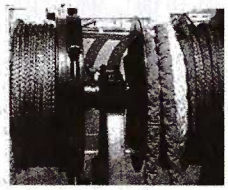
Material	: Mixed polymer rope (Polyolefin/HT Polyester)
Eyes	: 1.8m protected eyes (PES)
Colour	: White with 3 black stripes
Melting Point	: 165°C
Specific Gravity	: 0.99 (floating)
Water Absorption	: <1%
Elongation	: 18% at break

CODE	Diam. mm	MBL Spliced (kN)	MBL Unspliced (kN)	MBL Spliced (metric ton)	MBL Unspliced (metric ton)
21 13 71	40	315	350	26	29
73	44	380	423	38	43
74	48	451	501	45	51
76	52	528	587	53	59
78	56	611	679	62	69
21 13 79	60	699	777	71	79
81	64	794	882	80	89
82	68	894	994	91	101
83	72	1,001	1,112	101	113
84	76	1,113	1,237	113	126
21 13 86	80	1,231	1,368	125	139

* This product can also be purchased as a mooring tail or ringtail in certain diameters and lengths.

Name of Mfr.: Wilhelmsen Ships Service

Ultra High Molecular Weight Polyethylene (UHMWPE) Fiber Mooring Rope 12-Strand "AmSteel®-Blue", Dyneema SK78



AmSteel®-Blue is a proven cost-saving replacement for wire rope in key applications where strength, weight and safety are important.

Recognized worldwide as the standard for single braid HMPE ropes, AmSteel®-Blue is easily spliced and inspected. These features, with the superior wear and tension fatigue of Dyneema SK-78 fiber and Samthane coating, are combined in a torque-free 12-strand single braid design. The result is an industry leading braided synthetic rope that outlasts wire rope and has proven operator cost saving benefits.

AmSteel®-Blue, at only 1/7th the weight of wire, requires less committed crew for most operations, significantly reduces mooring times and tug costs, and improves crew safety. The reduced weight, high strength and low stretch also make it ideal for tug assist/maneuvering lines, resulting in quick, efficient connections and controlled response. AmSteel®-Blue is proven to provide longer service life and reduced costs when compared to wire in a variety of applications.

Standardized working pendants are available for mooring and tug assist lines. It is recommended for split drum winch applications, not recommended for use on H-bitts, capstans or cleats if surging or rendering the rope is required.

Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

Features:

- Uses Dyneema SK-78
- A Size for size strength replacement for wire rope at only 1/7th the weight
- Torque-free, very flexible, easy to handle
- Similar elastic elongation to wire rope
- Easily inspected or field spliced
- Floats

Applications

- Primary vessel mooring lines
- Face and wing wires for push tugs
- Emergency and seismic tow lines

Technical Specifications

Specific Gravity: 0.98 (Floats)
Elastic Elongation %: At % of break strength
10%.....0.46%, 20%..... 0.70%, 30%..... 0.96%
Splicing Procedures Required:
Eye splice - 12 strand/Class II rope
End for end splice - 12 strand/Class II rope

How to order: CODE

Mooring rope, 12-srand, "AmSteel®-Blue", Dyneema SK-78, DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KIND OF REQUIRED CERTIFICATE

Unit Per C/L

CODE	Size			Strength ISO/BS EN919	Weight kgs per 100 mtr
	Dia.		Circ.	MBS*	
	Inch	mm	Inch	Metric Tonnes	
21 16 01	1/4	6	3/4	3.9	2.4
02	5/16	8	1	6.2	4.0
03	3/8	9	1-1/8	8.9	5.1
04	7/16	11	1-1/4	10.8	6.7
05	1/2	12	1-1/2	15.4	8.8
21 16 06	9/16	14	1-3/4	18.4	11.8
07	5/8	16	2	24.0	15.2
08	3/4	18	2-1/4	29.2	19.8
10	7/8	22	2-3/4	41.2	29.2
11	1	24	3	49.4	32.4
21 16 12	1-1/16	26	3-1/4	60.8	40.9
13	1-1/8	28	3-1/2	67.1	47.5
14	1-1/4	30	3-3/4	74.8	53.9
15	1-5/16	32	4	84.0	62.2
27	1-3/8	34	4-1/8	93.0	67.0
21 16 16	1-1/2	36	4-1/2	103.0	76.9
17	1-5/8	40	5	128.0	97.0
28	1-11/16	42	5-1/4	139.0	106.0
18	1-3/4	44	5-1/2	152.0	117.0
19	2	48	6	173.0	129.0
21 16 20	2-1/8	52	6-1/2	207.0	162.0
21	2-1/4	56	7	244.0	173.0
22	2-1/2	60	7-1/2	267.0	220.0
23	2-5/8	64	8	300.0	248.0
24	2-3/4	68	8-1/2	333.0	278.0
21 16 25	3	72	9	377.0	307.0
26	3-1/4	80	10	457.0	357.0

Remark: *MBS denotes Minimum Breaking Strength

Name of Mfr.: Samson

Tug and Mooring Line, 8-strand

Blend of Polyester & Dyneema SK-75, "Quantum-8™"

Quantum-8 was developed to meet customer requests for a light-weight, high-strength, torque-free rope that can float and grip a winch or capstan. Quantum-8 is a unique upgrade. This patented construction utilizes Samson's exclusive DPX™ fiber technology. Samson's proven DPX fiber technology has the best abrasion and cut resistance of all high performance fibers, so rope durability is excellent. Quantum-8 has multiple marine uses.

It can be used as a high performance tug working line, a floating tug stem line, a typhoon or vessel mooring line, an offshore messenger or pick-up line.

Quantum-8 has an orange urethane coating for high visibility as well as additional abrasion resistance.

Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

Features

* A blend of polyester and Dyneema SK-75
- Good grip on capstans and H-bitts
- Excellent single drum spooling capabilities

Applications

- Wire replacement
- Secondary mooring lines
- Berge and dredge working lines
- Tracer tug winch lines
- General working lines
- Heavy lift slings
- Rig tow lines
- Lowering/Lifting lines

Technical Specifications

- Specific Gravity: 1.0 (Floats in seawater)
- Elastic Elongation %: At % of break strength
  10%.....0.97%, 20%.....1.15%, 30%.....1.29%
- Splicing Procedures Required:
  Eye splice - 8 strand/Class II rope
  End for end splice - 8 strand/Class II rope

How to order: CODE

Tug and mooring line, 8-strand,Polyester/Dyneema SK-75, Quantum 8,
DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size			Strength ISO/BS EN919	Weight kgs per 100 mtr
	Dia.		Circ.	MBS*	
	Inch	mm	Inch	MetricTonnes	
21 18 01	1	24	3	29.0	34.2
02	1-1/8	28	3-1/2	38.6	43.3
03	1-1/4	30	3-3/4	51.7	53.4
04	1-5/16	32	4	58.5	59.1
06	1-1/2	36	4-1/2	83.0	77.1
21 18 07	1-5/8	40	5	99.8	90.3
08	1-3/4	44	5-1/2	115.0	105.0
09	2	48	6	146.0	137.0
10	2-1/8	52	6-1/2	163.0	155.0
11	2-1/4	56	7	179.0	173.0
21 18 12	2-3/8	57	7-1/8	200.0	193.0
13	2-1/2	60	7-1/2	220.0	214.0
14	2-5/8	64	8	240.0	235.0
15	2-3/4	68	8-1/2	263.0	259.0
16	3	72	9	311.0	308.0
21 18 17	3-1/4	80	10	363.0	362.0
18	3-5/8	88	11	428.0	430.0
19	4	96	12	544.0	549.0
20	4-1/4	104	13	635.0	647.0
21	4-5/8	112	14	732.0	748.0
21 18 22	5	120	15	836.0	863.0
23	5-1/4	128	16	955.0	987.0
24	5-1/2	136	17	1,073.0	1,131.0
25	6	144	18	1,186.0	1,274.0

Remark: *MBS denotes Minimum Breaking Strength

Name of Mfr.: Samson

Tug and Mooring Line, 12-strand

Blend of Polyester & Dyneema SK-75, "Quantum-12™"

Much like Quantun-8, Quantun-12 is a lightweight, high strength, floating rope that can grip a capstan or H-bitt. The DPX fiber provides superior abrasion and cut resistance, but with a higher coefficient of friction than similar high performance ropes such as AmSteel®-Blue. The 12-strand construction provides added flexibility, improved handling and easy spliceability. Green Samthane coating provides excellent visibility and additional abrasion resistance.

Standard length is 200 mtr. When ordering, please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

Applications
- Wire replacement
- Offshore messenger or pick-up line
- For use on H-bitts, capstans and winches
- General working lines
- Rig row lines

Technical Specifications
- Specific Gravity: 0.99 (Floats)
- Elastic Elongation %: At % of break strength
  10%.....0.65%, 20%.....0.75%, 30%.....0.90%
- Splicing Procedures Required:
  Eye splice - 12 strand/Class II rope
  End for end splice - 12 strand/Class II rope

How to order: CODE

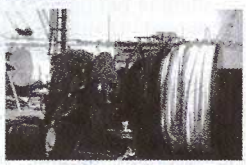
Tug and mooring line, 12-strand, Polyester/Dyneema SK-75, Quantum 12, DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size			Strength ISO/ BS EN919	Weight kgs per 100 mtr
	Dia.		Circ.	MBS* Metric	
	Inch	mm	Inch	Tonnes	
21 18 31	1	24	3	37.4	31.2
32	1-1/8	28	3-1/2	47.6	37.9
33	1-1/4	30	3-3/4	59.4	46.1
34	1-5/16	32	4	66.2	49.1
35	1-5/8	40	5	103.0	79.4
21 18 36	1-3/4	44	5-1/2	120.0	90.5
37	2	48	6	158.0	118.0
38	2-1/8	52	6-1/2	180.0	133.0
39	2-1/4	56	7	203.0	149.0
40	2-3/8	57	7-1/8	228.0	167.0
21 18 41	2-1/2	60	7-1/2	255.0	186.0
42	2-5/8	64	8	284.0	205.0
43	2-3/4	68	8-1/2	309.0	231.0
44	3	72	9	366.0	366.0
45	3-1/4	80	10	428.0	317.0

Remark: *MBS denotes Minimum Breaking Strength
Name of Mfr.: Samson

Winch Line with 100% Dyneema
"Turbo-RC™"



Turbo-RC has the firmness and low stretch of wire, yet only 1/6th the weight. The durable 'turbo' braided jacket is very cut and abrasion resistant, and protects the 12-strand single braid strength-member core.

Turbo-RC spools on winches easily, does not rust or "fish hook" like wire rope, and it floats. Turbo-RC is specially designed for improved service life in applications where creep results from long-term static loads. Both cover and core are coated with a Samthane coating.

A standard cover repair kit is available and easy to field apply. This product design requires a specialized splicing technique.

Standard length is 200 mtr. Please specify the diam and length of the rope, and one or both ends of the rope should be eye spliced.

Features
- Excellent single drum spooling capabilities
- Lightweight handling
- Superior drum compression resistance
- Retains hard round shape during use
- Protective cover with Dyneema provides superior wear characteristics

Applications
- Single or split drum winch primary mooring lines for various vessels
- Wire replacement in commercial fishing trawl systems
- "Tugger" winch lines for AHVs
- Deep water lifting projects

Technical Specifications
- Specific Gravity: 0.98
- Elastic Elongation %: At % of break strength
  10%.....0.33%, 20%.....0.49%, 30%.....0.76%
- Splicing Procedures Required: Eye splice - Product specific

How to order : CODE

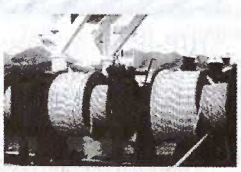
Mooring line, with 100% Dyneema, "Turbo-RC"DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size			Strength ISO/BS EN919	Weight kgs per 100 mtr
	Dia.		Circ.	MBS*	
	Inch	mm	Inch	Metric Tonnes	
21 18 51	1	24	3	44.0	37.9
52	1-1/8	28	3-1/2	56.7	47.8
53	1-1/4	30	3-3/4	68.0	59.5
54	1-3/8	34	4-1/8	83.9	73.7
55	1-1/2	36	4-1/2	95.3	88.5
21 18 56	1-5/8	40	5	113.0	99.7
57	1-3/4	44	5-1/2	138.0	127.0
58	2	48	6	166.0	147.0
59	2-1/8	52	6-1/2	177.0	164.0
60	2-1/4	56	7	204.0	187.0

Remark: *MBS denotes Minimum Breaking Strength
Name of Mfr.: Samson

Mooring Line, 12-strand
Polyester Jacketed "Turbo-EPX™"



Lightweight, high strength, round and firm winch rope.

Turbo-EPX is a unique jacketed product made with a 12-strand Dyneema SK-75 core bonded to a polyester jacket. This durable jacket provides grip and protects the strength member core from degradation. The core and jacket of Turbo-EPX work in harmony, preventing excess cover slack during mooring operations, which translates into longer service life. This construction creates a firm, round, torque-free rope, much like wire rope, but at 1/6th the weight. Turbo-EPX delivers excellent performance on all types of winches and offers much better resistance to flex and tension fatigue than wire. Coating improves service life, reduces snagging, enhances abrasion resistance, and prevents contamination.

Standard length is 200 mtr.

7TH 21

Features
- Good grip on winch drums
- Heat resistant
- Lightweight for safer and easier handling
- Superior winch performance with firm, round construction

Applications
- Wire replacement - jacketed
- Deepwater lowering and lifting lines
- Primary mooring lines
- Winch based tug working lines
- Wire replacement - tug working pendant

Technical Specifications
- Specific Gravity: 1.13
- Elastic Elongation %: At % of break strength
  10%.....0.30%, 20%.....0.50%, 30%..... 0.80%
- Splicing Procedures Required: Eye splice - Product spcific

How to order: CODE

Mooring line, 12-strand, Polyester jacketed, "Turbo-EPX" DIAM x LENGTH, WITH FURTHER DETAILS INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Unit Per C/L

CODE	Size			Strength ISO/BS EN919	Weight kgs per 100 mtr
	Dia.		Circ.	MBS* Metric	
	Inch	mm	Inch	Tonnes	
21 18 71	1	24	3	44.0	42.4
72	1-1/8	28	3-1/2	56.7	52.5
73	1-1/4	30	3-3/4	68.0	66.1
74	1-5/16	32	4	74.8	70.4
75	1-3/8	34	4-1/8	83.9	76.5
21 18 76	1-1/2	36	4-1/2	95.3	96.7
77	1-5/8	40	5	113.0	112.0
78	1-3/4	44	5-1/2	138.0	141.0
79	2	48	6	166.0	174.0
80	2-1/8	52	6-1/2	177.0	187.0
21 18 81	2-1/4	56	7	204.0	214.0

Remark: *MBS denotes Minimum Breaking Strength

Name of Mfr.: Samson

Mooring Line, Tug Line & Pendant High-Tenacity Polyester Line ,

"HTP-12™"

HTP-12 is a 12-strand construction that provides optimum performance in static bending situations, making HTP-12 ideal for use where small D/d ratios are common. Made with high-tenacity polyester fiber, HTP-12 provides good flex-fatigue resistance and shock absorption.

Standard Length is 200mtr, and also suitable as a High Performance Mooring Pendant

Applications

- Vessel Mooring
  - General Working Line
  - Pendant
- Tug
  - Mainline
  - Pendant
  - Shock Line
- Offshore
  - Lifting Slings
  - Synthetic Extension Pendants
  - Winch Line
  - Working Line

Features and Benefits
- Good flex-fatigue resistance
- Good shock absorption
- Easy to inspect
- Easy to splice

Technical Specifications·

Fiber: High-tenacity polyester
- Specific Gravity: 1.38
- Elastic Elongation Percentage: At % break strength
  10%.....1.70%, 20%.....3.40%, 30%.....5.80%

Splicing Procedures Required: Round Plait Class I

How to order: CODE

Mooring line, 12-strand, high-tenacity polyester line, "HTP-12", DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KINDS OF CERTIFICATE

Ordering Mooring Pendant, please specify; Mooring pendant, HTP-12, Type (Single leg or Strop), Diameter Size(mm), Overall Length, Both ends Fabrication (eg. 2mtr soft eye on each end), Minimum Breaking Strength, WITH KINDS OF REQUIRED CERTIFICATE

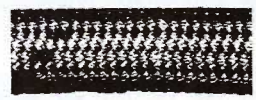
Unit Per C/L

CODE	Size			ISO 2307 Strength* MBS/Meetric Tonnes	Weight kgs/100m
	Dia.		Circ. Inch		
	Inch	mm			
21 18 82	1-1/2	36	4-1/2	41.6	107
83	1-5/8	40	5	51.3	138
84	1-3/4	44	5-1/2	61.7	165
85	1-7/8	45	5-5/8	65.8	176
86	2	48	6	75.8	217
21 18 87	2-1/8	52	6-1/2	82.1	237
88	2-1/4	56	7	95.3	290
89	2-3/8	57	7-1/8	105	317
90	2-1/2	60	7-1/2	110	344
92	2-5/8	64	8	121	384
21 18 93	2-3/4	68	8-1/2	134	424
94	2-7/8	70	8-5/8	144	464
95	3	72	9	151	491
96	3-1/8	76	9-1/2	164	545
97	3-3/16	78	9-9/16	180	612
21 18 98	3-7/16	84	10-5/16	195	665

Remark: *ISO 2307:1995 strength speicfications are for unspliced ropes.

Name of Mfr.: Samson

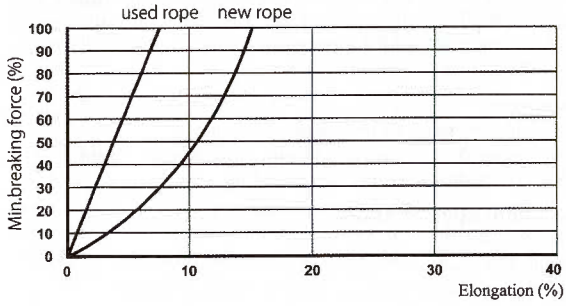
Tug and Mooring Line, StrongLine™



STRONGLINE rope has a construction consisting of a parallel core with a braided protective cover. The parallel core results in a very high strength compared to the diameter and material. The protective cover ensures a long life-time of the rope due to its excellent resistance against abrasion. The main application of this rope will be towing and mooring.

Specifications

Specific Gravity	1.38	Construction	Parallel cores with jacket
Material	Polyester		
UV-resistance	Excellent	TCLL Value	70%
Abrasion Resistance	Excellent	Colour	White
Chemical Resistance	Good	Maker Yarn	Orange
Elongation	See graph	Water-absorption	< 1%
Melting Point	Approx. 265°C		



Unit Per C/L

CODE	Diam mm	M.B.F kN	Weight kgs/100 mtr
21 16 29	32	353	76.5
30	36	440	95
43	40	533	131
44	44	638	147
45	48	750	175
21 16 46	52	870	189
47	56	995	227
48	60	1,130	256
49	64	1,270	284
50	68	1,420	307
21 16 70	72	1,570	367
84	76	1,730	390
21 17 43	80	1,890	417
44	88	2,250	527
45	92	2,450	560
21 17 46	96	2,630	590
47	100	2,840	630
48	104	3,090	662
49	112	3,650	778

Name of Mfr.: Lankhorst Ropes

Primary Mooring Line for FSRU

EverSteel™-X, 100% Dyneema®

EverSteel-X is the first line to be designed specifically for FSRU (Floating Storage Regasification Unit) mooring applications, using Dyneema Max DM20 technology to achieve superior creep performance and flex-fatigue resistance. It is a torque-free 12-strand single braid that is optimized in strength-to-size and strength-to-weight ratios. Size-for-size, it has the same strength as steel, but it's so light, it floats.

With the addition of a Samson proprietary coating, EverSteel-X is designed for long-term, continuous load conditions, and will last for long-term FSRU mooring applications. These features point to EverSteel-X as the best choice for FSRU mooring.

Features

- Superior creep performance
- Size-for-size as strong as wire
- Durable and lightweight
- Made with Dyneema® DM20 fiber
- Flex-fatigue resistant
- Floats in water

Application

- Long-term primary mooring line

Technical Specifications

- Specific Gravity: 0.98
- Elastic Elongation %: At % of break strength
  10%.....0.30%, 20%..... 0.55%, 30% 0.80%

Splicing Procedures Required: 12-strand/Class II rope

How to order: CODE

Mooring rope, EverSteel-X, 12-strand, Dyneema Max. DM-20, for FSRU mooring application, DIAM x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KIND OF REQUIRED CERTIFICATE

Unit Per C/L

CODE	Circ. Inch	Size		Strength ISO 2307 Metric Tonnes	Weight kgs/100 mtr
		Inch	mm		
21 18 26	5	1-5/8	40	128	92.4
27	5-1/4	1-11/16	42	140	97.5
28	5-1/2	1-3/4	44	157	107
29	6	2	48	175	121
30	7-1/2	2-1/2	60	277	193

Name of Mfr.: Samson

Mooring Tail (Forerunner)

(Forerunner, Pendants)

Reasons for Using Mooring Tails

When using mooring ropes, especially for Tanker vessels or Large vessels, there is a general desirability for the additional elasticity provided by mooring tails. The additional elasticity reduces the loads induced in mooring wires or HMPE lines under dynamic conditions by permitting the ship to respond more favorably to various combinations of wind, wave, and current forces, as well as to ships passing by in close proximity. Tails also tend to distribute the loadings more evenly in the mooring lines in the same service.

The additional elongation of the mooring line system permitted by the tail reduces the risk associated with poor line tending and the frequency and precision of line tending, particularly in berths where large tidal variations in high loading- unloading rates. Tails are also valuable at berths requiring short breast or spring leads as they provide the same effect as long all-wire line systems. And lastly, they facilitate the handling of wire lines by boatman and mooring gangs.

There are two configurations of tail ropes commonly used on board

Single-Leg

Standard length is 11 mtr overall length with a 2 mtr soft eye for the outboard end and a 1 mtr soft eye for the inboard end. 22mtr may also be requested depending on extreme berth conditions.

Grommet(Strop)

Standard length is 11 mtr overall length with 2 mtr and 1 mtr soft eyes formed by seizings. The body of the strop is also seized together 3 mtr from each eye lashing. 22mtr may also be requested depending on extreme berth conditions.

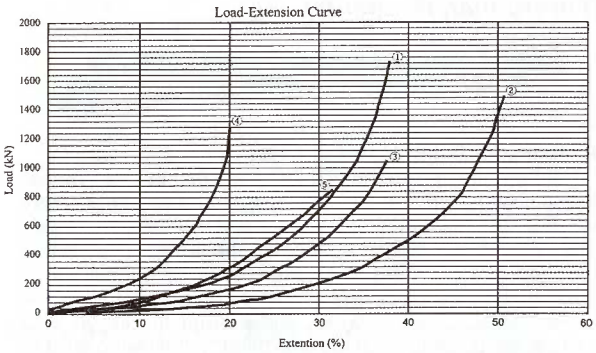
When ordering, please specify the following:

(A) Material of rope (PP/PE mixed Line, Nylon, Polyester, etc.)
(B) Construction of rope (8-strand/12-strand/double braided etc.)
(C) Diam or Circ of the ropes
(D) Length of the ropes and the desired eye sizes on each end.
(E) Required Breaking Strength based on below criteria according to OCIMF Guidelines.
- Synthetic Tails should have a breaking strength 25% higher than that of the mooring line
- Polyamide(Nylon) tails should have a breaking strength 37% higher than that of the mooring line

How to order: 21 - 11 - 37

Mooring tail, Material x Construction x Diam or Circ x Length x Eye Overall Size

Load Elongation Curve (60m/m)



① High strength Nylon [12-strand Dia, 85mm]
② High strength Nylon [8-strand Dia, 85mm]
③ Polypropylene/Polyester composite[8-strand Dia, 85mm]
④ Polypropylene/Polyester composite[12-strand Dia, 85mm]
⑤ Polyester [8-strand Dia, 85mm]

Mooring Pendant

MP-1™

MP-1 is a non-rotational rope with excellent abrasion and wear resistance for use as a pendant in vessel mooring applications. It has been proven to provide superior abrasion resistance and strength retention with extensive use.

MP-1 utilizes a polyester/polyolefin blend that provides a 10% lower linear density (lbs./ft.) compared to traditional 100% polyester fiber pendant constructions. This decreased weight makes for easier handling by crew members in mooring situations.

Features:
- 10% lighter than 100% polyester ropes
- High strength, • Low elongation, • Hockle-resistant
- Non-rotational, • Durable, • Flexible

Technical Specifications
Specific Gravity: 1.2
Elastic Elongation %: At % of break strength
10%.....1.30%, 20%.....1.95%, 30%.....3.05%

Splicing Procedures Required:
Eye splice – 8 strand/Class I rope
End for end splice – 8 strand/Class I rope

How to order: 21 - 11 - 60

Mooring pendant, MP-1, with the following information
Type : Single leg or Grommet Strop
Size : 72 mm (3 inch circumference)
Overall Length : 11 mtrs (36 feet)
Fabrication : 2 mtr (6.5 feet) soft eye one end, and a 1 mtr (3.2 feet) soft eye the other end
Minimum Strength : 104 tons
SPECIFY CLASS CERTIFICATION IF REQUIRED

Unit Per C/L

Circ. Inch	Size Diam.		Strength ISO 2307 Metric Tonnes	Weight kgs/100 mtr
	Inch	mm		
7	2-1/4	56	61.7	177.0
7-1/2	2-1/2	60	75.8	210.0
8	2-5/8	64	83.9	231.0
8-1/2	2-3/4	68	93.4	256.0
9	3	72	104	293.0
9-1/2	3-1/8	76	116	321.0
10-1/8	3-3/8	82	129	362.0
10-1/2	3-1/2	86	144	406.0
11-1/4	3-3/4	92	160	464.0
12	4	96	174	507.0
12-1/2	4-1/8	100	190	565.0
13-1/2	4-1/2	110	216	661.0

Name of Mfr. : Samson
*ISO2307 strength specifications are for unspliced rope.

8-strand Mooring Tails

Euroflex®

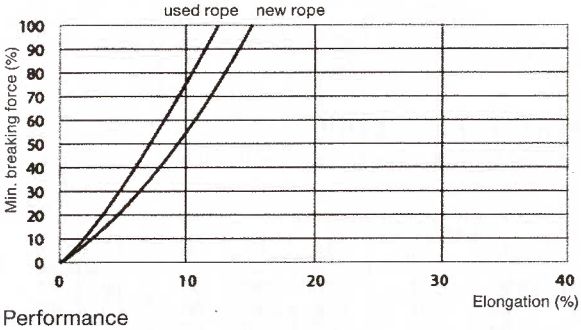
The Euroflex® mooring tails surpass the nylon tails in quality, the energy absorption is better, the rope remains elastic for a longer time and the rope does not lose a large portion of its dry MBF(Minimum Breaking Force) when it is wet. As the strength is higher than that of nylon, a smaller diameter of rope can be used, providing better handling. Made of polyester and polypropylene composite yarns. Extreme high fatigue (T.C.L.L.) resistance. The standard effective working length is 11 mtr, with 2 protected eyes of 2.0 mtr and 1.0 mtr respectively. But please specify sizes when different size from the standard is required.

Specifications

Specific Gravity	1.14
UV-resistance	Good
Abrasion Resistance	Very good
Chemical Resistance	Good
Elongation	See graph

(to be continued)

Melting Point	165°C/265°C
Construction	8-strand plaited
TCLL Value	79.6%
Colour	White
Marker Yarn	Yellow
Water absorption	< 0.5%



Performance
Effective Working Length: 11m

Dimeter mm	MBF kN	Weight 11 mtr/kgs	Dimeter mm	MBF kN	Weight 11 mtr/kgs
48	583	22.6	72	1,270	53.7
56	784	32.5	76	1,410	63.4
60	896	37.4	80	1,550	70.4
62	955	40.1	84	1,710	77.6
64	1,010	42.5	88	1,870	85.1
68	1,140	48.0	96	2,210	101.2

Effective Working Length

Dimeter mm	MBF kN	Weight per 22 mtr/kgs	Dimeter mm	MBF kN	Weight per 22 mtr/kgs
60	896	61.6	88	1,870	137.2
72	1,270	88.5	96	2,210	163.0
80	1,550	113.4			

Remark: Euroflex® tails comply with the OCIMF recommendations to have a MBF of 125% related to the steel wire rope mooring line. This because Euroflex® Mooring Tails have equal breaking strength under wet and dry conditions.

Name of Mfr.: Lankhorst Ropes

How to order: 21 - 11 - 39

Mooring tail, Lankhorst, 8-strand, DIAM x FINISHED LENGTH, EYE SPLICING SIZE

Synthetic Emergency Tow-Off Pendant Vulcan

Vulcan is Samson's patented synthetic emergency tow-off pendant (ETOP). A core dependant, jacketed rope made of 100% Technora®, enhanced with Samson's proprietary heat-resistant coating on the core. Samson's proprietary Samthane coating on the jacket provides protection against abrasion, ingress of foreign material, and damaged caused by exposure to ultra violet light. Vulcan is 60 to 70% lighter than the wire rope it replaces and prior to heat exposure its new rope breaking strength meets or exceeds the industry standards. ETOPs are traditionally an application for steel wire rope. These fire wires have historically been the leading cause of mooring related injuries due to the weight of wire and dangerous fish-hooks. The risk of injury is reduced significantly with the use of Vulcan and allows for faster, easier handling. Vulcan is only available in orange.

Diameter of Vulcan Rope will be determined by the DWT of the vessel. Please see the table below and select the rope size when ordering.

Features and Benefits

- Heat and flame resistant
- 60 to 70% (2/3rd) lighter than wire
- Abrasion resistant, • Jacketed load-bearing core
- Easy to adjust, • No lubrication necessary
- Easily stored when not in use, •Specific Gravity: 1.39
- Lightweight faster deployment and retrieval
- Reduced mooring –related injuries and claims

How to order: 21 - 18 - 99

Emergency Tow-Off Pendant, "Vulcan", DIAM(SEE BELOW TABLE) x LENGTH, WITH FURTHER SPECIFICATION INCLUDING END PREPARATION & KIND OF REQUIRED CERTIFICATE

Heated Rope Strengths

Vessel Size (DWT)	Strength Required MBS*	Unit Length	Rope Dia	Weight 100 mtr	Weight per unit	ISO/ BS MBS***	ISO/BS MBS*** Afer Heat Exposure
	(ton)	(m)	(mm)	(kgs)	(kgs)	(ton)	(ton)
<20,000	30	25	30	91.7	23	61.7	35.2
20,000-100,000	55	45	42	159	72	95.7	62.1
100,000-300,000	100	60	56	250	150	149	112
300,000+	120	70	60	286	200	170	136

Remark: * per ISGOTT table *** unspliced Strength
Name of Mfr.: Samson

Chafe Protections for Mooring Line

Chafe protection maximizes the service life of the ropes, protecting ropes from abrasion and cutting damage. All chafe options can be factory-installed on your ropes prior to shipment from the mfr's plants, or are available in bulk for field installation by certified personnel.

When replacing wire ropes with synthetics, it is important to prepare or repair the surfaces of deck equipment damaged by the wire rope. Chocks, fairleads, bollards, bitts or other hardware contacting the rope need to be smooth and free of rust to ensure the synthetic ropes achieve longest service life possible.

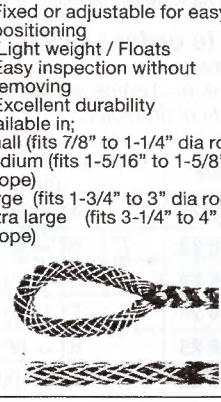
The followings are typical examples of Chafe protections:

Dynalene

Dynalene is a unique product that protects the strength member from abrasion, yet allows the rope to be easily inspected for both internal and external fiber wear. Braided from cut and abrasion resistant Dyneema fiber, Dynalene is permanently spliced over the rope, and acts as a sacrificial cover protecting the rope from abrasion and wear in mooring and offshore applications.
Dynalene is fully repairable in the field, does not absorb water, and floats. It is easy to install anywhere on the rope.

* Fixed or adjustable for easy positioning
* Light weight / Floats
* Easy inspection without removing
* Excellent durability

Available in;
Small (fits 7/8" to 1-1/4" dia rope)
Medium (fits 1-5/16" to 1-5/8" dia rope)
Large (fits 1-3/4" to 3" dia rope)
Extra large (fits 3-1/4" to 4" dia rope)



(to be continued)

DC Gard

DC Gard is a tightly braided cover construction of Dyneema fiber that is spliced onto the strength member to protect it from wear and abrasion in specific areas. Designed for use in applications where frequent handling and use put a premium on rope protection and resistance to snagging, DC Gard provides the maximum protection for synthetic fiber ropes.

* Fixed or adjustable for easy positioning
* Light and flexible / Floats
* Can be removed for rope inspection
* Cut resistant
* Superior durability

Available in ;
Size C: (fits 1" to 1-1/4" ropes)
Size D: (fits 1-5/16" to 1-3/4" ropes)
Size E: (fits 1-7/8" to 2-1/2" ropes)
Size F:(fits 2-5/8" to 3-1/8" ropes)

DC Moor-Gard

With a similar Dyneema fiber cover construction as DC Gard, DC Moor-Gard is a tubular sleeve solution that provides sliding protection from wear and abrasion. Standard length is 10' and the ends are coated with urethane.

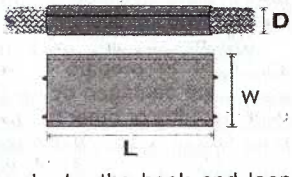
* Fixed or adjustable for easy positioning
* Light an flexible / Floats
* Easily removed for rope inspection
* Cut resistant
* Superior durability

Size E (fits 1" to 1-3/4" ropes)
Size F (fits 1-7/8" to 2-14" ropes)
Size G (fits 2-3/8" to 3-1/4" ropes)

How to order: 21 - 18 - 91

Chafe protection, Dyneema fiber, TYPE OF CHAFE PROTECTION (Dynalene, DC Gard, or DC Moor-Gard) FIXED OR ADJUSTABLE TYPE, SIZE OF ROPE TO BE INSTALLED, Length of coverage desired.

Hawser Protectors



Designed to cover the synthetic hawser to protect from friction on the surface of steel chock, enable hawser to make long-term use. Easily attached and removed around hawser and can be fixed around chocks by the hook and loop fastener. Normally the width will be determined by rope diameter and please specify the length when ordering.

Properties: Melting Point, Polyester, 240°C

How to order : CODE

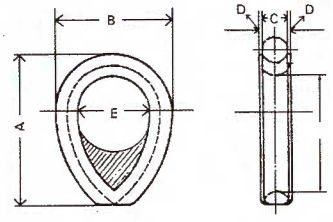
Please specify;
- The product name of Hawser rope/Structure/Diameter
- Length of protector

Unit Per Pc.

CODE	Hawser rope diameter (mm)	Width (mm)
21 46 21	41 ~ 50	250
21 46 22	51 ~ 60	300
21 46 23	61 ~ 70	350
21 46 24	71 ~ 80	400
21 46 25	81 ~ 90	450
21 46 26	91 ~ 100	500

Hawser Thimbles for Mooring

Reinforced with Triangular Plate



How to order: CODE

Hawser thimble, ungalvanized, heavy duty, for rope diam mm with triangle plate

Unit Per Pc.

CODE	Diam. of rope	A	B	C	D	E
21 46 01	50	240	180	50	10	115
02	55	260	200	55	10	125
03	60	280	220	60	12	135
04	65	300	240	65	13	145
05	70	340	270	70	14	165
21 46 06	75	360	280	75	16	165
07	80	380	300	80	16	175
08	90	400	320	90	16	190
09	100	400	320	100	16	200

Mooring Links and Shackles

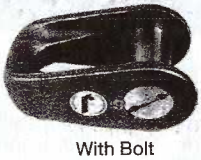
Specially designed to connect the forerunner of a synthetic rope with a wire rope when mooring. These links are important in preventing any friction or coiling in the connection between the wire rope and the mooring tail and they make the mooring process a great deal easier.

These mooring links cost less because thimbles or conventional shackles are not required. They are lightweight, easy to handle, and safe because they are easier to connect and disconnect.

TIMM Boss Link - Mooring Shackles

A stainless steel mooring link (anti-corrosive), used as connection between steel wire ropes or HMPE fiber ropes and mooring tails. Can be delivered with or without roller. The shackles are proof-tested under the control of DNV GL and carry DNV GL type approval.

Recommended working load limit: 50% of the specified MBL
Normal working load: 20% of the specified MBL



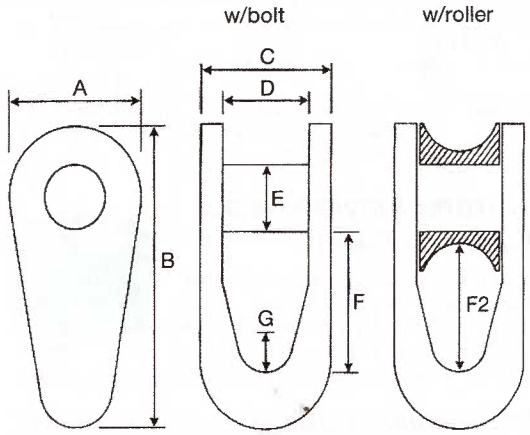
With Bolt

With Roller

Suitable Rope Size

Timm Boss Link 120T/140T
for mooring tail 6-10" circ. 48mm – 80mm diameter

Timm Boss Link 165T/180T/250T
for mooring tail 10-14" circ. 80mm – 112 mm diameter



With Bolt

Unit Per Pc.

CODE	21 11 41	21 11 45	21 11 42	21 11 46	21 11 47
Model	120 T	140 T	165 T	180 T	250 T
Size mm					
A	134	134	150	150	150
B	283	283	325	325	325
C	127	127	165	165	165
D	100	100	120	120	120
E	64	64	75	75	75
F	134	134	150	150	150
G	32	32	34	34	34
MBL Ton	120	140	165	180	250
ABL Ton	148.1	148.1	187.1	187.1	269
Weight	11.6	11.6	19.6	19.6	19.6

Name of Mfr.: Wilhelmsen Ships Service

With Roller

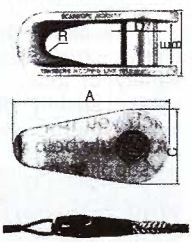
Unit Per Pc.

CODE	21 11 43	21 11 48	21 11 44	21 11 49	21 11 50
Model	120 T	140 T	165 T	180 T	250 T
Size mm					
A	134	134	150	150	150
B	283	283	325	325	325
C	127	127	165	165	165
D	100	100	120	120	120
E	64	64	75	75	75
F2	124	124	138	138	138
G	32	32	34	34	34
MBL Ton	120	140	165	180	250
ABL Ton	148.1	148.1	187.1	187.1	269
Weight	15.4	15.4	24.8	24.8	24.8

Name of Mfr.: Wilhelmsen Ships Service

Tonsberg Mooring Links

Galvanized steel mooring link of compact design typically utilised as connection between wire rope and fibre forerunner. Stocked in three sizes 90T, 120T and 180T. 300T can be supplied on special request. Steel wire rope around the body - fibre rope around the bolt. Each link is individually proof-tested and certified by DNV.



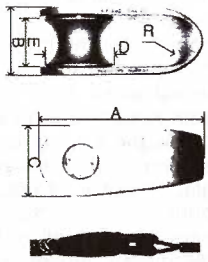
Unit Per Pc.

CODE	Type	Dimensions mm A	B	C	D	E	R	Nom. B/S tons	Wgt. Kgs	Applicable forerunner Size cir. inch
21 11 51	90T	285	115	136	65	75	22	90	11.2	6-9
52	120T	324	142	150	75	90	28	120	17.0	9-11
53	180T	350	184	160	85	120	30	180	24,5	11-15

Name of Mfr.: Eurorope Marine A/S

Mandal Fairlead Shackles

Stainless steel mooring shackle with sleek sharp design to pass easily through fairleads. Available in two sizes 90M and 120M. Steel wire rope around the sheave - fibre rope around the body. Each shackle is proof tested and certified by DNV.



Unit Per Pc.

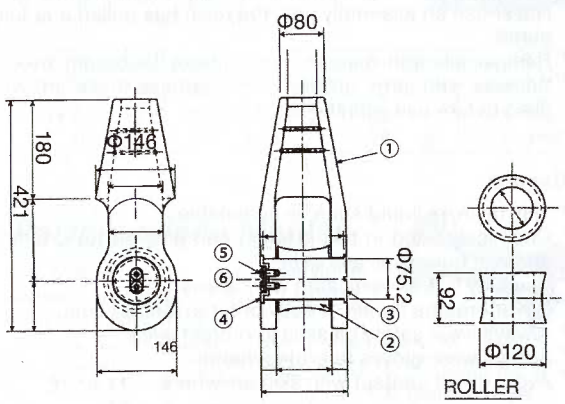
CODE	Type	Dimensions mm A	B	C	D	E	R	Nom. B/S tons	Wgt. Kgs	Applicable forerunner Size cir. inch
21 11 56	90M	255	67	120	65	67	34	90	7.8	6-9
57	120M	300	121	130	82	90	120	120	13.3	9-11

Name of Mfr. : Eurorope Marine A/S

Mooring Wire Socket, Roller Pin Type

Quite new style of mooring shackle as substitute for traditional connection of a synthetic tail rope with a wire rope when mooring. Attaching this new type Roller Socket at the end of mooring wire rope you can connect directly to mooring tail rope (Forerunner) by its unique construction combined conventional mooring shackles and wire rope socket. You don't need to buy standard mooring shackle anymore if this new style roller shackle is attached to mooring wire.

Roller shackle is made from carbon and alloy steel with pin and roller which are detachable for connecting tail rope. Normally the roller shackle will be supplied pre-attached to mooring wire rope by factory, but it is possible to attach by ship's workers using a unique socketing media "Wirelock".



21 11 71	Mooring wire socket, roller pin type 0-42 carbon and alloy steel for 42 mm dia wire rope	Pc.

Socketing Resin "Wirelock"

The suitable resin for socketing wire rope terminations. This wire rope assemblies are 100% efficient when used with steel wire rope, galvanized wire ropes.

Pass the wire rope through the end hole of roller socket, and measure the rope ends to be socketed. The rope end should be seized at the sufficient length so that the ends of the unlaid wires (from the strands) will be at the top of the socket basket. The wire rope is secured in a vice directly below the seizing to allow the strands to be unlaid to the seizing. Plasticine or clay based putty, i.e., window or glazing putty, is required to seal the base of the socket prior to pouring, thus, preventing resin leakage which may cause voids. All of the liquid resin should be placed in the mixing container and then all of the power added to it (or vice versa) before mixing. Always mix all of the resin with all of the powder. Upon mixing, the resin will turn to a greenish turquoise color. If the mix remains a pale straw yellow color, do not use the kit. Once the resin is mixed, it should be poured immediately into the socket to ensure good penetration. The rope can be put in service or proof loaded one hour after the material in the socket has gelled. Whenever possible, the assembly should be proof loaded.

Warning

* Incorrect use of the socketing resin can result in an unsafe termination which may lead to serious injury, death, or property damage.
* Do not use the resin with stainless steel rope in salt water environment applications. Consult with the manufacturer.
* Use only soft annealed iron wire for seizing.
* Do not use any other wire (copper, brass, stainless, etc.) for seizing.
* Never use an assembly until the resin has gelled and fully cured.
* Remove any non-metallic coating from the broom area.
* Sockets with large grooves need to have those grooves filled before use with the resin.

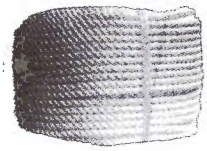
Caution

* This resin, in liquid state, is flammable.
* Chemicals used in this product can give off toxic fumes and can burn eyes and skin.
* Use only in well-ventilated work areas.
* Never breathe fumes directly or for extended time.
* Always wear safety glasses to protect eyes.
* Always wear gloves to protect hands.
* Avoid direct contact with skin anywhere.

CODE	Contents	Unit
21 11 75	250 cc	Set
76	500 cc	"
77	1000 cc	"

Approvals: Lloyds Register of Shipping, Det Norske Veritas, United States Coast Guard, Registro Italiano Navale, Germanischer Lloyd

3-Strand Vinylon Rope (Kuremona Rope)



Made from a compound of vinyl chloride and vinylidene from lime stone. Spun into cotton-like soft thread and stranded into rope. Easy-to-tighten due to its flexibility and also easy to handle.

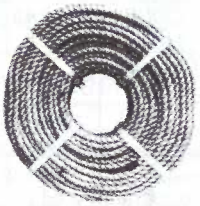
How to order: CODE

Vinylon rope, 3-strand, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms					220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil	Breaking Strength kN	CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 12 01	1	8	7.1	6.86	**21 12 21**	1	8	7.8
02	1-1/8	9	9.6	8.83	**22**	1-1/8	9	10.6
03	1-1/4	10	11.6	11.8	**23**	1-1/4	10	12.8
04	1-1/2	12	15.6	14.7	**24**	1-1/2	12	17.2
05	1-3/4	14	21.6	21.6	**25**	1-3/4	14	23.8
21 12 06	2	16	29.0	25.5	**21 12 26**	2	16	31.9
07	2-1/4	18	36.0	32.4	**27**	2-1/4	18	39.6
08	2-1/2	20	47.6	37.3	**28**	2-1/2	20	52.4
09	2-3/4	22	58.0	47.1	**29**	2-3/4	22	63.8
10	3	24	69.0	54.9	**30**	3	24	75.9
21 12 11	3-1/4	26	79.8	62.8	**21 12 31**	3-1/4	26	87.8
12	3-1/2	28	93.4	72.6	**32**	3-1/2	28	102.7
13	3-3/4	30	106.6	80.4	**33**	3-3/4	30	117.3
14	4	32	122.2	93.2	**34**	4	32	134.4

3-Strand Tarred Hemp Rope



For general use on board a ship. All ropes are of a 3 strand lay and supplied in 200 mtr/110 fathom length coils.

How to order: CODE

Hemp rope, 3-strand tarred, DIAM x LENGTH

Unit Per C/L

200 mtrs/110 fms				220 mtrs/120 fms			
CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil	CODE	Size Cir. inch	Size Diam. mm	Weight kgs. coil
21 12 51	3/4	6	6.5	**21 12 55**	1-1/2	12	25.6
52	1	8	11.3	**56**	1-3/4	14	34.8
53	1-1/8	9	14.4	**57**	2	16	45.5
54	1-1/4	10	17.8	**58**	2-1/4	18	57.6

3-Strand Heaving Lines

Specially designed as a heaving line which is easy to handle for a variety of jobs. When ordering, please specify the rope material which you require, as listed in the code table below. All heaving lines are supplied in 200 mtr/110 fathom length coils.

How to order: CODE

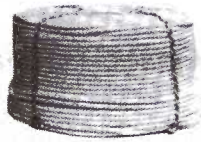
Heaving line, 3-strand, MATERIAL, DIAM x LENGTH

Unit Per C/L

Polypropylene Heaving			Manila Heaving			Cotton Heaving		
CODE	Size		CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 12 71	1	8	**21 12 76**	1	8	**21 12 81**	1	8
72	1-1/8	9	**77**	1-1/8	9	**82**	1-1/8	9
73	1-1/4	10	**78**	1-1/4	10	**83**	1-1/4	10

Vinylon Heaving			Nylon Heaving		
CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 12 86	1	8	**21 12 91**	1	8
87	1-1/8	9	**92**	1-1/8	9
88	1-1/4	10	**93**	1-1/4	10

Signal Halyards (Flag Line)



These halyards are braided for easy handling. When ordering, select from the following 4 kinds of materials. Furnished in lengths of 300 meters.

How to order: CODE

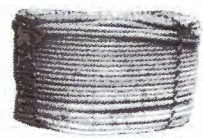
Signal halyard (flag line), MATERIAL, DIAM x LENGTH

Unit Per C/L

Polypropylene			Cotton		
CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 01	3/4	6	**21 13 06**	3/4	6
02	1	8	**07**	1	8
03	1-1/8	9	**08**	1-1/8	9

Vinylon			Nylon		
CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 11	3/4	6	**21 13 16**	3/4	6
12	1	8	**17**	1	8
13	1-1/8	9	**18**	1-1/8	9

Log Lines



All braided, non-kinkable lines for logging purposes. All ropes are 300 meters in length.

Please specify the rope material you require from the coded table below.

How to order: CODE

Log line, MATERIAL, DIAM x LENGTH

Unit Per C/L

Polypropylene			Cotton		
CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 21	3/4	6	**21 13 26**	3/4	6
22	1	8	**27**	1	8
23	1-1/8	9	**28**	1-1/8	9

Vinylon			Nylon		
CODE	Size		CODE	Size	
	Cir. inch	Diam. mm		Cir. inch	Diam. mm
21 13 31	3/4	6	**21 13 36**	3/4	6
32	1	8	**37**	1	8
33	1-1/8	9	**38**	1-1/8	9

3-Strand Polyethylene Tiger Rope

Made of polyethylene, braided with two yellow coloured and one black coloured strand. Suitable to indicate the boundaries of a dangerous zone. Furnished in 200 mtr length coils.

How to order: CODE

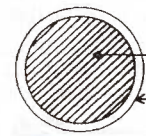
Tiger rope, 3-strand, polyethylene, black/yellow, DIAM x LENGTH

Unit Per C/L

CODE	Size		Weight kgs. coil	Breaking Strength (kN)
	Cir. inch	Diam. mm		
21 13 51	3/4	6	3.5	3.92
52	1	8	6.4	7.85
53	1-1/4	10	10.0	10.8
54	1-1/2	12	14.8	12.7
55	1-3/4	14	19.8	16.7
21 13 56	2	16	25.0	21.6
57	2-1/4	18	32.0	27.5
58	2-1/2	20	40.0	35.3
59	2-3/4	22	48.0	43.1
60	3	24	58.0	50.0

Man Rope

Used as hand rail rope for a gang way or wharf ladder, made of vinylon rope strand with vinyl chloride coating.



Strand of vinylon rope

Vinyl chloride coating, 2mm (thickness) white color

Finished diam.	Weight per mtr
22 mm	1 kgs

How to make rope ends:

Diamond Preparation

Small Eye

How to order: 21-13-65

Man rope, vinylon with vinyl chloride coating, 22 mm diam x FINISHED LENGTH (Mtr)

Tarred Marline

Sturdily woven, thoroughly tarred, waterproof, polished jute. When ordering, please specify if the marline is required in ball or hank form.

Unit Per C/L

CODE	Diam. mm	Weight kgs	Unit	CODE	Diam. mm	Weight kgs	Unit
21 14 01	3	0.3	Hank	**21 14 03**	4	0.3	Hank
02	3	2.5	Ball	**04**	4	2.5	Ball

Polypropylene Marline

Made of polypropylene, waterproof thread. Easy for seizing. Available only in hank.

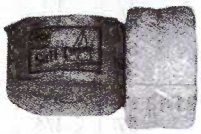
CODE	Diam.	Weight and Unit
21 14 11	3 mm	100 gram in Hank
12	4 mm	

Seizing Twine

Made of manila or polypropylene. Both are supplied in 2.5 kg balls. When ordering, please specify whether polypropylene or manila twine will be required.

CODE	Material	Diam.	Unit
21 14 21	Polypropylene	3 mm	2.5 kgs. Ball
22	Manila	3 mm	2.5 kgs .Ball

Sail Twine

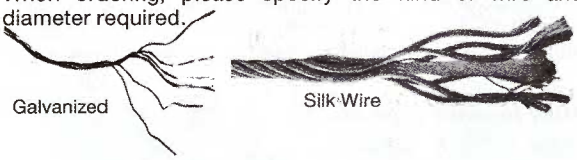


All purpose, uniform, strong woven, cotton or vinylon twine. Please specify whether you require waxed or unwaxed twine when ordering.

Unwaxed (Seaming Twine) Cotton			Waxed (Roping Twine) Vinylon		
CODE	Weight	Unit	CODE	Weight	Unit
21 14 31	225 grms	Hank	**21 14 33**	225 grms	Hank
32	225 grms	Ball	**34**	225 grms	Ball

Wire Rope – Small Diameter for Seizing

For seizing large ropes or riggings. Two kinds of wire are shown here: an ordinary galvanized type and a spring type which returns to its original shape after removing. When ordering, please specify the kind of wire and diameter required.



Unit Per Kgs — Unit Per Mtr

Galvanized				Silk Wire			
CODE	Construc-tion	Diam. mm	STD. Coil	CODE	Construc-tion	Diam. mm	STD Coil
21 14 51	7-strand	2	5 kgs	**21 14 55**	6 × 7	2	100 mtrs
52	"	3	"	**56**	6 × 7	3	"
53	"	4	"	**57**	6 × 19	4	"
				58	6 × 19	5	"

Seizing Wire

Galvanized or ungalvanized wire for seizing large rope ends or riggings.

Unit Per Kgs.

Galvanized Wire		Kgs Per 1,000 m	Ungalvanized Wire	
CODE	Diam mm		CODE	Diam mm
67 11 01	0.23	0.326	**67 11 51**	0.23
02	0.26	0.417	**52**	0.26
03	0.29	0.518	**53**	0.29
04	0.32	0.631	**54**	0.32
05	0.35	0.755	**55**	0.35
67 11 06	0.40	0.987	**67 11 56**	0.40
07	0.45	1.25	**57**	0.45
08	0.50	1.54	**58**	0.50
09	0.55	1.87	**59**	0.55
10	0.60	2.22	**60**	0.60
67 11 11	0.65	2.60	**67 11 61**	0.65
12	0.70	3.02	**62**	0.70
13	0.80	3.95	**63**	0.80
14	0.90	4.99	**64**	0.90
15	1.0	6.17	**65**	1.0

(to be continued)

Unit Per Kgs.

Galvanized Wire		Kgs Per 1,000 m	Ungalvanized Wire	
CODE	Diam mm		CODE	Diam mm
67 11 16	1.2	8.88	**67 11 66**	1.2
17	1.4	12.1	**67**	1.4
18	1.6	15.8	**68**	1.6
19	1.8	20.0	**69**	1.8
20	2.0	24.7	**70**	2.0
67 11 21	2.3	32.6	**67 11 71**	2.3
22	2.6	41.7	**72**	2.6
23	2.9	51.8	**73**	2.9
24	3.2	63.1	**74**	3.2
25	3.5	75.5	**75**	3.5
67 11 26	4.0	98.7	**67 11 76**	4.0
27	4.5	125	**77**	4.5
28	5.0	154	**78**	5.0
29	5.5	187	**79**	5.5
30	6.0	222	**80**	6.0
67 11 31	6.5	260	**67 11 81**	6.5

Elastic Trapeze Cord

Elastic cord similar to rubber band but more durable and stronger. Use for fastening the items very easily. Attached with hook and clamp.

21 14 61	Elastic Trapeze Cord, 10 mm dia with hook and clamp	MTR
21 14 62	Hooks for Elastic Trapeze Cord	Pc.
21 14 63	Rope Clamps for Elastic Trapeze Cord	Pc.

Marine Oakum

Available spun or unspun. The primary use of marine oakum is for caulking the seams of wooden vessels and the wooden decks of all types of marine structures. Both spun and unspun oakum are waterproof and essential for all marine work.

Unit Per Kgs

CODE	Description
21 14 71	Spun marine oakum
72	Unspum marine oakum

Cordage

Name	Descriptions of Cordage
Point Line	Small rope used for reef points. Usually about inch to 1-3/4 inch in size. Generally referred to by the number of threads, 15 to 21, used in making it.
Ratlines	Small ropes stretched horizontally between shrouds to form foot and hand holds when going aloft. Sized to forward and after shrouds, clove hitched around intermediate shrouds.
Houseline	Soft laid three yarn stuff used for general purpose. May be tarred or untarred.
Boat Lacing	Line by which a boat's canvas cover, or other canvas gear, is secured in place.
Marline	Superior kind of spunyarn laid up left-handed.
Spunyarn	Spunyarn is a small stuff and is the cheapest and most commonly used for seizing, service, etc., where neatness is not important. It is laid up loosely, is left-handed, 2, 3 or 4 stranded, and is tarred.

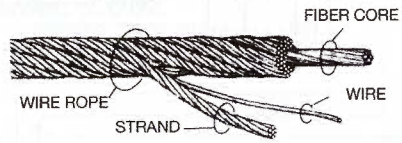
Specifications of Cordage

Name	Material	Number of Strand	Number of Thread & Diameter	
Point Line	Manila	3	12 thread 15 21	9 mm 10 12
Ratlines	Tarred Hemp of Manila	3	6 thread 9 12	6 mm 8 9
Houseline	Manila	3		5 mm 6
Sash Cord	Cotton	Senette Lay		6 mm 8 9
Wrapping Twine	Jute & Hemp	Spun	1.5 - 2.0 mm	
Boat Lacing	Manila	3	6 thread	6 mm
Manila	Hemp	-	3 lay 2	2 mm 3 4
Spunyarn	Jute	Spun	2 lay	4 mm

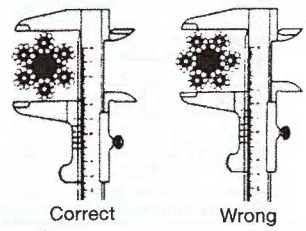
Steel Wire Rope

Wire rope construction is indicated primarily by the number of strands and the number of wires in each strand. For instance a 6 x 24 steel wire rope is composed of 6 main strands and each strand has 24 main wires. These numbers are modified as follows:

1) The arrangement of wires in the strand, i.e. Filler, Seale, Warrington, etc.
2) Lay of stranding, i.e. regular, lang, right, left, etc.
3) Outer covering, i.e. galvanized, ungalvanized, etc.
4) Type of center, i.e. hemp core, I.W.R.C. (Independent Wire Rope Core) and strand.



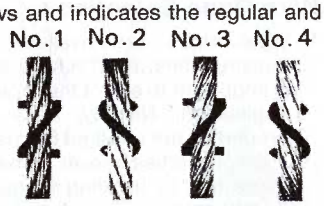
Gauging Wire Rope



The diameter of a wire rope is the diameter of the circle which will enclose all of its strands. When measuring a wire rope by caliper, care should be taken to measure the correct circumference of diameter of all the strands, not areas where there are two adjacent strands. See diagram above.

The Lays of Wire Rope

The picture right shows and indicates the regular and Lang's lay of wires.



1) Right hand regular lay
2) Left hand regular lay
3) Right hand Lang's lay
4) Left hand Lang's lay

Wire ropes can be either Lang's lay or Regular lay (Ordinary lay).

Lang's lay construction is one in which the wires in the strand are laid in the same direction as the strands are laid into the rope.

The advantage of using Lang's lay is that a rope so constructed offers a better wearing surface when in use, and, therefore, can be expected in many cases to survive for a longer period than a rope made with regular lay. Lang's lay ropes should never be used when one end of the rope is free to rotate.

Regular lay construction is one in which the strand wires are laid in one direction, and the completed strands laid into the rope in the opposite direction.

Nearly all ropes are supplied right-hand lay, but left-hand lay is occasionally required.

Nominal Tensile Strength

Referring to JIS G-3525

Galvanized Wire Rope		Un-galvanized Wire Rope	
Class	Tensile Strength N/mm² (kgf/mm²)	Class	Tensile Strength N/mm² (kgf/mm²)
E	-	E	1,320 (135)
G	1,470 (150)	G	-
A	1,620 (165)	A	1,620 (165)
B	1,770 (180)	B	1,770 (180)

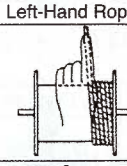
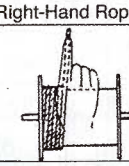
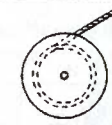
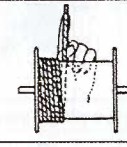
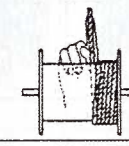
API - 9A

Nominal Grade	Class	Tensile Strength
180	IPS	1,770 Nm²
190	EIPS	1,860
200	-	1,960
220	-	2,160

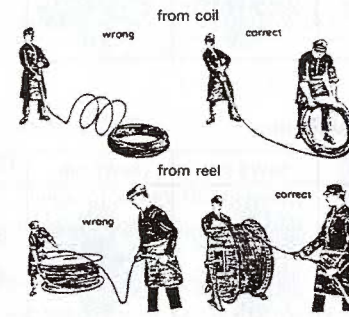
IPS : Improved Plow Steel
EIPS : Extra Improved Plow Steel

Winding Wire Rope

For left-handed drum = right-hand rope
For right-handed drum = left-hand rope

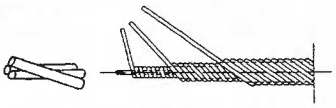
Left-Hand Rope	Right-Hand Rope	Drum
		
		

Unwinding Wire Rope



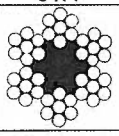
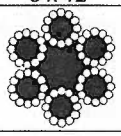
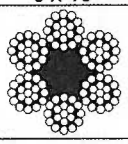
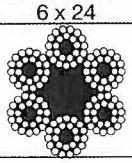
Cross Section of Wire rope

A) Cross Lay (Conventional Lay)

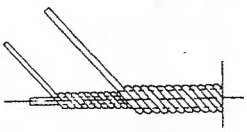


The strands of a so-called conventional wire rope have equal-sized wires in all layers. Each layer has different length of lay and the wires of one layer cross the wires of the underlying layer.

When the strands are spun in this manner the wires of the individual layers are in point contact with each other. In conventional ropes, all wires, except for the center wire, are of the same length.

Construction	6 x 7	6 x 12
Illustration		
6 x 19	6 x 24	6 x 37
		

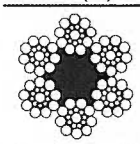
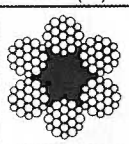
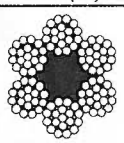
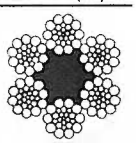
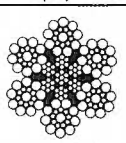
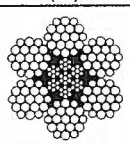
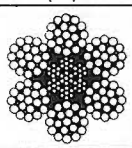
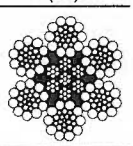
B) Parallel Lay (Equal Lay)



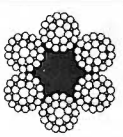
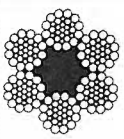
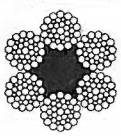
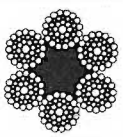
The strands of equal lay ropes have wires of varying sizes laid in such a way that the wires of one layer are parallel with and supported over their total length by wires in the underlying layers. All wires have the same length of lay, and are laid up in a single operation.

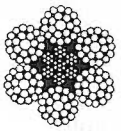
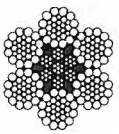
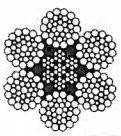
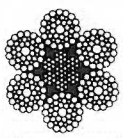
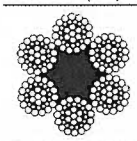
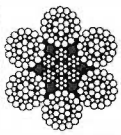
The use of equal lay strands avoids deformation, internal wear and secondary bending stress which result from the point contact between the wires in the conventional type. In most fields of application, therefore, equal lay ropes have proved to have a longer life than conventional ropes. The following types of construction are equal lay : Warrington, Seale, Filler and combinations of the same.

6 x 19 Classification

6 x S(19)	6 x W(19)	6 x Fi(25)	6 x WS(26)
			
6 x S(19) IWRC	6 x W(19)IWRC	6 x Fi(25)IWRC	6 x WS(26)IWRC
			

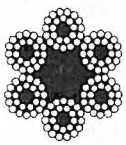
6 x 37 Classification

6xFi(29)	6xWS (31)	6xWS(36)	6xWS(41)
			

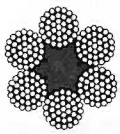
6xFi(29)IWRC	6xWS(31)IWRC	6xWS(36)IWRC	6xWS(41) IWRC
			
6xSeS(37)	6xSeS(37)IWRC		
			

Wire Arrangement

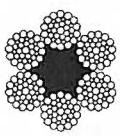
6 x 24
6 x (9+15) = 144 wires



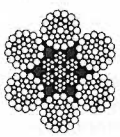
6 x 37
6 x (1+6+12+18) = 222 wires



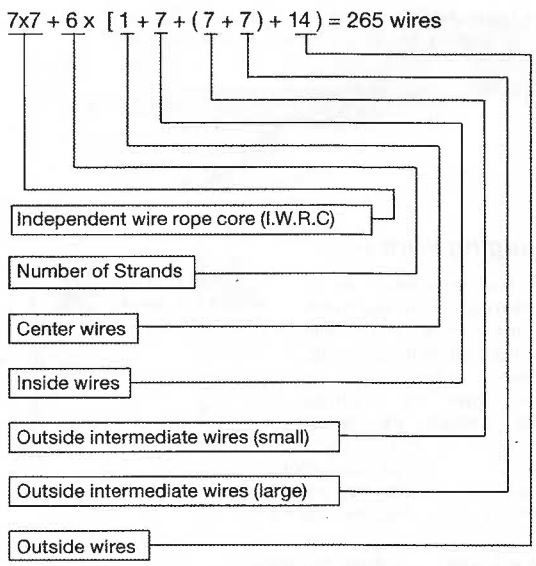
6 x WS (36)
6 x [1+7+(7+7)+14] = 216 wires



IWRC
6 x WS (36)



7x7 + 6 x [1 + 7 + (7 + 7) + 14) = 265 wires



Wire Rope Selection :

1. Wire ropes are available in various types and constructions, each having specific uses. Therefore, it is important to select the rope according to the intended application. Namely, it is necessary to see what properties are required for the rope to be used correctly. The properties cover breaking strength, flexibility, resistance to bending fatigue, anti-friction, resistance to deformation, non-rotation and anti-corrosion. In most cases, the key point of selecting the rope for a particular application is consideration of the above properties.

2. Selection by features

1) Where breaking strength is important, IWRC parallel lay ropes are recommended. For example : IWRC 6 x Fi(25), IWRC 6 x Fi(29), IWRC 6 x WS(36).

2) Where flexibility is important, FC (Fibre Core) cross lay ropes are recommended. For example : 6 x 24FC, 6 x 37FC.

3) Where resistance to bending fatigue is important, ropes made of strands with as many wires as possible are recommended. For example : FC 6 x WS(36), FC 6 x WS(41).

4) Where anti-friction is important, ropes consisting of outer strands made of thick wires are recommended. For example : 6 x S(19), 6 x Fi(21), 6 x Fi(25).

5) In case resistance to deformation is important, parallel lay ropes are recommended. For example : IWRC 6 x WS(31), U4 x SeS(39).

6) Where non-rotation is required, non-rotating wire ropes are recommended. For example : U4 x SeS(39), 18 x 7, 19 x 7, etc.

7) Where anti-corrosion is important, galvanized or stainless steel ropes are recommended.

Wire Rope 6 x 7

6 x (1+6)

Applications : Standing rigging.

FC

How to order: CODE

Wire rope, galvanized, 6 x 7, DIAM x LENGTH

Galvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 20 01	3/4"	6	18.8	1.92	0.134
02		6.3	21.0	2.14	0.147
03	1"	8	33.8	3.45	0.237
04		9	42.8	4.36	0.300
05	1-1/4"	10	52.8	5.38	0.371
21 20 06		11.2	66.2	6.75	0.465
07	1-1/2"	12	75.4	7.69	0.534
08		12.5	82.5	8.41	0.579
09	1-3/4"	14	103	10.6	0.727
10	2"	16	135	13.8	0.950
21 20 11	2-1/4"	18	171	17.4	1.20
12	2-12"	20	211	21.5	1.48
13	2-3/4"	22	254	25.9	1.80
14		22.4	265	27.0	1.86
15	3"	24	302	30.8	2.14
21 20 16		25	330	33.6	2.32
17	3-1/4"	26	354	36.1	2.51
18	3-1/2"	28	414	42.2	2.91
19	3-3/4"	30	475	48.4	3.34

(1,470 N/mm^2)

Wire Rope 6 x 19

6 x (1+6+12)

Applications: Running rigging.

FC

How to order: CODE

Wire rope, galvanized, 6 x 19, DIAM x LENGTH

Galvanized

Unit Per C/L

CODE 200 mtrs 110 fms	CODE 220 mtrs 120 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 21 01	21 21 26	1/2"	4	8.03	0.82	0.058
02	27		5	12.5	1.28	0.091
03	28	3/4"	6	17.8	1.82	0.131
04	29		6.3	19.9	2.03	0.144
05	30	1"	8	32.1	3.28	0.233
21 21 06	21 21 31		9	40.7	4.15	0.295
07	32	1-1/4"	10	50.2	5.12	0.364
08	33		11.2	63.0	6.42	0.457
09	34	1-1/2"	12	72.3	7.37	0.524
10	35		12.5	78.4	8.00	0.569
21 21 11	21 21 36	1-3/4"	14	98.4	10.0	0.713
12	37	2"	16	128	13.1	0.932
13	38	2-1/4"	18	163	16.6	1.18
14	39	2-1/2"	20	201	20.5	1.46
15	40	2-3/4"	22	240	24.5	1.76
21 21 16	21 21 41		22.4	252	25.7	1.83
17	42	3"	24	286	29.2	2.10
18	43		25	314	32.0	2.28
19	44	3-1/4"	26	336	34.3	2.46
20	45	3-1/2"	28	393	40.1	2.85
21 21 21	21 21 46	3-3/4"	30	452	46.1	3.28

(1,470 N/mm^2)

How to order: CODE

Wire rope, ungalvanized, 6 x 19, DIAM x LENGTH

Ungalvanized

Unit Per C/L

CODE 200 mtrs 110 fms	CODE 220 mtrs 120 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 21 51	21 21 76	1/2"	4	8.64	0.88	0.058
52	77		5	13.5	1.38	0.091
53	78	3/4"	6	19.4	1.98	0.131
54	79		6.3	21.4	2.19	0.144
55	80	1"	8	34.6	3.53	0.233
21 21 56	21 21 81		9	43.8	4.46	0.295
57	82	1-1/4"	10	54.0	5.51	0.364
58	83		11.2	67.8	6.91	0.457
59	84	1-1/2"	12	77.8	7.93	0.524
60	85		12.5	84.4	8.61	0.569
21 21 61	21 21 86	1-3/4"	14	106	10.8	0.713
62	87	2"	16	138	14.1	0.932
63	88	2-1/4"	18	175	17.8	1.18
64	89	2-1/2"	20	216	22.0	1.46
65	90	2-3/4"	22	261	26.6	1.76
21 21 66	21 21 91		22.4	271	27.6	1.83
67	92	3"	24	311	31.7	2.10
68	93		25	338	34.4	2.28
69	94	3-1/4"	26	365	37.2	2.46
70	95	3-1/2"	28	424	43.2	2.85
21 21 71	21 21 96	3-3/4"	30	486	49.6	3.28

(1,620 N/mm^2))

Wire Rope 6 x 24

6 x (9 + 15)

Applications: Slings, Mooring, Boom hoists, Preventers, Towing lines

FC

How to order: CODE

Wire rope, galvanized, 6 x 24, DIAM x LENGTH

Galvanized

Unit Per C/L

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kgs/mtr)
200 mtrs 110 fms	220 mtrs 120 fms			kN	tf	
21 22 01	**21 22 51**	3/4"	6	16.4	1.67	0.120
02	**52**		6.3	18.0	1.84	0.132
03	**53**	1"	8	29.3	2.99	0.212
04	**54**		9	37.1	3.78	0.269
05	**55**	1-1/4"	10	45.8	4.67	0.332
21 22 06	**21 22 56**		11.2	57.4	5.86	0.416
07	**57**	1-1/2"	12	65.9	6.72	0.478
08	**58**		12.5	71.5	7.30	0.519
09	**59**	1-3/4"	14	89.7	9.15	0.651
10	**60**	2"	16	117	12.0	0.850
21 22 11	**21 22 61**	2-1/4"	18	148	15.1	1.08
12	**62**	2-1/2"	20	183	18.7	1.33
13	**63**	2-3/4"	22	221	22.5	1.61
14	**64**		22.4	230	23.4	1.67
15	**65**	3"	24	264	26.9	1.91
21 22 16	**21 22 66**		25	286	29.2	2.08
17	**67**	3-1/4"	26	308	31.4	2.24
18	**68**	3-1/2"	28	359	36.6	2.60
19	**69**	3-3/4"	30	412	42.0	2.99
20	**70**		31.5	454	46.3	3.29
21 22 21	**21 22 71**	4"	32	466	47.5	3.40
22	**72**		33.5	514	52.4	3.73
23	**73**	4-1/4"	34	526	53.6	3.84
24	**74**		35.5	577	58.8	4.18
25	**75**	4-1/2"	36	589	60.1	4.30
21 22 26	**21 22 76**		37.5	644	65.7	4.67
27	**77**	4-3/4"	38	657	67.0	4.79
28	**78**	5"	40	732	74.7	5.31

(1,470 N/mm²)

How to order: CODE

Wire rope, ungalvanized, 6 x 24, DIAM x LENGTH

Ungalvanized

Unit Per C/L

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kgs/mtr)
200 mtrs 110 fms	220 mtrs 120 fms			kN	tf	
21 23 01	**21 23 51**	3/4"	6	16.4	1.81	0.120
02	**52**		6.3	19.5	1.99	0.132
03	**53**	1"	8	31.6	3.22	0.212
04	**54**		9	39.9	4.07	0.269
05	**55**	1-1/4"	10	49.3	5.03	0.332
21 23 06	**21 23 56**		11.2	61.8	6.31	0.416
07	**57**	1-1/2"	12	71.0	7.24	0.478
08	**58**		12.5	77.0	7.85	0.519
09	**59**	1-3/4"	14	96.6	9.85	0.651
10	**60**	2"	16	126	12.9	0.850
21 23 11	**21 23 61**	2-1/4"	18	160	16.3	1.08
12	**62**	2-1/2"	20	197	20.1	1.33
13	**63**	2-3/4"	22	220	24.3	1.61
14	**64**		22.4	247	25.2	1.67
15	**65**	3"	24	262	28.9	1.91
21 23 16	**21 23 66**		25	308	31.4	2.08
17	**67**	3-1/4"	26	332	33.9	2.24
18	**68**	3-1/2"	28	387	39.4	2.60
19	**69**	3-3/4"	30	444	45.2	2.99
20	**70**		31.5	489	49.9	3.29
21 23 21	**21 23 71**	4"	32	466	51.4	3.40
22	**72**		33.5	553	56.4	3.73
23	**73**	4-1/4"	34	569	58.0	3.84
24	**74**		35.5	621	63.4	4.18
25	**75**	4-1/2"	36	637	65.0	4.30
21 23 26	**21 23 76**		37.5	693	70.7	4.67
27	**77**	4-3/4"	38	656	72.4	4.79
28	**78**	5"	40	789	80.4	5.31

(1,620 N/mm²)

Wire Rope 6 x 37

6 x (1+6+12+18)

FC

Applications: Running rigging, Boat falls, Winches, Cranes, Safety ropes Hoists, Mooring, Slings

How to order: CODE

Wire rope, galvanized, 6 x 37 DIAM x LENGTH

Galvanized

Unit Per C/L

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kgs/ mtr)
200 mtrs 110 fms	220 mtrs 120 fms			kN	tf	
21 25 01	**21 25 51**	3/4"	6	17.7	1.80	0.129
02	**52**		6.3	19.6	2.00	0.143
03	**53**	1"	8	31.6	3.22	0.230
04	**54**		9	40.0	4.08	0.291
05	**55**	1-1/4"	10	49.4	5.03	0.359
21 25 06	**21 25 56**		11.2	61.9	6.31	0.451
07	**57**	1-1/2"	12	71.1	7.25	0.517
08	**58**		12.5	77.1	7.86	0.561
09	**59**	1-3/4"	14	96.7	9.86	0.704
10	**60**	2"	16	126	12.9	0.920
21 25 11	**21 25 61**	2-1/4"	18	160	16.3	1.16
12	**62**	2-1/2"	20	197	20.1	1.44
13	**63**	2-3/4"	22	237	24.2	1.74
14	**64**		22.4	248	25.3	1.80
15	**65**	3"	24	284	29.0	2.07
21 25 16	**21 25 66**		25	308	31.5	2.25
17	**67**	3-1/4"	26	330	33.7	2.43
18	**68**	3-1/2"	28	387	39.5	2.82
19	**69**	3-3/4"	30	444	45.3	3.23
20	**70**		31.5	490	49.9	3.57
21 25 21	**21 25 71**	4"	32	501	51.1	3.68
22	**72**		33.5	554	56.5	4.03
23	**73**	4-1/4"	34	566	57.7	4.15
24	**74**		35.5	622	63.4	4.53
25	**75**	4-1/2"	36	634	64.7	4.66
21 25 26	**21 25 76**		37.5	694	70.8	5.05
27	**77**	4-3/4"	38	707	72.1	5.19
28	**78**	5"	40	790	80.5	5.75
29	**79**	5-1/4"	42	863	88.0	6.34
30	**80**		42.5	892	90.9	6.49
21 25 31	**21 25 81**	5-1/2"	44	947	96.6	6.96
32	**82**		45	1,000	102.0	7.28
33	**83**	5-3/4"	46	1,040	106.0	7.60
34	**84**		47.5	1,110	114.0	8.11
35	**85**	6"	48	1,128	115.0	8.28
21 25 36	**21 25 86**	6-1/4"	50	1,230	126.0	8.98

(1,470 N/mm²)

How to order: CODE

Wire rope, ungalvanized, 6 x 37 DIAM x LENGTH

Ungalvanized

Unit Per C/L

CODE		Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kgs/ mtr)
200 mtrs 110 fms	220 mtrs 120 fms			kN	tf	
21 26 01	**21 26 51**	3/4"	6	19.1	1.95	0.129
02	**52**		6.3	21.1	2.15	0.143
03	**53**	1"	8	34.0	3.47	0.230
04	**54**		9	43.0	4.39	0.291
05	**55**	1-1/4"	10	53.1	5.42	0.359
21 26 06	**21 26 56**		11.2	66.6	6.79	0.451
07	**57**	1-1/2"	12	76.5	7.80	0.517
08	**58**		12.5	83.0	8.46	0.561
09	**59**	1-3/4"	14	104	10.6	0.704
10	**60**	2"	16	136	13.9	0.920

(to be continued)

Unit Per C/L

CODE 200 mtrs 110 fms	CODE 220 mtrs 120 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 26 11	21 26 61	2-1/4"	18	172	17.5	1.16
12	62	2-1/2"	20	212	21.7	1.44
13	63	2-3/4"	22	257	26.2	1.74
14	64		22.4	266	27.2	1.80
15	65	3"	24	306	31.2	2.07
21 26 16	21 26 66		26	332	33.8	2.25
17	67	3-1/4"	26	359	36.6	2.43
18	68	3-1/2"	28	416	42.5	2.82
19	69	3-3/4"	30	478	48.7	3.23
20	70		31.5	527	53.7	3.57
21 26 21	21 26 71	4"	32	543	55.4	3.68
22	72		33.5	596	60.8	4.03
23	73	4-1/4"	34	613	62.5	4.15
24	74		35.5	669	68.3	4.53
25	75	4-1/2"	36	687	70.1	4.66
21 26 26	21 26 76		37.5	747	76.2	5.05
27	77	4-3/4"	38	766	78.1	5.19
28	78	5"	40	850	86.7	5.75
29	79	5-1/4"	42	936	95.4	6.34
30	80		42.5	959	97.8	6.49
21 26 31	21 26 81	5-1/2"	44	1,030	105.0	6.96
32	82		45	1,080	110.0	7.28
33	83	5-3/4"	46	1,118	114.0	7.60
34	84		47.5	1,200	122.0	8.11
35	85	6"	48	1,226	125.0	8.28
21 26 36	21 26 86	6-1/4"	50	1,330	135.0	8.98

(1,620 N/mm²)

Wire Rope 6 x Fi(25)

6 x [1+6+(6)+12]

FC

Applications: Cranes, Winches, Derricks, Hoists

How to order: CODE

Wire rope, ungalvanized, 6 x Fi(25) DIAM x LENGTH

Ungalvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 27 01	1-1/4"	10	58.1	5.92	0.386
02		11.2	72.8	7.43	0.484
03	1-1/2"	12	83.6	8.52	0.555
04		12.5	90.7	9.25	0.603
05	1-3/4"	14	114	11.6	0.756
21 27 06	2"	16	149	15.2	0.988
07	2-1/4"	18	188	19.2	1.25
08	2-1/2"	20	232	23.7	1.54
09	2-3/4"	22	280	28.6	1.87
10		22.4	291	29.7	1.94
21 27 11	3"	24	333	34.0	2.22
12		25	363	37.0	2.41
13	3-1/4"	26	391	39.9	2.61
14	3-1/2"	28	455	46.4	3.02
15	3-3/4"	30	532	53.3	3.47
21 27 16		31.5	576	58.7	3.83
17	4"	32	593	60.5	3.95
18		33.5	652	66.5	4.33
19	4-1/4"	34	670	68.3	4.46
20		35.5	732	74.6	4.86
21 27 21	4-1/2"	36	751	76.6	5.00
22		37.5	816	83.3	5.42
23	4-3/4"	48	837	85.3	5.57
24	5"	40	929	94.7	6.17

(1,770 N/mm²)

Wire Rope 6 x Fi(25)IWRC

7x7+6x[1+6+(6)+12]

IWRC

Applications: Cranes, Anchor handling

How to order: CODE

Wire rope, ungalvanized, 6 x Fi(25)IWRC DIAM x LENGTH

Ungalvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 27 51	1-1/4"	10	66.2	6.75	0.430
52		11.2	83.0	8.47	0.539
53	1-1/2"	12	94.9	9.68	0.619
54		12.5	103	10.5	0.672
55	1-3/4"	14	130	13.2	0.843
21 27 56	2"	16	169	17.3	1.10
57	2-1/4"	18	214	21.9	1.39
58	2-1/2"	20	265	27.0	1.72
59	2-3/4"	22	319	32.5	2.08
60		22.4	332	33.9	2.16
21 27 61	3"	24	380	38.7	2.48
62		25	414	42.2	2.69
63	3-1/4"	26	446	45.5	2.91
64	3-1/2"	28	519	52.9	3.37
65	3-3/4"	30	596	60.7	3.87
21 27 66		31.5	657	67.0	4.27
67	4"	32	676	68.9	4.40
68		33.5	743	75.7	4.83
69	4-1/4"	34	762	77.7	4.97
70		35.5	834	85.1	5.42
21 27 71	4-1/2"	36	855	87.2	5.57
72		37.5	931	94.9	6.05
73	4-3/4"	38	952	97.1	6.21
74	5"	40	1,060	108.0	6.88

(1,770 N/mm²)

Wire Rope 6 x Fi(29)

6 x [1+7+(7)+14]

FC

Applications: Cranes, Winches, Derricks, Hoists

How to order: CODE

Wire rope, ungalvanized, 6 x Fi(29) DIAM x LENGTH

Ungalvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 28 01	1-1/4"	10	59.2	6.04	0.396
02		11.2	74.3	7.58	0.496
03	1-1/2"	12	85.1	8.68	0.570
04		12.5	92.5	9.44	0.618
05	1-3/4"	14	116	11.8	0.776
21 28 06	2"	16	152	15.5	1.01
07	2-1/4"	18	192	19.6	1.28
08	2-1/2"	20	237	24.2	1.58
09	2-3/4"	22	286	29.2	1.92
10		22.4	297	30.3	1.99
21 28 11	3"	24	340	34.7	2.28
12		25	370	37.8	2.47
13	3-1/4"	26	399	40.7	2.68
14	3-1/2"	28	464	47.4	3.10
15	3-3/4"	30	533	54.4	3.56

(to be continued)

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 28 16		31.5	588	59.9	3.93
17	4"	32	605	61.7	4.05
18		33.5	665	67.8	4.44
19	4-1/4"	34	684	69.7	4.58
20		35.5	746	76.1	4.99
21 28 21	4-1/2"	36	766	78.1	5.13
22		37.5	833	84.9	5.57
23	4-3/4"	38	853	87.0	5.72
24	5"	40	948	96.6	6.33

(1,770 N/mm²)

Wire Rope 6 x Fi(29)IWRC

7x7+6x[1+7+(7)+14]

IWRC

Applications: Cranes, Anchor handling

How to order: CODE

Wire rope, ungalvanized, 6 x Fi(29)IWRC DIAM x LENGTH

Ungalvanized

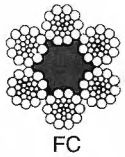
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 28 51	1-1/4"	10	67.7	6.90	0.440
52		11.2	84.9	8.66	0.552
53	1-1/2"	12	97.3	9.92	0.634
54		12.5	106	10.8	0.688
55	1-3/4"	14	133	13.5	0.862
21 28 56	2"	16	173	17.7	1.13
57	2-1/4"	18	219	22.4	1.43
58	2-1/2"	20	271	27.6	1.76
59	2-3/4"	22	327	33.3	2.13
60		22.4	340	34.6	2.21
21 28 61	3"	24	389	39.7	2.53
62		25	423	43.2	2.75
63	3-1/4"	26	457	46.6	2.97
64	3-1/2"	28	531	54.1	3.45
65	3-3/4"	30	609	62.1	3.96
21 28 66		31.5	672	68.5	4.37
67	4"	32	691	70.5	4.51
68		33.5	760	77.5	4.94
69	4-1/4"	34	781	79.6	5.09
70		35.5	853	87.0	5.55
21 28 71	4-1/2"	36	876	89.3	5.70
72		37.5	952	97.1	6.19
73	4-3/4"	38	976	99.5	6.35
74	5"	40	1,080	110.0	7.04

(1,770 N/mm²)

Wire Rope 6 x WS(26)

6x[1+5+(5+5)+10]



FC

Applications: Cranes, Winches, Hoists, Mooring, Slings

How to order: CODE

Wire rope, galvanized, 6 x WS(26) DIAM x LENGTH

Galvanized

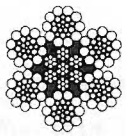
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 29 01	1-1/4"	10	54.5	5.55	0.386
02		11.2	68.3	6.97	0.484
03	1-1/2"	12	78.4	8.00	0.555
04		12.5	85.1	8.68	0.603
05	1-3/4"	14	107	10.9	0.756
21 29 06	2"	16	139	14.2	0.988
07	2-1/4"	18	176	18.0	1.25
08	2-1/2"	20	218	22.2	1.54
09	2-3/4"	22	264	26.9	1.87
10		22.4	273	27.9	1.94
21 29 11	3"	24	314	32.0	2.22
12		25	340	34.7	2.41
13	3-1/4"	26	368	37.5	2.61
14	3-1/2"	28	427	43.5	3.02
15	3-3/4"	30	490	50.0	3.47
21 29 16		31.5	540	55.1	3.83
17	4"	32	557	56.8	3.95
18		33.5	611	62.3	4.33
19	4-1/4"	34	630	64.2	4.46
20		35.5	686	70.0	4.86
21 29 21	4-1/2"	36	705	71.9	5.00
22		37.5	766	78.1	5.42
23	4-3/4"	38	786	80.1	5.57
24	5"	40	871	88.9	6.17

(1,620 N/mm²)

Wire Rope 6 x WS(26)IWRC

7x7+6x[1+5+(5+5)+10]



IWRC

Applications: Running rigging, Winches, Cranes, Hoists, Mooing, Towing, Anchor handling

How to order: CODE

Wire rope, galvanized, 6 x WS(26)IWRC DIAM x LENGTH

Galvanized

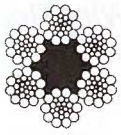
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 29 51	1-1/4"	10	66.2	6.75	0.431
52		11.2	83.0	8.47	0.540
53	1-1/2"	12	96.9	9.68	0.620
54		12.5	103	10.5	0.673
55	1-3/4"	14	130	13.2	0.844
21 29 56	2"	16	169	17.3	1.10
57	2-1/4"	18	214	21.9	1.40
58	2-1/2"	20	265	27.0	1.72
59	2-3/4"	22	326	33.2	2.09
60		22.4	332	33.9	2.16
21 29 61	3"	24	387	39.5	2.48
62		25	414	42.2	2.69
63	3-1/4"	26	455	46.4	2.91
64	3-1/2"	28	519	52.9	3.38
65	3-3/4"	30	596	60.7	3.88
21 29 66		31.5	657	67.0	4.27
67	4"	32	689	70.3	4.41
68		33.5	743	75.7	4.83
69	4-1/4"	34	778	79.3	4.98
70		35.5	834	85.1	5.43
21 29 71	4-1/2"	36	672	88.9	5.58
72		37.5	931	94.9	6.06
73	4-3/4"	38	972	99.1	6.22
74	5"	40	1,060	108.0	6.89

(1,770 N/mm²)

Wire Rope 6 x WS(31)

6x[1+6+(6+6)+12]



FC

Applications: Running rigging, Boat falls, Winches, Cranes, Safety ropes, Hoists, Mooring, Slings

How to order: CODE

Wire rope, galvanized, 6 x WS(31) DIAM x LENGTH

Galvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 30 01	1-1/4"	10	55.6	5.67	0.396
02		11.2	69.7	7.11	0.496
03	1-1/2"	12	80.0	8.16	0.570
04		12.5	86.9	8.86	0.618
05	1-3/4"	14	109	11.1	0.776
21 30 06	2"	16	142	14.5	1.01
07	2-1/4"	18	180	18.4	1.28
08	2-1/2"	20	222	22.7	1.58
09	2-3/4"	22	269	27.4	1.92
10		22.4	279	28.4	1.99
21 30 11	3"	24	320	32.6	2.28
12		25	348	35.4	2.47
13	3-1/4"	26	376	38.3	2.68
14	3-1/2"	28	436	44.4	3.10
15	3-3/4"	30	500	51.0	3.56
21 30 16		31.5	552	56.3	3.93
17	4"	32	569	58.0	4.05
18		33.5	624	63.6	4.44
19	4-1/4"	34	643	65.6	4.58
20		35.5	701	71.4	4.99
21 30 21	4-1/2"	36	721	73.5	5.13
22		37.5	782	79.7	5.57
23	4-3/4"	38	802	81.8	5.72
24	5"	40	890	90.7	6.33

(1,620 N/mm²)

Wire Rope 6 x WS(31)IWRC

7x7+6x[1+6+(6+6)+12]

IWRC

Applications: Running rigging, Winches, Cranes,Hoists, Mooring, Towing, Anchor handling

How to order: CODE

Wire rope, galvanized, 6 x WS(31)IWRC DIAM x LENGTH

Galvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 30 51	1-1/4"	10	67.7	6.90	0.441
52		11.2	84.9	8.66	0.553
53	1-1/2"	12	96.2	9.81	0.635
54		12.5	106	10.8	0.689
55	1-3/4"	14	133	13.5	0.864
21 30 56	2"	16	173	17.7	1.13
57	2-1/4"	18	219	22.4	1.43
58	2-1/2"	20	271	27.6	1.76
59	2-3/4"	22	324	33.0	2.13
60		22.4	340	34.6	2.21
21 30 61	3"	24	384	39.4	2.54
62		25	423	43.2	2.76
63	3-1/4"	26	452	46.1	2.98
64	3-1/2"	28	531	54.1	3.46
65	3-3/4"	30	609	62.1	3.97

(to be continued)

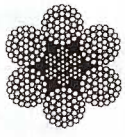
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 30 66		31.5	672	68.5	4.37
67	4"	32	685	69.8	4.51
68		33.5	760	77.5	4.95
69	4-1/4"	34	773	78.8	5.10
70		35.5	853	87.0	5.56
21 30 71	4-1/2"	36	866	86.3	5.71
72		37.5	952	97.1	6.20
73	4-3/4"	38	965	98.4	6.37
74	5"	40	1,080	110.0	7.05

(1,770 N/mm²)

Wire Rope 6 x 37 IWRC

7x7+6x[1+6+12+18]



IWRC

Applications: Running rigging, Winches, Cranes,Hoists, Mooring, Towing, Anchor handling

How to order: CODE

Wire rope, galvanized, 6 x 37 IWRC, DIAM x LENGTH

Galvanized

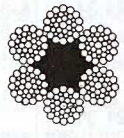
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 31 26		22.4	325	33.2	2.03
27	3"	24	373	38.1	2.33
28		25	404	41.2	2.52
29	3-1/4"	26	438	44.6	2.73
30	3-1/2"	28	507	51.7	3.17
21 31 31	3-3/4"	30	582	59.4	3.63
32		31.5	642	65.5	4.01
33	4"	32	663	67.6	4.13
34		33.5	726	74.1	4.53
35	4-1/4"	34	748	76.3	4.67
21 31 36		35.5	816	83.2	5.09
37	4-1/2"	36	839	85.6	5.23
38		37.5	910	92.8	5.68
39	4-3/4"	38	935	95.3	5.83
40	5"	40	1,040	106.0	6.46
21 31 41	5-1/4"	42	1,140	116.2	7.25
42		42.5	1,170	119.0	7.29
43	5-1/2"	44	1,250	128.0	7.82
44		45	1,310	134.0	8.18
45	5-3/4"	46	1,370	140.0	8.54
21 31 46		47.5	1,460	149.0	9.11
47	6"	48	1,490	152.0	9.30
48	6-1/4"	50	1,620	165.0	10.10

(1,770 N/mm²)

Wire Rope 6 x WS(36)

6 x [1+7+(7+7)+14]



FC

Applications: Running rigging, Boat falls, Winches, Cranes, Safety ropes, Hoists, Mooring, Slings

How to order: CODE

Wire rope, galvanized, 6 x WS(36) DIAM x LENGTH

Galvanized

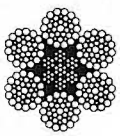
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 31 01	2-1/2"	20	222	22.7	1.58
02	2-3/4"	22	269	27.4	1.92
03		22.4	279	28.4	1.99
04	3"	24	320	32.6	2.28
05		25	348	35.4	2.47
21 31 06	3-1/4"	26	376	38.3	2,68
07	3-1/2"	28	436	44.4	3.10
08	3-3/4"	30	500	51.0	3.56
09		31.5	552	56.3	3.93
10	4"	32	569	58.0	4.05
21 31 11		33.5	624	63.6	4.44
12	4-1/4"	34	642	65.5	4.58
13		35.5	701	71.4	4.99
14	4-1/2"	36	721	73.5	5.13
15		37.5	782	79.7	5.57
21 31 16	4-3/4"	38	802	81.8	5.72
17	5"	40	890	90.7	6.33
18	5-1/4"	42	981	100.0	6.98
19		42.5	1,000	102.0	7.15
20	5-1/2"	44	1,079	110.0	7.66
21 31 21		45	1,130	115.0	8.01
22	5-3/4"	46	1,177	120.0	8.38
23		47.5	1,250	128.0	8.93
24	6"	48	1,285	131.0	9.12
25	6-1/4"	50	1,390	142.0	9.90

(1,620 N/mm²)

Wire Rope 6 x WS(36)IWRC

7x7+6x[1+7+(7+7)+14]



IWRC

Applications : Running rigging, Winches, Cranes, Hoists, Mooring, Towing, Anchor handling

How to order: CODE

Wire rope, galvanized, 6 x WS(36)IWRC DIAM x LENGTH

Galvanized

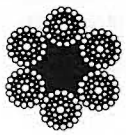
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 31 51	2-1/2"	20	271	27.6	1.76
52	2-3/4"	22	330	33.7	2.13
53		22.4	340	34.6	2.21
54	3"	24	393	40.1	2.54
55		25	423	43.2	2.76
21 31 56	3-1/4"	26	461	47.0	2.98
57	3-1/2"	28	531	54.1	3.46
58	3-3/4"	30	609	62.1	3.97
59		31.5	672	68.5	4.37
60	4"	32	698	71.2	4.51
21 31 61		33.5	760	77.5	4.95
62	4-1/4"	34	788	80.4	5.10
63		35.5	853	87.0	5.56
64	4-1/2"	36	885	90.2	5.71
65		37.5	952	97.1	6.20
21 31 66	4-3/4"	38	981	100.0	6.37
67	5"	40	1,080	110.0	7.05
68	5-1/4"	42	1,206	123.0	7.78
69		42.5	1,220	125.0	7.96
70	5-1/2"	44	1,324	135.0	8.53
21 31 71		45	1,370	140.0	8.93
72	5-3/4"	46	1,442	147.0	9.33
73		47.5	1,530	156.0	9.95
74	6"	48	1,569	160.0	10.2
75	6-1/4"	50	1,690	173.0	11.0

(1,770 N/mm²)

Wire Rope 6 x WS(41)

6 x [1+8+(8+8)+16]



FC

Applications: Running rigging, Winches Cranes, Mooring

How to order: CODE

Wire rope, galvanized, 6 x WS(41) DIAM x LENGTH

Galvanized

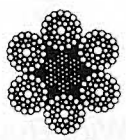
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 32 01	3-3/4"	30	500	51.0	3.56
02		31.5	552	56.3	3.93
03	4"	32	569	58.0	4.05
04		33.5	624	63.6	4.44
05	4-1/4"	34	642	65.5	4.58
21 32 06		35.5	701	71.4	4.99
07	4-1/2"	36	721	73.5	5.13
08		27.5	782	79.7	5.57
09	4-3/4"	38	802	81.8	5.72
10	5"	40	890	90.7	6.33
21 32 11	5-1/4"	42	981	100.0	6.98
12		42.5	1,000	102.0	7.15
13	5-1/2"	44	1,079	110.0	7.66
14		45	1,130	115.0	8.01
15	5-3/4"	46	1,177	120.0	8.38
21 32 16		47.5	1,250	128.0	8.93
17	6"	48	1,285	131.0	9.12
18	6-1/4"	50	1,390	142.0	9.90

(1,620 N/mm²)

Wire Rope 6 x WS(41)IWRC

7x7+6x[1+8+(8+8)+16]



IWRC

Applications : Running rigging, Winches, Cranes, Mooring, Towing, Anchor handling

How to order: CODE

Wire rope, galvanized, 6 x WS(41)IWRC DIAM x LENGTH

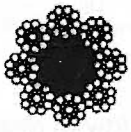
Galvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 32 51	3-3/4"	30	609	62.1	3.97
52		31.5	672	68.5	4.37
53	4"	32	689	70.3	4.51
54		33.5	760	77.5	4.95
55	4-1/4"	34	779	79.4	5.10
21 32 56		35.5	853	87.0	5.56
57	4-1/2"	36	873	89.0	5.71
58		27.5	952	97.1	6.20
59	4-3/4"	38	973	99.2	6.37
60	5"	40	1,080	110.0	7.05
21 32 61	5-1/4"	42	1,187	121.0	7.78
62		42.5	1,220	125.0	7.96
63	5-1/2"	44	1,304	133.0	8.53
64		45	1,370	140.0	8.93
65	5-3/4"	46	1,422	145.0	9.33
21 32 66		47.5	1,530	156.0	9.95
67	6"	48	1,549	158.0	10.2
68	6-1/4"	50	1,690	173.0	11.0

(1,620 N/mm²)

Elevator Wire Rope



8 x S(19)

Standard wire rope to be used for elevators.

How to order: CODE

Wire rope for elevator, ungalvanized, 8 x S(19), DIAM x LENGTH

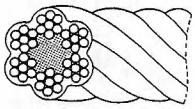
Ungalvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Diam. mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 33 01	8.0	26.0	2.65	0.220
02	10.0	40.6	4.14	0.343
03	11.2	51.0	5.20	0.430
04	12.0	58.5	5.96	0.494
05	12.5	63.5	6.47	0.536
21 33 06	14.0	79.6	8.12	0.672
07	16.0	104.0	10.60	0.878
08	18.0	132.0	13.40	1.110
09	20.0	162.0	16.60	1.370
10	22.4	204.0	20.80	1.720
21 33 11	25.0	254.0	25.90	2.140

Vinyl Covered Wire Rope

for Staying Antenna



Used for staying antenna pole, boat fall lashing wire, or mast stay wire etc. Normally 6x19 or 6x24 construction with vinyl cover for protection from corrosion.

How to order : CODE

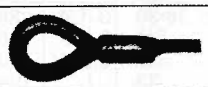
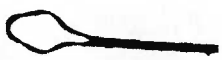
Wire rope, vinyl covered, galvanized, CONSTRUCTION, OUTER DIAM of WIRE ROPE & VINYL COVER, LENGTH

Galvanized

Unit Per Mtr

CODE	Outer Diam. mm Wire Rpe	Outer Diam. mm Vinyl Cover	Rope Construction
21 33 21	6	8	6 x 19
22	8	10	6 x 24
23	10	12	6 x 24
24	12	14	6 x 24
25	14	16	6 x 24
21 33 26	16	18	6 x 24
27	18	21	6 x 24
28	20	23	6 x 24
29	22	25	6 x 24
30	24	27	6 x 24

Typical Example of Rope End Preparation

Pressed Thimble JIS Type (Mechanical Splice)	
Soft Eye Splice (Mechanical Splice)	
Soft Eye Splice (Hand-Splice)	
Soft Eye Splice (Hand-Splice) "Australian Splice"	
Becket Eye (made of 2-strands)	
Tapered and Welded End	
JIS Type-Solid Thimble Pressed	
Solid Thimble Pressed	
JIS Type-Open Socket	
JIS Type-Closed Socket	
End with Seizing	

Non Rotating 4 Strand Wire Rope

Best for use as a single lift crane rope. This rope has a unique four strand construction which serves to control and minimize the self spinning or rotating nature of the rope. The simple construction of the rope prevents sectional collapse and deformation. A smooth exterior finish, created through a special process, withstands abrasion and fits easily to the grooves of a drum or sheave. Because the outer shape of the rope is fitted well to drums and sheaves, there is less resulting friction during actual use, extending the length of service of the rope considerably.

The breaking strength of the non rotating ropes is higher than that of 6 strand ropes of an equivalent diameter and the margin of safety is higher. In spite of the 4 strand construction, these ropes have superior flexibility.

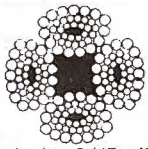
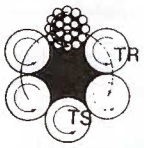
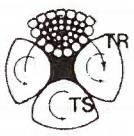
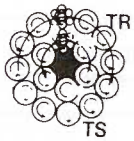
Recommended for use as the hoisting lines of tower and derrick cranes, as grab winch ropes, derrick fall ropes and lifeboat fall ropes.

UNI-Rope U4 x SeS(39)

* Principles of non-rotating properties of wire rope

(1) By making wire rope with multi strands and by laying the strands of the inner core of the rope in the opposite direction of the outer strands, the self rotating torque can be counteracted.

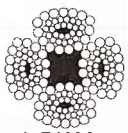
(2) By lengthening the lay (pitch) of the strands, reducing the number of strands, and laying strands of a more triangular shape, the tendency for the rope to be affected by spherical motion is decreased.

Conventional rope 6 x 19	Non-rotating rope (single strand rope) U4 x SeS(39)	Non-rotating rope (multi strand rope) 18 x 7
		
FC	A+4x (a+9/15+15)	FC
		
TS < TR	TS = TR	TS ≒ TR

Non Rotating Wire Rope U4xSeS(39)

A+4x(a+9/15+15)

Uni-Rope (Non-Rotating Rope)



Applications: Cranes, Hoists

How to order: CODE

Wire rope, non-rotating, U4 x SeS(39), galvanized, DIAM x LENGTH with TYPE of rope end preparation

Galvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 35 01	1"	8	40.9	4.10	0.257
02		9	51.8	5.28	0.326
03	1-1/4"	10	63.9	6.52	0.402
04		11.2	86.8	8.86	0.505
05	1-1/2"	12	99.7	10.2	0.579
21 35 06		12.5	108	11.0	0.628
07	1-3/4"	14	136	13.8	0.788
08	2"	16	177	18.1	1.03
09	2-1/4"	18	224	22.9	1.30
10		19	250	25.5	1.45
21 35 11	2-1/2"	20	277	28.2	1.61
12	2-3/4"	22	335	34.2	1.95
13		22.4	347	35.4	2.02
14	3"	24	399	40.7	2.32
15		25	433	44.1	2.51
21 35 16	3-1/4"	26	468	47.7	2.72
17	3-1/2"	28	543	55.4	3.15
18	3-3/4"	30	623	63.5	3.62
19		31.5	687	70.1	3.99
20	4"	32	709	72.3	4.12
21 35 21		33.5	777	79.2	4.51
22	4-1/4"	34	800	81.6	4.65
23		35.5	872	89.0	5.07
24	4-1/2"	36	897	91.5	5.21
25		37.5	974	99.3	5.66
21 35 26	4-3/4"	38	1,000	102.0	5.81
27	5"	40	1,080	110.0	6.44

Class (Tensile Grade):

H..... High Tensile — SH..... Special High Tensile

"A"..... Rope Fibre Core — "a"..... Strand Fibre Core

Non Rotating Wire Rope U4xSeS(48)

A+4x(a+12/18+18)

Uni-Rope (Non-Rotating Rope)

Uni-Rope F48 type is superior to F39 type in flexibility and fatigue properties. Normally supplied with Right Hand Regular Lay.

Applictions: Cranes, Hoists

How to order: CODE

Wire rope, non-rotating, U4 x SeS(48), galvanized, DIAM x LENGTH with TYPE of rope end preparation

Galvanized

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kg/mtr)
21 35 31	2"	16	189	19.2	1.00
32	2-1/4"	18	239	24.4	1.27
33		19	266	27.1	1.41
34	2-1/2"	20	295	30.1	1.56
35	2-3/4"	22	357	36.4	1.89
21 35 36		22.4	370	37.7	1.96
37	3".	24	425	43.3	2.25
38		25	450	45.9	2.44
39	3-1/4"	26	487	49.6	2.64
40	3-1/2"	28	564	57.5	3.07
21 35 41	3-3/4"	30	648	66.1	3.52
42		31.5	714	72.8	3.88
43	4"	32	737	75.2	4.00
44		33.5	808	82.4	4.39
45	4-1/4"	34	812	82.8	4.52
21 35 46		35.5	885	90.2	4.93
47	4-1/2"	36	910	92.8	5.07
48		37.5	939	95.7	5.50
49	4-3/4"	38	964	98.3	5.65
50	5"	40	1,070	109	6.26
21 35 51	5-1/4"	42	1,180	120	6.90
52		42.5	1,210	123	7.06
53	5-1/2"	44	1,290	132	7.57
54		45	1,350	138	7.92

Class (Tensile Grade):

"SH" ..... Special High Tensile

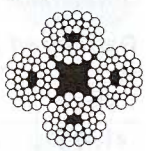
"A" ..... Rope Fibre Core

"a" ..... Strand Fibre Core

Non Rotating Wire Rope 4xF(40)

4 x [8+(8+8)+16]

Single Rope (Non-Rotating Rope)



Applications: Cranes, Hoists

How to order: CODE

Wire rope, non-rotating, 4 x F(40), galvanized, DIAM x LENGTH with TYPE of rope end preparation

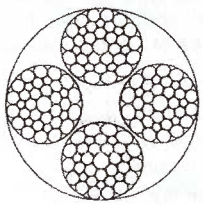
Galvanized

Unit Per C/L

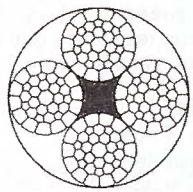
CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 36 25	2-1/2"	20	272	27.8	1.64
26	2-3/4"	22	329	33.6	1.99
27		22.4	341	34.8	2.06
28	3"	24	392	40.0	2.36
29		25	425	43.4	2.57
21 36 30	3-1/4"	26	460	46.9	2.77
31	3-1/2"	28	534	54.4	3.22
32	3-3/4"	30	613	62.5	3.69
33		31.5	675	68.9	4.07
34	4"	32	697	71.1	4.20
21 36 35		33.5	764	77.9	4.61
36	4-1/4"	34	787	80.2	4.74
37		35.5	858	87.5	5.17
38	4-1/2"	36	882	89.9	5.32
39		37.5	957	97.6	5.77
21 36 40	4-3/4"	38	983	100.0	5.93
41	5"	40	1,090	111.0	6.57

4 Strand Non Rotating Wire Rope
LANKO®FOUR (Non-Rotating Rope)

LANKO®FOUR is 4 strand, non-rotating, hoisting wire rope to be used on cranes. Galvanized and lubricated to provide long protection against inner abrasion and corrosion. The LANKO®FOUR Compacted wire rope has a higher MBF and to maintain the required safety factors. Both versions have a thick outer wire, to make the wire robust and impact resistant in the often harsh conditions of loading and discharging.



LANKO®FOUR



LANKO®FOUR Compacted

<Specifications>

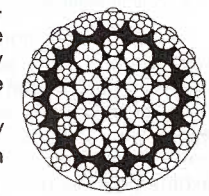
	LANKO® FOUR	LANKO® FOUR COMPACTED
Quality	galvanized	galvanized
Tensile Strength	1,960N/mm²	2,060N/mm²
Total Number of Strands	4	4
Total Number of Wire	144	144
Type of Core	fibre	fibre
Number of outer wires	56	56
Number of outer strands	4	4
Compacted	No	Yes
Type of Lay	regular lay	regular lay
Direction of Lay	right hand lay	right hand lay
Greasing	core and strand	core and strand

Unit Per C/L

CODE	Dia (mm)	MBF (kN)	Weight (kgs/100m)
LANKO®FOUR			
21 36 71	12.5	103	66
72	18	225	120
73	20	280	150
74	22	345	188
75	24	400	226
21 36 76	26	470	256
77	28	555	304
78	30	635	349
79	32	725	397
80	34	805	429
21 36 81	36	900	497
82	38	1,010	556
LANKO®FOUR COMPACTED			
21 36 83	32	895	439
84	34	1,015	499
85	36	1,133	551

Name of Mfr. : Lankhorst Ropes

Multi Strand Non Rotating Wire Rope
37 x 7, 31 x 7
LANKO®PACK(Non-Rotating Rope)



Compacted Multi-Strand, Non-Rotating, Hoisting Wire Rope. The construction ensures great flexibility to make this wire rope suitable for use on "European" type of cranes.

The galvanization and internal/ external lubrication provide protection against environment.

The compacting gives this wire rope added breaking strength, for those circumstances where you need it.

Applications: Cranes, Hoists

Quality	:	galvanized
Tensile Strength	:	2,160 N/mm²
Total Number of Strands < 12mm	:	31
Total Number of Strands > 13mm	:	37
Total Number of Wires < 12mm	:	217
Total Number of Wires > 13mm	:	259
Type of Core	:	WSC
Number of outer wires	:	90/96
Number of outer strands	:	15/16
Type of Lay	:	Lang's Lay
Direction of Lay	:	right hand lay
Greasing	:	Yes
On Request	:	Regular Lay, Ungalvanised Dry Left Hand Lay Larger diameters

How to order : CODE

Compacted Multi-strand Wire rope, 37x7, LANKOPACK, non-rotating, galvanized, DIAM x LENGTH, Type/Direction of Lay, with TYPE of rope end preparation

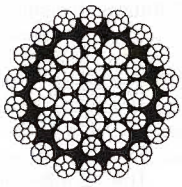
Unit Per C/L

CODE	Dia (mm)	MBF (kN)	Weight (kgs/100 m)
21 35 76	10	96.9	48.0
77	12	137.3	68.3
78	13	165.7	81.6
79	14	192.5	94.9
80	15	220.6	108.8
21 35 81	16	251.4	124.5
82	18	317.7	156.2
83	19	355.9	175.7
84	20	393.0	193.0
85	22	474.7	234.2
21 35 86	24	567.4	279.0
87	25	616.6	304.3
88	26	666.1	327.0
89	28	770.9	380.2
90	30	888.8	439.1
21 35 91	32	1,007.8	497.7
92	34	1,133.0	558.6
93	36	1,282.8	631.4
94	38	1,418.4	701.4
95	40	1,569.0	774.4

Name of Mfr. : Lankhorst Ropes

Multi Strand Non Rotating Wire Rope

37x7 LANKO®LIFT COMPACTED (Non-Rotating Rope)



Multi-Strand, non-rotating hoisting wire rope. The special feature of LANKO® LIFT is that in the production process the core is covered by an especially designed HDPE extruded cover. This gives the wire rope stability, avoids point to point contact between wires of the outer and inner strands and stops corrosion and wear of the core. When the high breaking strength is added, this hoisting wire rope really is top quality.

Applications	: Cranes, Hoists
Total Number of Wire	: 259
Quality	: galvanized
Tensile Strength	: 1,960 N/mm²
Total Number of Strands	: 37
Type of Core	: WSC
Number of outer wires	: 126
Number of outer strands	: 18
Type of Lay	: Lang Lay
Direction of Lay	: right hand lay
Greasing	: Yes
On Request	: Regular Lay Left Hand Lay Ungalvanised Dry

How to order: CODE

Multi-Strand Wire rope, LANKOLIFT, 37x7, non-rotating, galvanized, DIAM x LENGTH, Type/Direction of Lay, with TYPE of rope end preparation

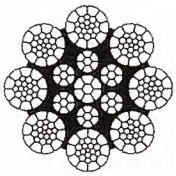
Unit Per C/L

CODE	Dia (mm)	MBF (kN)	Weight (kgs/100 m)
21 36 86	16	239.4	124.5
87	18	302.5	156.2
88	19	338.9	175.7
89	20	374.2	193.0
90	22	452.0	234.2
21 36 91	24	540.3	279.0
92	25	587.1	304.3
93	26	634.2	327.0
94	28	734.0	380.2
95	30	846.3	439.1
21 36 96	32	959.6	497.7
97	34	1,079.3	558.6
98	36	1,221.5	631.4
99	38	1,352.4	701.4
21 37 00	40	1,495.0	774.4
21 37 31	42	1,645.2	851.9
32	44	1,818.6	940.0
33	46	1,995.7	1,037.4
34	48	2,184.3	1,132.0
35	50	2,331.7	1,204.2
21 37 36	52	2,548.8	1,322.6
37	54	2,731.2	1,412.8

Name of Mfr. : Lankhorst Ropes

8-strand Wire Rope

Lanko®Top Compacted



8 Strand compacted wire rope mainly designed for Crane luffing wire. The special feature of LANKO® TOP compacted is that in the production process the core is covered by an especially designed HDPE extruded cover. This gives the wire rope stability, avoids point to point contact between wires of the outer and inner stands and stops corrosion and wear of the core. Compacting the wire rope provides more strength, due to higher steel content, and better abrasion resistance due to larger area of contact between wire rope and sheave.

* Quality	: galvanised
* Type of core	: plastic coverd IWRC
* Tensile Strength	: 2,160 N/mm²
* Type of lay	: regular lay
* Total number of strands	: 15
* Direction of lay	: right hand lay
* Number of outer strands	: 8
* Greasing	: yes
* On request	: lang lay, left hand lay, ungalvanized, dry

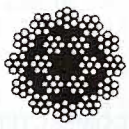
Unit Per C/L

CODE	Dia (mm)	MBF (kN)	Weight (kgs/100 m)
21 37 38	12	133	64.9
39	13	156	76.9
40	14	182	89.6
41	15	211	103.4
42	16	232	114.8
21 37 43	17	267	131.5
44	18	299	147.9
45	19	330	163.2
46	20	372	183.8
47	22	439	217.3
21 37 48	24	535	254.8
49	26	618	305.4
50	28	719	355.4
51	30	833	412.8
52	32	949	469.4
21 37 53	34	1,067	526.1
54	36	1,204	596.9
55	38	1,332	661.2
56	40	1,479	729.8
57	42	1,613	797.8
21 37 58	44	1,820	900.1
59	46	1,975	978.0
60	48	2,155	1,066.0

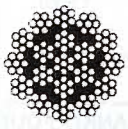
Name of Mfr. : Lankhorst Ropes

Hercules Rope

Multi strand type non-rotating rope and normally used for lifting or lowering lifeboats or crane wire rope.



18 x 7



19 x 7

How to order: CODE

Wire rope, non-rotating, Hercules, CONSTRUCTION, galvanized, DIAM x LENGTH with TYPE of rope end preparation

18 x 7

A+6x(1+6)/12x(1+6) Unit Per Mtr

CODE	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 36 51	12.5	85.6	8.73	0.634
52	14.0	107.0	11.0	0.796
53	16.0	140.0	14.3	1.040
54	18.0	178.0	18.1	1.320
55	20.0	219.0	22.4	1.620
21 36 56	22.4	275.0	28.0	2.040

19 x 7

1x(1+6)+6x(1+6)/12(1+6) Unit Per Mtr

CODE	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 36 61	12.5	91.9	9.37	0.664
62	14.0	115.0	11.8	0.833
63	16.0	151.0	15.4	1.090
64	18.0	191.0	19.4	1.380
65	20.0	235.0	24.0	1.700
21 36 66	22.4	295.0	30.1	2.130

Wire Rope for Offshore Drilling Units

The following recommendation table lists ropes which are designed and manufactured to meet the requirements for structural use on offshore drilling units. Many of the ropes are shown previously in the catalogue, but to simplify the selection process, the most popular wire constructions for offshore applications are provided below. These ropes are made to order, so ropes of constructions other than those listed below are also available upon request.

When ordering, specify the construction type, diameter, length of coil, and other related information helpful in identification of the rope.

Rope Recommendations Table

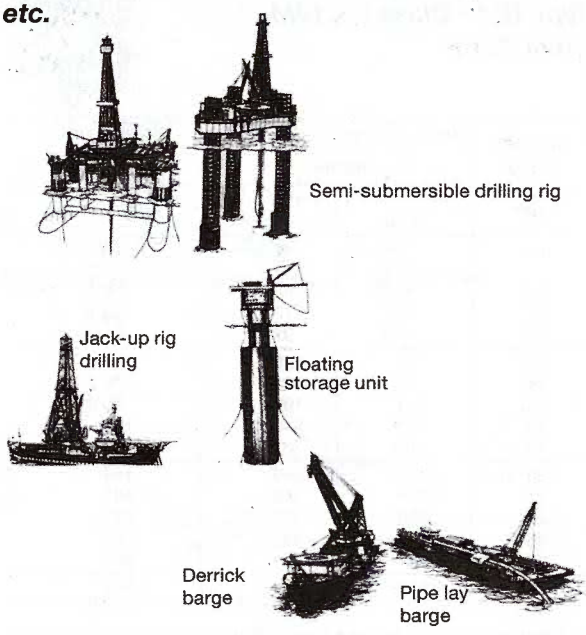
All ropes are right-hand, regular lay unless otherwise stated.

Applications	Recommended Construction
Drilling Lines	6 x 19, Seale with IWRC 6 x 26, Warrington Seale with IWRC
Anchor Lines	6 x 25, Filler Wire with IWRC 6 x 36, Warrington Seale with IWRC 6 x 41, Warrington seale with IWRC
Anchor Pennant Lines	6 x 25, Filler Wire with IWRC 6 x 41, Warrington Seale with IWRC
Riser-Tensioner Lines	6 x 41, Warrington Seale with IWRC, Lang's lay
Guide Lines	6 x 25, Filler Wire with IWRC 6 x 36, Warrington Seale with IWRC
Crane Hoist Wires	6 x 25, Filler Wire with IWRC or FC 6 x 36, Warrington Seale with IWRC or FC 18 x 7, Hercules 37 x 7, Nuflex U4 x SeS(39), UNI-ROPE, etc.
Crane Derricking Wires	6 x 25, Filler Wire with IWRC or FC 6 x 36, Warrington Seale with IWRC or FC 6 x 41, Warrington Seale with IWRC or FC
Sand Lines	6 x 7, PPC
Pipe Handling Slings	6 x 24, FC
Heavy Lifting Slings	Cable Laid Steel Wire rope IWRC

*** Please indicate Tensile grade (IPS or EIPS) and Finish (Bright or Galvanized) when ordering.

IPS= Improved Plow Steel, EIPS= Extra Improved Plow Steel, IWRC = Independent Wire Rope Core, FC= Fibre Core

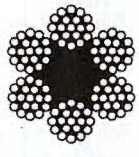
Typical Exploration Offshore Drilling Units, etc.



Specification for Wire Rope

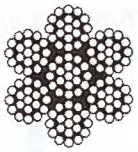
ANSI/API specification 9A
Twenty-fifth Edition, February 2004
ISO 10425:2003, Steel Wire Ropes for the Petroleum and Natural Gas Industries -
Minimum Requirement and Terms for Acceptance

Type G.3 - Class 6 x 19M Fibre Core



Nominal Rope Diameter mm	Minimum Breaking Force (Fmin) Grade 1,770 kN	Minimum Breaking Force (Fmin) Grade 1,960 kN	Approximate Nominal Length Mass kgs/100 mtr
3	4.89	5.42	3.11
4	8.69	9.63	5.54
5	13.6	15.0	8.65
6	19.6	21.7	12.5
7	26.6	29.5	17.0
8	34.8	38.5	22.1
9	44.0	48.7	28.0
10	54.3	60.2	34.6
11	65.8	72.8	41.9
12	78.2	86.6	49.8
13	91.8	102	58.5
14	107	118	67.8
16	139	154	88.6
18	176	195	112
19	196	217	125
20	217	241	138
22	263	291	167
24	313	347	199
26	367	407	234
28	426	472	271
32	556	616	354

Type G.4 - Class 6 × 19M Steel Core

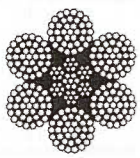


Nominal Rope Diameter mm	Minimum Breaking Force (Fmin)		Approximate Nominal Length Mass
	Grade 1,770 kN	Grade 1,960 kN	kgs/100 mtr
8	37.6	41.6	24.7
9	47.6	52.7	31.2
10	58.8	65.1	38.6
11	71.1	78.7	46.7
12	84.6	93.7	55.6
13	99.3	110	65.2
14	115	128	75.7
16	150	167	98.8
18	190	211	125
19	212	235	139
20	235	260	154
22	284	315	187
24	338	375	222
26	397	440	261
28	461	510	303
32	602	666	395

Type G.5 - Class 6 × 37M Fibre Core

Nominal Rope Diameter mm	Minimum Breaking Force (Fmin)		Approximate Nominal Length Mass
	Grade 1,770 kN	Grade 1,960 kN	kgs/100 mtr
5	13.9	14.6	8.65
6	18.8	20.8	12.5
7	25.6	28.3	17.0
8	33.4	37.0	22.1
9	42.3	46.8	28.0
10	52.2	57.8	34.6
11	63.2	70.0	41.9
12	75.2	83.3	49.8
13	88.2	97.7	58.5
14	102	113	67.8
16	134	148	88.6
18	169	187	112
19	188	209	125
20	209	231	138
22	253	280	167
24	301	333	199
26	353	391	239
28	409	453	271
32	535	592	354
35	640	708	424
36	677	749	448
38	754	835	500
40	835	925	554

Type G.6 - Class 6 × 37M Steel Core



Nominal Rope Diameter mm	Minimum Breaking Force (Fmin)		Approximate Nominal Length Mass
	Grade 1,770 kN	Grade 1,960 kN	kgs/100 mtr
8	39.2	43.4	24.4
9	49.6	54.9	30.9
10	61.2	67.8	38.1
11	74.1	82.1	46.1
12	88.2	97.7	54.9
13	95.4	106	64.4
14	111	126	74.7
16	145	160	97.5
18	183	203	123
19	204	226	138
20	226	250	152
22	273	303	184
24	325	360	219
26	382	423	258
28	443	490	299
32	578	640	390
35	692	766	467
36	732	810	494
38	815	903	550
40	903	1,000	610

Federal Specification, FS RR-W-410E-2002 (Superseding FS RR-W-410D-1984)

Type I, General Purpose, Class 1, 6×7, Improved Plow Steel, Fiber Cores

Rope Diameter		Approx. Weight lbs./ ft.	Nominal Strength in lbs.	
Inches	Circum.		Uncoated	Galvanized
1/4	3/4	0.094	5,280	4,760
5/16	1	0.15	8,200	7,380
3/8	1-1/8	0.21	11,720	10,540
7/16	1-3/8	0.29	15,860	14,280
1/2	1-5/8	0.38	20,600	18,540
9/16	1-3/4	0.48	26,000	23,400
5/8	2	0.59	31,800	28,600
3/4	2-3/8	0.84	45,400	40,800
7/8	2-3/4	1.15	61,400	55,200
1	3-1/8	1.50	79,400	71,400
1-1/8	3-1/2	1.90	99,600	89,600
1-1/4	3-7/8	2.34	122,000	109,800
1-3/8	4-3/8	2.84	146,200	131,600
1-1/2	4-3/4	3.38	172,400	155,200

Type I, General Purpose, Class 1, 6 × 7, Iron Galvanized, Regular Lay, Fiber Cores

Rope Diameter		Approx. Weight lbs./ft.	Nominal Strength in lbs.
Inches	Circum.		
1/4	3/4	0.094	1,840
5/16	1	0.15	2,840
3/8	1-1/8	0.21	4,080
7/16	1-3/8	0.29	5,520
1/2	1-5/8	0.38	7,160
9/16	1-3/4	0.48	9,020
5/8	2	0.59	11,080
3/4	2-3/8	0.84	15,800
13/16	2-1/2	0.99	18,460
7/8	2-3/4	1.15	21,400
1	3-1/8	1.50	27,600
1-1/16	3-3/8	1.70	31,000
1-1/8	3-1/2	1.90	34,600
1-3/16	3-3/4	2.12	38,400
1-1/4	3-7/8	2.34	42,400

Type I, General Purpose, Class 2, 6 × 19, and Class 3, 6 × 37, Single Operation Strand, Improved Plow Steel, Fiber Cores

Rope Diameter		Approx.	Nominal Strength in lbs.	
Inches	Circum.	Weight lbs./ft.	Uncoated	Galvanized
1/4	3/4	0.105	5,480	4,940
5/16	1	0.164	8,520	7,660
3/8	1-1/8	0.236	12,200	10,980
7/16	1-3/8	0.32	16,540	14,880
1/2	1-5/8	0.42	21,400	19,260
9/16	1-3/4	0.53	27,000	24,300
5/8	2	0.66	33,400	30,000
3/4	2-3/8	0.95	47,600	42,800
7/8	2-3/4	1.29	64,400	58,000
1	3-1/8	1.68	83,600	75,200
1-1/8	3-1/2	2.13	105,200	94,600
1-1/4	3-7/8	2.63	129,200	116,200
1-3/8	4-3/8	3.18	155,400	139,800
1-1/2	4-3/4	3.78	184,000	165,600
1-5/8	5-1/8	4.44	214,000	192,600
1-3/4	5-1/2	5.15	248,000	224,000
1-7/8	5-7/8	5.91	282,000	254,000
2	6-1/4	6.72	320,000	288,000
2-1/8	6-5/8	7.59	358,000	322,000
2-1/4	7-1/8	8.51	400,000	360,000
2-1/2	7-7/8	10.5	488,000	440,000
2-3/4	8-5/8	12.7	584,000	526,000
3	9-3/8	15.1	685,000	616,000
3-1/4	10-1/4	17.7	798,000	718,000
3-1/2	11	20.6	914,000	822,000

Type I, General Purpose, Class 2, 6 × 19, and Class 3, 6 × 37, Single Operation Strand, Improved Plow Steel, Wire Strand Core or IWRC

Rope Diameter		Approx.	Nominal Strength in lbs.	
Inches	Circum.	Weight lbs./ft.	Uncoated	Galvanized
1/4	3/4	0.116	5,880	5,300
5/16	1	0.180	9,160	8,240
3/8	1-1/8	0.26	13,120	11,800
7/16	1-3/8	0.35	17,780	16,000
1/2	1-5/8	0.46	23,000	20,700
9/16	1-3/4	0.59	29,000	26,100
5/8	2	0.72	35,800	32,200
3/4	2-3/8	1.04	51,200	46,000
7/8	2-3/4	1.42	69,200	62,200
1	3-1/8	1.85	89,800	80,800
1-1/8	3-1/2	2.34	113,000	101,800
1-1/4	3-7/8	2.89	138,800	125,000
1-3/8	4-3/8	3.50	167,000	150,400
1-1/2	4-3/4	4.16	197,800	178,000
1-5/8	5-1/8	4.88	230,000	207,000
1-3/4	5-1/2	5.67	266,000	240,000
1-7/8	5-7/8	6.50	304,000	274,000
2	6-1/4	7.39	344,000	310,000
2-1/8	6-5/8	8.35	384,000	346,000
2-1/4	7-1/8	9.36	430,000	387,000
2-1/2	7-7/8	11.6	524,000	472,000
2-3/4	8-5/8	14.0	628,000	566,000
3	9-3/8	16.6	740,000	666,000
3-1/4	10-1/4	19.5	858,000	772,000
3-1/2	11	22.7	982,000	884,000

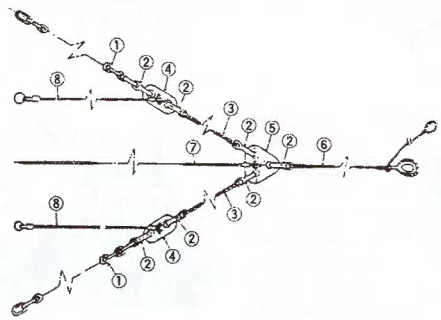
Note:

These specifications are quoted from the Federal Specification RR-W-410E dated February 7, 2002 and superseded to RR-W-410D on April 25, 1984. However, please acknowledge that these specifications are subject to change based upon revisions in Federal Regulations and other various factors. To obtain the most updated version of these specifications, please contact the Federal Supply Service Bureau at the following address:

Federal Supply Service Bureau,
Specification Section
470 East L'Enfant Plaza S.W., Suite 8100,
Washington D.C. 20407 U.S.A.
TEL: (202) 755-0325, FAX: (202) 755-0285

Offshore Drilling Units

Typical Assembling Plan for Towing Bridle



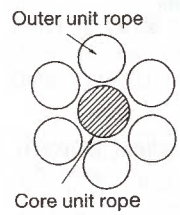
Quantity listed below shows for 2 sets of Towing Bridles

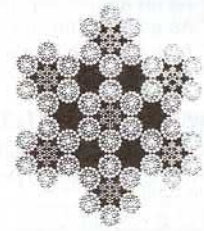
1	Towing Chain 78 mm Φ × 18 Mtrs	4 Sets
2	Anchor Shackle	14 Pcs.
3	towing ire 84 mm Φ × 41 Mtrs	4 Sets
4	Connection Plate	4 Pcs.
5	Tri Plate	2 Pcs.
6	Pendant Wire 80 mm Φ × 50 Mtrs	2 Sets
7	Recovering rope 28 mm Φ × 125 Mtrs	2 Sets
8	Recovering Rope	4 Sets

Cable Laid Sling

Steel slings which are designed for use in situations where extremely heavy load capacity is required. In the structural design and construction of modern offshore drilling rigs it is necessary to use ropes which can withstand very heavy loads for extended periods of time under extreme conditions.

For such jobs, ropes of more complex construction designs with high breaking strengths, good flexibility, easy handling, and product reliability are in greater demand.

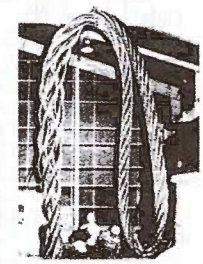




Cable Laid Design

The term "Cable Laid" indicates a rope that is constructed from a number of unit ropes laid up in a helical design. Because of the complexity of the rope design, there is a wide choice of sling constructions available. A more typical design is illustrated in this section.

When ordering, please indicate the size of the eye splice at each



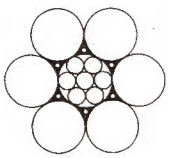
180 mm

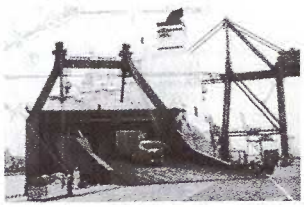
end of the rope as well as the diameter of the sling, the construction, breaking strength, and total length.

How to order: 21 - 38 - 01

Sling, cable laid, galvanized, DIAM of SLING, CONSTRUCTION, BREAKING STRENGTH, LENGTH

Delta Filler Wire Rope





A specially designed IWRC type rope with a patened plastic filler liner between the inner core and the outer strands of the rope. There are several unique advantages to this wire construction which make it more efficient and durable than normal wire ropes.

Delta Filler Rope eliminates one of the leading cause for unexpected wire rope failure, the invisible breakage of wire contact points inside of the wire core. When a rope is in use, the inner core of the rope is constantly in friction with the outside strands, causing abrasive wear on the connecting points in the wire core. With the Delta Filler Rope, a plastic lining fills the inner space of the rope stabilizing the strand lay construction and absorbing any friction between the inner core and the outer strands of the rope. The inner plastic lining also protects the inner core from corrosion. It keeps water and other elements from entering the inner core of the rope while keeping the anticorrosive lubricant oils inside of the rope from dripping out and polluting the environment.

Because of the ropes tendency not to twist it has a higher breaking strength than conventional ropes.

Delta Filler Rope is suitable for the following uses:

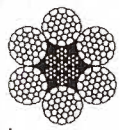
* As a mooring line for LNG carriers
* As a ramp support for RO-RO vessels.
* As an anchoring line for large vessels.
* As a luffing for deck cranes.
* As a guy line for large cranes.
* As a towing line for ocean tugboats.

How to order: 21-38-06

Delta Filler Wire Rope, CONSTRUCTION, DIAM, LENGTH with TYPE of rope end preparation

Circ. Inch	Diam. mm	Outer wire dia mm		Breaking Strength		Weight per mtr (kgs/mtr)
		6 x 36 W.S.	6 x 41 W.S.	kN	tf	
	25	1.42	1.26	431	44.0	2.75
3-1/4"	26	1.47	1.30	467	47.6	2.97
3-1/2"	28	1.62	1.42	541	55.2	3.45
3-3/4"	30	1.72	1.52	621	63.3	3.96
	31.5	1.82	1.62	685	69.8	4.36
4"	32	1.85	1.65	707	72.1	4.50
	33.5	1.92	1.72	775	79.0	4.94
4-1/4"	34	1.95	1.75	798	81.4	5.08
	35.5	2.02	1.82	870	88.7	5.54
4-1/2"	36	2.06	1.85	894	91.2	5.70
	37.5	2.15	1.92	971	99.0	6.18
4-3/4"	38	2.18	1.95	1,000	102	6.35
5"	40	2.27	2.02	1,108	113	7.04
5-1/4"	42	2.36	2.12	1,216	124	7.76
	42.5	2.40	2.15	1,245	127	7.94
5-1/2"	44	2.47	2.20	1,334	136	8.51
	45	2.55	2.27	1,402	143	8.91
5-3/4"	46	2.60	2.33	1,461	149	9.31
	47.5	2.70	2.40	1,559	159	9.92
6"	48	2.72	2.43	1,589	162	10.1
6-1/4"	50	2.85	2.55	1,726	176	11.0
6-1/2"	52	2.95	2.60	1,863	190	11.9
	53	3.03	2.70	1,942	198	12.4
6-3/4"	54	3.10	2.75	2,010	205	12.8
7"	56	3.20	2.85	2,167	221	13.8
7-1/4"	58	3.30	2.95	2,324	237	14.8
7-1/2"	60	3.40	3.03	2,491	254	15.8
	63	3.60	3.20	2,746	280	17.5

Green Rope



A unique full circle processed form provides approx. 10 to 20% higher breaking strength and endurance against abrasion compared with conventional wire rope.

Also this form will not get out easily under hard conditions by passing through the rollers or sheaves, or by winding into rope drum frequently.

Applications: Winches, Cranes

How to order: 21 - 38 - 11

Wire rope, Green Rope, ungalvanized 6xWS(31)IWRC, DIAM x LENGTH with TYPE of rope end preparation

Ungalvanized

Circ. Inch	Diam. mm	Breaking Strength		Weight per mtr (kgs/mtr)
		kN	tf	
2-1/4"	18	265	27.1	1.50
2-1/2"	20	328	33.4	1.86
2-3/4"	22	396	40.4	2.25
3"	24	472	48.1	2.67
	25	512	52.2	2.90
3-1/4"	26	554	56.4	3.14
3-1/2"	28	642	65.5	3.64
3-3/4"	30	737	75.2	4.18
4"	32	839	85.5	4.75
4-1/4"	34	947	96.5	5.37
4-1/2"	36	1,060	108.0	6.02

Stainless Steel Wire Rope

There are many kinds of stainless steel ropes which are applicable for use in a wide variety of industries. The most commonly used stainless steel alloys are the AISI 304 and AISI 316 alloys which have superior resistance to corrosion in atmospheres with the presence of alkaline, acidic, or chemical elements. Stainless steel is also superior in its resistance to the adverse effects of extreme hot or cold temperatures.

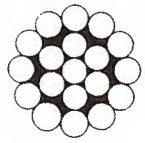
Features of Stainless Steel Rope

* It will not rust easily in normal atmospheres and keeps a clean surface appearance.
* It will resist corrosion easily in high temperatures.

* It will resist corrosion from many industrial chemicals.
* Hard stainless steel has a high breaking strength and superior mechanical properties.
* Soft stainless steel wire rope is laid with bright annealing wire and is very flexible.
* Stainless steel AISI 304 complies with Japanese Industrial Standards SUS-304 for wire ropes.

Stainless Steel Wire Rope 1 x 19

1 x (1 + 6 + 12)



Applications: Standing Riggings

How to order: CODE

Wire rope, stainless steel, SUS-304,
1 x 19, DIAM x LENGTH

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 40 01		7	44.3	4.52	0.265
02	1"	8	53.0	5.40	0.328
03	1-1/8"	9	68.1	6.94	0.416
04	1-1/4"	10	81.4	8.30	0.512
05		11	100	10.2	0.640
21 40 06	1-1/2"	12	109	11.1	0.710
07	1-3/4"	14	151	15.4	1.00
08	2"	16	180	18.4	1.31
09	2-1-4"	18	230	23.5	1.66
10		19	255	26.0	1.85

Stainless Steel Wire Rope 6 x 19

6 x (1 + 6 + 12)

Applications: Cranes, etc.

How to order: CODE

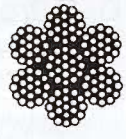
Wire rope, stainless steel, SUS-304,
6 x 19, DIAM x LENGTH

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 40 31	3/4"	6	22.2	2.26	0.133
32	1"	8	37.9	3.86	0.236
33	1-1/8"	9	48.6	4.96	0.298
34	1-1/4"	10	58.5	5.97	0.369
35	1-1/2"	12	84.2	8.59	0.531
21 40 36	1-3/4"	14	112	11.4	0.624
37	2"	16	143	14.6	0.924
38	2-1/4"	18	183	18.7	1.20
39	2-1/2"	20	221	22.5	1.47
40	2-3/4"	22	267	27.2	1.86
21 40 41	3"	24	316	32.2	2.05
42	3-1/4"	26	359	36.6	2.50

Stainless Steel Wire Rope 7 x 19

1x (1+6+12) + 6 x (1+6+12)



Applications: Hoists, etc.

How to order: CODE

Wire rope, stainless steel, SUS-304, 7 x 19, DIAM x LENGTH

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 40 61	1"	8	40.0	4.08	0.269
62	1-1/8"	9	53.4	5.45	0.340
63	1-1/4"	10	64.5	6.58	0.419
64	1-1/2"	12	93.0	9.48	0.584
65	1-3/4"	14	124	12.6	0.821
21 40 66	2"	16	158	16.1	1.08
67	2-1/4"	18	203	20.7	1.36
68	2-1/2"	20	244	24.9	1.68
69	2-3/4"	22	295	30.1	2.12
70	3"	24	350	35.7	2.41
21 40 71	3-1/4"	26	398	40.6	2.94
72	3-1/2"	28	479	48.8	3.28
73	3-3/4"	30	534	54.5	3.77

Stainless Steel Wire Rope 6 x 24

6 x (9 + 15)

Applications: Cranes, etc.

How to order: CODE

Wire rope, stainless steel, SUS-304,
6 x 24, DIAM x LENGTH

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 41 01	3/4"	6	19.0	1.94	0.103
02	1"	8	33.4	3.41	0.215
03	1-1/8"	9	52.0	4.28	0.273
04	1-1/4"	10	51.9	5.29	0.337
05	1-1/2"	12	72.9	7.43	0.487
21 41 06	1-3/4"	14	99.0	10.1	0.661
07	2"	16	127	13.0	0.864
08	2-1/4"	18	159	16.2	1.10
09	2-1/2"	20	196	20.0	1.35
10	2-3/4"	22	230	23.5	1.70
21 41 11	3"	24	275	28.0	1.88
12	3-1/4"	26	301	30.7	2.29

Stainless Steel Wire Rope 6 x 37

6 x (1 + 6 + 12 + 18)

Applications: Cranes, etc.

How to order: CODE

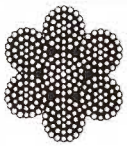
Wire rope, stainless steel, SUS-304, 6 x 37,
DIAM x LENGTH

Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 41 31	3/4"	6	21.0	2.14	0.131
32	1"	8	35.2	3.59	0.232
33	1-1/8"	9	45.1	4.60	0.294
34	1-1/4"	10	54.4	5.55	0.364
35	1-1/2"	12	78.4	7.99	0.505
21 41 36	1-3/4"	14	104	10.6	0.713
37	2"	16	134	13.7	0.933
38	2-1/4"	18	173	17.6	1.19
39	2-1/2"	20	207	21.1	1.45
40	2-3/4"	22	250	25.5	1.84
21 41 41	3"	24	297	30.3	2.03
42	3-1/4"	26	333	34.0	2.55
43	3-1/2"	28	394	40.2	2.86
44	3-3/4"	30	430	43.8	3.28

Stainless Steel Wire Rope 7 x 37

1 x (1+6+12+18) + 6 x (1+6+12+18)



Applications: Cranes, etc.

How to order: CODE

Wire rope, stainless steel, SUS-304, 7 x 37, DIAM x LENGTH

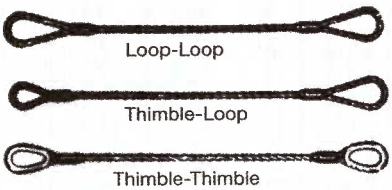
Unit Per C/L

CODE 200 mtrs 110 fms	Circ. Inch	Diam mm	Breaking Strength kN	Breaking Strength tf	Weight per mtr (kgs/mtr)
21 41 61	3/4"	6	23.2	2.37	0.151
62	1"	8	38.8	3.96	0.267
63	1-1/8"	9	51.5	5.25	0.338
64	1-1/4"	10	62.1	6.33	0.417
65	1-1/2"	12	89.3	9.11	0.580
21 41 66	1-3/4"	14	119	12.1	0.818
67	2"	16	154	15.7	1.07
68	2-1/4"	18	197	20.1	1.35
69	2-1/2"	20	237	24.2	1.67
70	2-3/4"	22	286	29.2	2.10
21 41 71	3"	24	341	34.8	2.32
72	3-1/4"	26	390	39.8	2.94
73	3-1/2"	28	439	44.8	3.28
74	3-3/4"	30	500	51.0	3.77

Wire Rope Slings

Generally made from galvanized wire rope of 6 x 24 construction. Made to order. When ordering, please specify the following points :

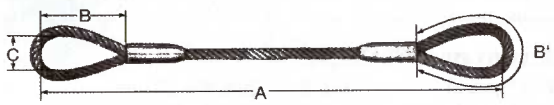
1. Type
2. Wire Rope Construction
3. Wire Rope Diameter
4. Overall Length



How to order: 21 - 45 - 01

Sling, wire rope, TYPE, CONSTRUCTION , DIAM (mm), OVERALL LENGTH (mtr)

Standard Size of Eye Splicing

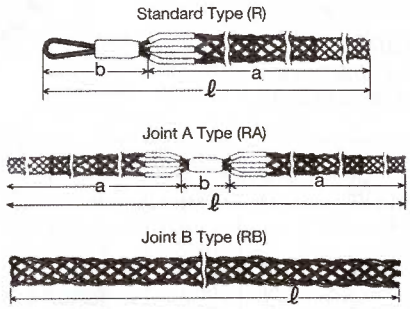


Wire Rope Diam.	Standard Size of Eye Splice B	C	B'	Wire Rope Diam.	Standard Size of Eye Splice B	C	B'
6	100	50	250	36	500	250	1,250
8	160	80	400	38	500	250	1,250
9	160	80	400	40	600	300	1,500
10	200	100	500	42	600	300	1,500
12	200	100	500	45	700	350	1,750
14	260	130	650	48	800	400	2,000
16	260	130	650	50	900	450	2,250
18	300	150	750	53	1,000	500	2,500
20	300	150	750	56	1,100	550	2,750
22	300	150	750	60	1,200	600	3,000
24	360	180	900	65	1,300	650	3,250
26	360	180	900	70	1,400	700	3,500
28	400	200	1,000				
30	400	200	1,000				
32	460	230	1,150				
34	460	230	1,150				

Cable Grips (Cable Stocking)

Cable grips are invariably made from woven mesh wire in the shape of an open ended stocking or sleeve. Cable grips of the same diameter as the rope to be restored are prepared with the strand ends fitted with pull collars. The sock is placed over the ends of the new and old wire ropes and when it is pulled taught, the woven mesh tightens snug around the rope.

The grip is easily fitted and removed. It holds the wire rope securely, operates safely, and saves labor costs compared to other means of rope repair.



Unit Per Pc.

CODE	Road Diam mm	Size mm a	Size mm b	Size mm L	Max. Work Load (Tons)
Standard Type (R)					
21 45 06	8 ~ 11	450	140	590	0.5
07	11 ~ 13	500	190	690	1.1
08	13 ~ 16	600	190	790	1.1
09	16 ~ 21	650	220	870	1.4
10	21 ~ 25	850	220	1,070	1.7
21 45 11	25 ~ 30	900	250	1,150	2.7
12	30 ~ 35	1,100	310	1,410	3.0
13	35 ~ 42	1,200	360	1,560	3.5
14	42 ~ 50	1,500	360	1,860	4.2
Joint A Type (RA)					
21 45 15	8 ~ 11	450	140	1,040	0.4
16	11 ~ 13	500	210	1,210	0.8
17	13 ~ 16	600	210	1,410	0.8
18	16 ~ 21	650	220	1,520	1.1
19	21 ~ 25	850	220	1,920	1.3
21 45 20	25 ~ 30	900	220	2,020	2.1
21	30 ~ 35	1,100	280	2,480	2.4
22	35 ~ 42	1,200	280	2,680	2.8
23	42 ~ 50	1,500	280	3,280	3.3

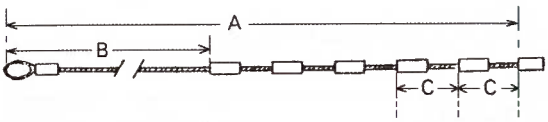
Joint A Type (RB)

CODE	Road Diam mm	Size (L) mm	Max. Work Load (Tons)
21 45 24	8 ~ 11	950	0.4
25	11 ~ 13	1,200	0.8
26	13 ~ 16	1,600	0.8
27	16 ~ 21	1,700	1.1
28	21 ~ 25	2,000	1.3
21 45 29	25 ~ 30	2,000	2.1
30	30 ~ 35	2,600	2.4
31	35 ~ 42	2,900	2.8
32	42 ~ 50	3,500	3.3

Guy Preventers & Stoppers

When ordering the preventers, please specify:

(1) Overall length of wire rope: (A)
(2) Intervals and the number of sleeves (Ferrules) to be attached: (B & C)
(3) Rope-end processing
(4) Quantity

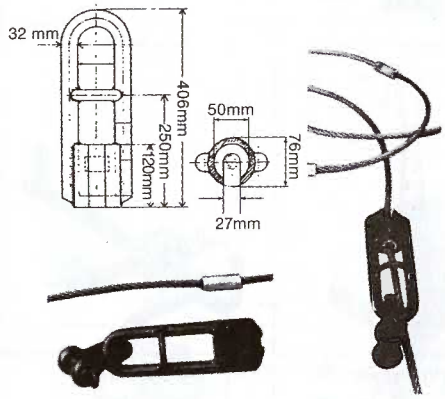


Galvanized Steel Wire Rope
Construction : 7 x 19
Diam : 20 mm
Breaking Strength : 32 tons

Sleeves (Ferrules)
Material : Aluminium Alloy
Size : Diam - 43 mm
Length - 100 mm

Stoppers (Shoes) or Preventer Grips
Material : Iron
Size : as per sketch

Stoppers (Shoes)



How to order: 21-46-11

Guy preventer, galvanized wire rope, 20 mm dia, 7 x 19 x length x sleeve interval x processing of rope and x with stopper (set)

Rope Core

FC Fibre Core

IWRC Independent Wire Rope Core

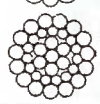
Rope Symbols

S	Seale
W	Warrington
Fi	Filler
WS	Warrington Seale
SeS	Semi Seale
IWRC	Independent Wire Rope Core
FC	Fibre Core

Wire Rope Section

Warrington Type

Filler Type


Semi Seale Type

Warrington Seale Type

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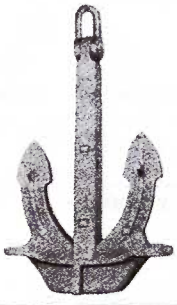
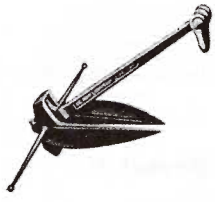
World Various Type Anchors

JIS Stockless Anchor	JIS Stocked Anchor	US Navy Type Stockless Anchor	US Navy Type Light Weight Anchor
			
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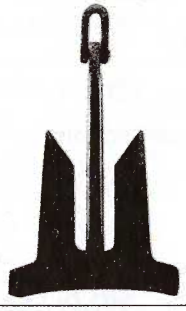	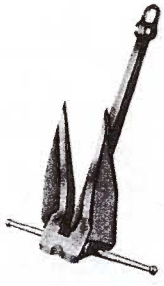	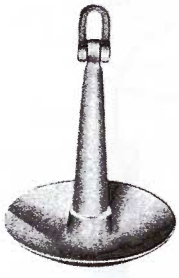	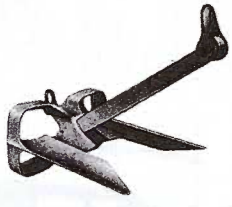
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	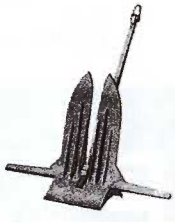		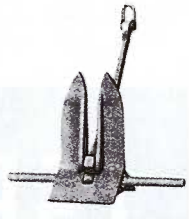

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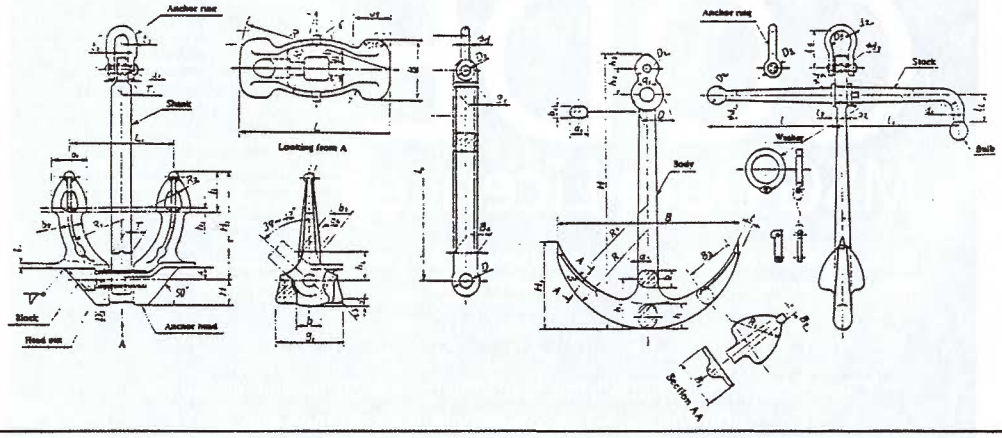
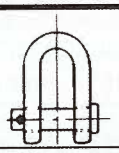
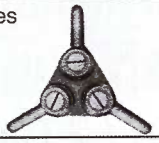
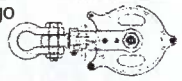
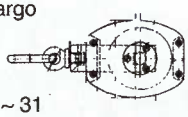
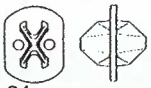
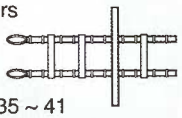
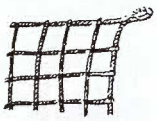
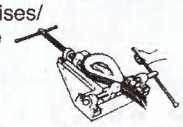


RIGGING EQUIPMENT & GENERAL DECK ITEMS

Shackles  P. 23-1 ~ 8	Turnbuckles P. 23-8 ~ 10	Wire Clips/ Thimbles/Sockets P. 23-11 ~ 14	Chains/Links P. 23-14 ~ 20
Cargo Hooks P. 23-20 ~ 21	Delta Plates  P. 23-21	Crosby Products P. 23-21 ~ 26	Steel Cargo Blocks  P. 26-29
Wood Cargo Blocks  P. 23-29 ~ 31	Container Lashings  P. 23-31 ~ 34	Car Claspers P. 23-34	Ladders  P. 23-35 ~ 41
Scaffolds/Stages/Boatswain's Chairs P. 23-41 ~ 42	Cargo Nets/Sfety Nets  P. 23-42	Cargo Bags/ Sling Belts P. 23-42 ~ 43	Canvas/Canvas Maintenance Items P. 23-43 ~ 45
Hatch Wedges/Hatach Cover Tapes P. 23-45 ~ 46	Rat Guards P. 23-46	Riggers' Vises/ Wire Rope Grips  P. 23-46	Fenders P. 23-46 ~ 48
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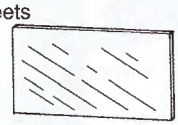
Dunnage Bags/ Plywood P. 23-52 ~ 53	Nails P. 23-53	Acryl Sheets  P. 23-53	Waste/Rags P. 23-53 ~ 54
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Requirement of Certificate

Please mention on your request for cargo handling gear such as shackles, turnbuckles, cargo blocks, chains, etc. if you require a certificate, and specify which type of certificate: Class / Factory / Manufacturer, etc.

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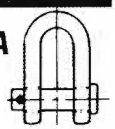
1. Shackles

M Class Straight Shackles - SA
with Flat Head Pin
(Ref. JIS B 2801-1996)

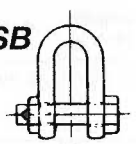

SA

Drop forged carbon steel shackle with flat head pin and split pin hole on the other end. Used for heavy work. Please specify Ungalvanized (Black) or Galvanized shackle is required.

Unit Per Pc.

CODE Ungalv. (Black)	Type Galv.	Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. Ton
23 37 01	23 37 21	34	50	116	40	7.0
02	22	36	54	123	42	8.0
03	23	38	57	129	46	9.0
04	24	40	60	136	48	10.0
05	25	42	63	142	51	11.0
23 37 06	23 37 26	44	66	149	54	12.5
07	27	46	68	156	56	13.0
08	28	48	72	163	58	14.0
09	29	50	75	170	60	16.0
10	30	55	83	187	65	18.0
23 37 11	23 37 31	60	90	205	70	20.0
12	32	65	98	221	77	25.0
13	33	70	105	238	83	31.5
14	34	75	112	255	90	35.0
15	35	80	120	272	96	40.0
23 37 16	23 37 36	85	128	289	102	45.0
17	37	90	135	306	108	50.0

M Class Straight Shackles - SB
with Hexagon Head Bolt
(Ref. JIS B 2801-1996)

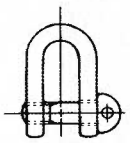

SB

Drop forged carbon steel shackle with a hexagon, metric coarse threaded bolt, which has a split pin hole at the end and a securing nut. Please specify Ungalvanized (Black) or galvanized shackle is required.

Unit Per Pc.

CODE Ungalv. (Black)	CODE Galv.	Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin Diam. mm	S.W.L. Ton
23 37 41	23 37 66	20	31	M24	68	24	2.5
42	67	22	34	M24	75	26	3.15
43	68	24	39	M30	81	30	3.6
44	69	26	41	M30	88	32	4.0
45	70	28	43	M33	92	34	4.8
23 37 46	23 37 71	30	45	M36	102	36	5.0
47	72	32	48	M36	109	38	6.3
48	73	34	50	M39	116	40	7.0
49	74	36	54	M42	123	42	8.0
50	75	38	57	M45	129	46	9.0
23 37 51	23 37 76	40	60	M48	136	48	10.0
52	77	42	63	M48	142	51	11.0
53	78	44	66	M48	149	54	12.5
54	79	46	68	M48	156	56	13.0
55	80	48	72	M56	163	58	14.0
23 37 56	23 37 81	50	75	M56	170	60	16.0
57	82	55	83	M64	187	65	18.0
58	83	60	90	M64	205	70	20.0
59	84	65	98	M 72x6	221	77	25.0
60	85	70	105	M 80x6	238	83	31.5
23 37 61	23 37 86	75	112	M 80x6	255	90	35.0
62	87	80	120	M 90x6	272	96	40.0
63	88	85	128	M 90x6	289	102	45.0
64	89	90	135	M100x6	306	108	50.0

M Class Straight Shackles - SC
with Eye Bolt
(Ref. JIS B 2801-1996)

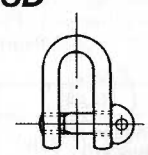

SC

A drop forged, carbon steel shackle with an eye bolt which has a metric coarse thread on one end. Please specify Ungalvanized (Black) or Galvanized shackle is required.

Unit Per Pc.

CODE Ungalv. (Black)	CODE Galv.	Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin Diam. mm	S.W.L. Ton
23 38 01	23 38 16	16	26	M18	54	19	1.6
02	17	18	29	M20	61	21	2.0
03	18	20	31	M24	68	24	2.5
04	19	22	34	M24	75	26	3.15
05	20	24	39	M30	81	30	3.6
23 38 06	23 38 21	26	41	M30	88	32	4.0
07	22	28	43	M33	95	34	4.8
08	23	30	45	M36	102	36	5.0
09	24	32	48	M36	109	38	6.3
10	25	34	50	M39	116	40	7.0
23 38 11	23 38 26	36	54	M42	123	42	8.0
12	-	38	57	M45	129	46	9,0
13	-	40	60	M48	136	48	10.0

M Class Straight Shackles - SD
with Eye Bolt
(Ref. JIS B 2801-1996)


SD

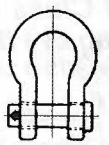
A drop forged, carbon steel shackle with an eye bolt which has metric coarse threads at one end. Please specify Ungalvanized (Black) or Galvanized shackles is required.

Unit Per Pc.

CODE Ungalv. (Black)	CODE Galv.	Body Diam. mm	Opening mm	Screw Pin Thread	Clear Length mm	Pin Diam. mm	S.W.L. Ton
-	23 38 41	16	32	M20	53	21	1.0
-	42	20	40	M24	68	24	1.6
-	43	22	44	M27	74	27	2.0
-	44	24	48	M27	81	29	2.5
-	45	26	52	M30	88	32	3.15
-	23 38 46	28	56	M33	95	34	3.5
23 38 31	47	30	60	M36	102	36	4.0
32	48	34	68	M42	115	42	5.0
33	49	38	76	M45	129	45	6.3
34	50	40	80	M48	136	48	7.0
23 38 35	23 38 51	42	84	M48	142	51	8.0
36	52	48	96	M56	163	58	10.0
37	53	52	104	M56	177	62	12.5
38	54	58	116	M64	198	68	16.0

Note: Both SC, SD shackles are similar in type, but opening and SWL differ in the same size. Sizes of the opening in SD type are double the body size.

M Class Bow Shackles - BA
with Flat Head Pin
(Ref. JIS B 2801-1996)


BA

A weldless, drop forged, carbon steel shackle with a flathead pin which has a hole for a securing pin at one end. Please specify Ungalvanized (Black) or Galvanized shackles is required.

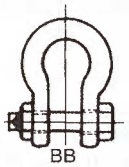
Unit Per Pc.

CODE		Oval Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.					
23 38 61	23 38 81	34	50	156	40	7.0
62	82	36	54	169	42	8.0
63	83	38	57	175	46	9.0
64	84	40	60	188	48	10.0
65	85	42	63	194	51	11.0
23 38 66	23 38 86	44	66	203	54	12.5
67	87	46	68	212	56	13.0
68	88	48	72	219	58	14.0
69	89	50	75	227	60	16.0
70	90	55	83	247	65	18.0
23 38 71	23 38 91	60	90	275	70	20.0
72	92	65	98	299	77	25.0
73	93	70	105	318	83	31.5
74	94	75	112	342	90	35.0
75	95	80	120	366	96	40.0
23 38 76	23 38 96	85	128	389	102	45.0
77	97	90	135	419	108	50.0

M Class Bow Shackles - BB

with Hexagon Head Bolt

(Ref. JIS B 2801-1996)


BB

A weldless, drop forged, carbon steel shackle with a hexagon, metric coarse threaded bolt, nut, and a split pin hole at the other end. Please specify Ungalvanized (Black) or Galvanized shackle is required.

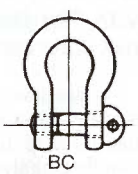
Unit Per Pc.

CODE		Oval Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.						
23 39 01	23 39 26	20	31	M24	92	24	2.5
02	27	22	34	M24	104	26	3.15
03	28	24	39	M30	111	30	3.6
04	29	26	41	M30	119	32	4.0
05	30	28	43	M33	127	34	4.8
23 39 06	23 39 31	30	45	M36	135	36	5.0
07	32	32	48	M36	148	38	6.3
08	33	34	50	M39	156	40	7.0
09	34	36	54	M42	169	42	8.0
10	35	38	57	M45	175	46	9.0
23 39 11	23 39 36	40	60	M48	188	48	10.0
12	37	42	63	M48	194	51	11.0
13	38	44	66	M48	203	54	12.5
14	39	46	68	M48	212	56	13.0
15	40	48	72	M56	219	58	14.0
23 39 16	23 39 41	50	75	M56	227	60	16.0
17	42	55	83	M64	247	65	18.0
18	43	60	90	M64	275	70	20.0
19	44	65	98	M 72x6	299	77	25.0
20	45	70	105	M 80x6	318	83	31.5
23 39 21	23 39 46	75	112	M 80x6	342	90	35.0
22	47	80	120	M 90x6	366	96	40.0
23	48	85	128	M 90x6	389	102	45.0
24	49	90	135	M100x6	419	108	50.0

M Class Bow Shackles - BC

with Eye Bolt

(Ref. JIS B 2801-1996)


BC

Weldless, drop forged, carbon steel shackle with an eye bolt which has a metric coarse threaded end. Please specify Ungalvanized (Black) or Galvanized shackle is required

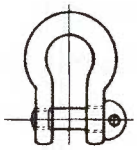
Unit Per Pc.

CODE		Oval Body Small Diam. mm	Opening mm	Screw Pin Thread	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.						
23 39 51	23 39 66	16	26	M18	70	19	1.6
52	67	18	29	M20	84	21	2.0
53	68	20	31	M24	92	24	2.5
54	69	22	34	M24	104	26	3.15
55	70	24	39	M30	111	30	3.6
23 39 56	23 39 71	26	41	M30	119	32	4.0
57	72	28	43	M33	127	34	4.8
58	73	30	45	M36	135	36	5.0
59	74	32	48	M36	148	38	6.3
60	75	34	50	M39	156	40	7.0
23 39 61	23 39 76	36	54	M42	169	42	8.0
62	77	38	57	M45	175	46	9.0
63	78	40	60	M48	188	48	10.0

M Class Bow Shackles - BD

with Eye Bolt

(Ref. JIS B 2801-1996)


BD

A weldless, drop forged, carbon steel shackle with an eye bolt which has metric coarse threads on the end. Please specify Ungalvanized (Black) shackle or Galvanized shackle is required.

Unit Per Pc.

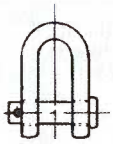
CODE		Oval Body Small Diam. mm	Opening mm	Screw Pin Thread	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.						
23 39 81	23 39 86	16	32	M20	69	21	1.2
82	87	18	36	M20	89	21	1.3
83	88	20	40	M24	100	24	1.8

Note: Both BC and BD shackles are similar in type, but the opening and SWL differ in the same size.
Sizes of the openings in the BD types are double the smaller diams. of the oval body.

Straight Shackles - SA

with Flat Head Pin

(Ref. JIS B 2801-1977)

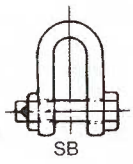

SA

Drop forged carbon steel shackle with flat head pin and split pin hole on the other end. Used for heavy work.

Unit Per Pc.

CODE		Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.					
23 01 01	23 13 01	34	50	116	40	7.0
02	02	36	54	123	42	8.0
03	03	38	57	129	46	9.0
04	04	40	60	136	48	10.0
05	05	42	63	142	51	11.0
23 01 06	23 13 06	44	66	149	54	12.0
07	07	46	68	156	56	13.0
08	08	48	72	163	58	14.0
09	09	50	75	170	60	15.0
10	10	55	83	187	65	18.0
23 01 11	23 13 11	60	90	205	70	22.0
12	12	65	98	221	77	26.0
13	13	70	105	238	83	30.0
14	14	75	112	255	90	35.0
15	15	80	120	272	96	40.0
23 01 16	23 13 16	85	128	289	102	45.0
17	17	90	135	306	108	50.0

Straight Shackles - SB
with Hexagon Head Bolt
(Ref. JIS B 2801-1977)

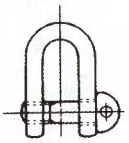

SB

Drop forged carbon steel shackle with a hexagon, metric coarse threaded bolt, which has a split pin hole at the end and a securing nut.

Unit Per Pc.

CODE		Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.						
23 01 21	23 13 21	20	31	M24	68	24	2.5
22	22	22	34	M24	75	26	3.0
23	23	24	39	M30	81	30	3.6
24	24	26	41	M30	88	32	4.2
25	25	28	43	M33	92	34	4.8
23 01 26	23 13 26	30	45	M36	102	36	5.4
27	27	32	48	M36	109	38	6.2
28	28	34	50	M39	116	40	7.0
29	29	36	54	M42	123	42	8.0
30	30	38	57	M45	129	46	9.0
23 01 31	23 13 31	40	60	M48	136	48	10.0
32	32	42	63	M48	142	51	11.0
33	33	44	66	M48	149	54	12.0
34	34	46	68	M48	156	56	13.0
35	35	48	72	M56	163	58	14.0
23 01 36	23 13 36	50	75	M56	170	60	15.0
37	37	55	83	M64	187	65	18.0
38	38	60	90	M64	205	70	22.0
39	39	65	98	M 72×6	221	77	26.0
40	40	70	105	M 80×6	238	83	30.0
23 01 41	23 13 41	75	112	M 80×6	255	90	35.0
42	42	80	120	M 90×6	272	96	40.0
43	43	85	128	M 90×6	289	102	45.0
44	44	90	135	M100×6	306	108	50.0

Straight Shackles - SC
with Eye Bolt
(Ref. JIS B 2801-1977)

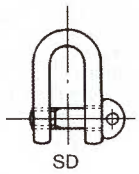

SC

A drop forged, carbon steel shackle with an eye bolt which has a metric coarse thread on one end. Please specify Ungalvanized (Black) or Galvanized shackle is required.

Unit Per Pc.

CODE		Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.						
23 13 51	23 01 51	6	11	M 8	20	8	0.2
52	52	8	14	M10	27	10	0.35
53	53	10	17	M12	34	12	0.6
23 01 54	23 13 54	12	20	M14	40	15	0.9
55	55	14	24	M16	47	17	1.2
23 01 56	23 13 56	16	26	M18	54	19	1.5
57	57	18	29	M20	61	21	2.0
58	58	20	31	M24	68	24	2.5
59	59	22	34	M24	75	26	3.0
60	60	24	39	M30	81	30	3.6
23 01 61	23 13 61	26	41	M30	88	32	4.2
62	62	28	43	M33	95	34	4.8
63	63	30	45	M36	102	36	5.4
64	64	32	48	M36	109	38	6.2
65	65	34	50	M39	116	40	7.0
23 01 66	23 13 66	36	54	M42	123	42	8.0
67	67	38	57	M45	129	46	9,0
68	68	40	60	M48	136	48	10.0

Straight Shackles - SD
with Eye Bolt
(Ref. JIS B 2801-1977)


SD

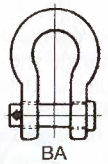
A drop forged, carbon steel shackle with an eye bolt which has metric coarse threads at one end. Please specify Ungalvanized (Black) or Galvanized shackles is required.

Unit Per Pc.

CODE		Body Diam. mm	Opening mm	Screw Pin Thread	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.						
23 13 71	23 01 71	10	20	M12	34	12	0.4
23 01 72	23 13 72	12	24	M14	40	15	0.6
73	73	14	28	M16	47	17	0.8
74	74	16	32	M20	54	20	1.0
75	75	20	40	M24	68	24	1.5
23 01 76	23 13 76	22	44	M27	74	27	2.0
77	77	24	48	M27	81	29	2.5
78	78	26	52	M30	88	32	3.0
79	79	28	56	M33	95	34	3.5
80	80	30	60	M36	102	36	4.0
23 01 81	23 13 81	34	68	M42	115	42	5.0
82	82	38	76	M45	129	45	6.0
83	83	40	80	M48	136	48	7.0
84	84	42	84	M48	142	51	8.0
85	85	48	96	M56	163	58	10.0
23 01 86	23 13 86	52	104	M56	177	62	12.0
87	87	58	116	M64	198	68	15.0

Note: Both SC, SD shackles are similar in type, but opening and SWL differ in the same size. Sizes of the opening in SD type are double the body size.

Bow Shackles - BA
with Flat Head Pin
(Ref. JIS B 2801-1977)

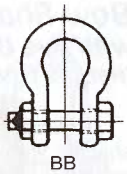

BA

A weldless, drop forged, carbon steel shackle with a flathead pin which has a hole for a securing pin at one end.

Unit Per Pc.

CODE		Oval Body Small Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. Ton
Ungalv. (Black)	Galv.					
23 02 01	23 14 01	34	50	156	40	7.0
02	02	36	54	169	42	8.0
03	03	38	57	175	46	9.0
04	04	40	60	188	48	10.0
05	05	42	63	194	51	11.0
23 02 06	23 14 06	44	66	203	54	12.0
07	07	46	68	212	56	13.0
08	08	48	72	219	58	14.0
09	09	50	75	227	60	15.0
10	10	55	83	247	65	18.0
23 02 11	23 14 11	60	90	275	70	22.0
12	12	65	98	299	77	26.0
13	13	70	105	318	83	30.0
14	14	75	112	342	90	35.0
15	15	80	120	366	96	40.0
23 02 16	23 14 16	85	128	389	102	45.0
17	17	90	135	419	108	50.0

Bow Shackles - BB
with Hexagon Head Bolt
(Ref. JIS B 2801-1977)

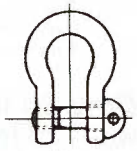

BB

A weldless, drop forged, carbon steel shackle with a hexagon, metric coarse threaded bolt, nut, and a split pin hole at the other end.

Unit Per Pc.

CODE Ungalv. (Black)	CODE Galv.	Oval Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin diam. mm	S.W.L. Ton
23 02 21	23 14 21	20	31	M24	92	24	2.5
22	22	22	34	M24	104	26	3.0
23	23	24	39	M30	111	30	3.6
24	24	26	41	M30	119	32	4.2
25	25	28	43	M33	127	34	4.8
23 02 26	23 14 26	30	45	M36	135	36	5.4
27	27	32	48	M36	148	38	6.2
28	28	34	50	M39	156	40	7.0
29	29	36	54	M42	169	42	8.0
30	30	38	57	M45	175	46	9.0
23 02 31	23 14 31	40	60	M48	188	48	10.0
32	32	42	63	M48	194	51	11.0
33	33	44	66	M48	203	54	12.0
34	34	46	68	M48	212	56	13.0
35	35	48	72	M56	219	58	14.0
23 02 36	23 14 36	50	75	M56	227	60	15.0
37	37	55	83	M64	247	65	18.0
38	38	60	90	M64	275	70	22.0
39	39	65	98	M 72×6	299	77	26.0
40	40	70	105	M 80×6	318	83	30.0
23 02 41	23 14 41	75	112	M 80×6	342	90	35.0
42	42	80	120	M 90×6	366	96	40.0
43	43	85	128	M 90×6	389	102	45.0
44	44	90	135	M100×6	419	108	50.0

Bow Shackles - BC
with Eye Bolt
(Ref. JIS B 2801-1977)

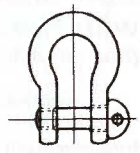

BC

Weldless, drop forged, carbon steel shackle with an eye bolt which has a metric coarse threaded end. Please specify Ungalvanized (Black) or Galvanized shackle is required.

Unit Per Pc.

CODE Ungalv. (Black)	CODE Galv.	Oval Body Small Diam. mm	Opening mm	Screw Pin Thread	Clear Length mm	Pin Diam. mm	S.W.L. Ton
23 14 51	23 02 51	6	11	M 8	32	8	0.2
52	52	8	14	M10	40	10	0.35
53	53	10	17	M12	48	12	0.6
23 02 54	23 14 54	12	20	M14	55	15	0.9
55	55	14	24	M16	63	17	1.2
23 02 56	23 14 56	16	26	M18	70	19	1.5
57	57	18	29	M20	84	21	2.0
58	58	20	31	M24	92	24	2.5
59	59	22	34	M24	104	26	3.0
60	60	24	39	M30	111	30	3.6
23 02 61	23 14 61	26	41	M30	119	32	4.2
62	62	28	43	M33	127	34	4.8
63	63	30	45	M36	135	36	5.4
64	64	32	48	M36	148	38	6.2
65	65	34	50	M39	156	40	7.0
23 02 66	23 14 66	36	54	M42	169	42	8.0
67	67	38	57	M45	175	46	9.0
68	68	40	60	M48	188	48	10.0

Bow Shackles - BD
with Eye Bolt
(Ref. JIS B 2801-1977)


BD

A weldless, drop forged, carbon steel shackle with an eye bolt which has metric coarse threads on the end. Please specify Ungalvanized (Black) shackle or Galvanized shackle is required.

Unit Per Pc.

CODE Ungalv. (Black)	CODE Galv.	Oval Body Small Diam. mm	Opening mm	Screw Pin Thread	Clear Length mm	Pin Diam. mm	S.W.L. Ton
23 14 71	23 02 71	6	12	M 8	32	8	0.15
72	72	8	16	M10	40	10	0.3
73	73	10	20	M12	48	12	0.5
23 02 74	23 14 74	12	24	M14	55	15	0.7
75	75	14	28	M16	63	17	0.9
23 02 76	23 14 76	16	32	M20	70	20	1.2
77	77	18	36	M20	89	21	1.3
78	78	20	40	M24	100	24	1.8

Note: Both BC and BD shackles are similar in type, but the opening and SWL differ in the same size.
Sizes of the openings in the BD types are double the smaller diams. of the oval body.

Straight Shackles - SE
with Eye Bolt

Drop forged steel shackle with eye bolt. Please specify whether you reuire galvanized or ungalvanized shackles.

Unit Per Pc.

CODE	Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. ton
Black					
23 03 01	22	34	75	26	3
02	24	39	81	30	3.6
03	26	41	88	32	4.2
04	28	43	95	34	4.8
05	30	45	102	36	5.4
23 03 06	32	48	109	38	6.2
07	34	50	116	40	7
08	36	54	123	42	8
09	38	57	129	46	9
10	40	60	136	48	10
Galvanized					
23 03 11	22	34	75	26	3
12	24	39	81	30	3.6
13	26	41	88	32	4.2
14	28	43	95	34	4.8
15	30	45	102	36	5.4
23 03 16	32	48	109	38	6.2
17	34	50	116	40	7
18	36	54	123	42	8
19	38	57	129	46	9
20	40	60	136	48	10

Screw Pin "D" Shackles

Made of drop forged steel. When ordering, please specify whether you require galvanized or ungalvanized shackles.

Unit Per Pc.

CODE	Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. ton
Black					
23 03 21	6	12	22	6.5	0.138
22	8	17	27	8.5	0.216
23	9	18	31	10	0.284
24	12	24	40	13	0.468
25	16	30	50	17	0.8

(to be continued)

Unit Per Pc.

CODE	Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. ton
23 03 26	19	36	64	20	1.0
27	22	43	74	23	1.5
28	25	47	82	27	2.0
29	28	55	95	30	2.5
30	32	58	103	34	3.2
23 03 31	38	73	125	40	4.2
		Galvanized			
23 03 41	6	12	22	6.5	0.138
42	8	17	27	8.5	0.216
43	9	18	31	10	0.284
44	12	24	40	13	0.468
45	16	30	50	17	0.8
23 03 46	19	36	64	20	1.0
47	22	43	74	23	1.5
48	25	47	82	27	2.0
49	28	55	95	30	2.5
50	32	58	103	34	3.2
23 03 51	38	73	125	40	4.2

Screw Pin Countersink Shackles
(Carver Shackles)

Made of drop forged steel with countersink and slotted pins. The shackle pins are also galvanized above the threading. When ordering, please specify whether galvanized or black shackles are required.

Unit Per Pc.

CODE	Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. ton
		Black			
23 03 63	9	18	32	9	0.3
64	12	26	40	12	0.5
65	16	32	52	16	0.8
66	19	38	64	19	1.0
67	22	44	75	22	1.5
23 03 68	25	50	83	25	2.0
69	28	43	95	34	4.8
70	32	48	109	38	6.2
71	38	57	129	46	9.0
		Galvanized			
23 03 83	9	18	32	9	0.3
84	12	26	40	12	0.5
85	16	32	52	16	0.8
86	19	38	64	19	1.0
87	22	44	75	22	1.5
23 03 88	25	50	83	25	2.0
89	28	43	95	34	4.8
90	32	48	109	38	6.2
91	38	57	129	46	9.0

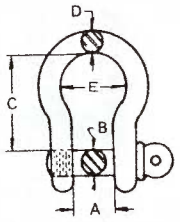
Roller Shackles

Drop forged roller shackle with a hexagon bolt pin and nut. A cotter pin hole is located at the end of the pin thread to prevent the nut from loosening and coming off. Commonly used as lashing equipment for lumber vessels and log carriers.

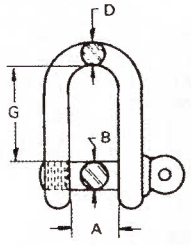
Unit Per Pc.

CODE	Body Diam.mm	Roller Width×Diam mm	S.W.L. ton
23 04 01	25	44 × 63	3
03	32	60 × 85	5

U.S. Federal Specification(RR-C-271b)
Mild Steel Shackles



Screw Pin Anchor



Screw Pin Chain

Nominal Size	Pin Dia (D)	Inside Length (C)	Inside Length (G)	Inside Width (A)	SWL Short Ton
1/4	5/16	1-1/8	7/8	15/32	0.2
5/16	3/8	1-1/4	1	17/32	0.3
3/8	7/16	1-7/16	1-1/4	21/32	0.4
7/16	1/2	1-11/16	1-1/2	23/32	0.6
1/2	5/8	1-15/16	1-11/16	13/16	0.9
9/16	5/8	2-1/8	1-13/16	7/8	1.2
5/8	3/4	2-1/2	2	1-1/16	1.4
3/4	7/8	3	2-5/16	1-1/4	2.0
7/8	1	3-1/4	2-7/8	1-7/16	2.7
1	1-1/8	3-3/4	3-1/4	1-11/16	3.6
1-1/8	1-1/4	4-1/4	3-1/2	1-13/16	4.9
1-1/4	1-3/8	4-1/2	3-11/16	2	6.3
1-3/8	1-1/2	5-1/4	4-1/2	2-1/4	7.6
1-1/2	1-5/8	5-3/4	5	2-3/8	9.4
1-5/8	1-3/4	6-1/4	5-1/4	2-5/8	11
1-3/4	2	7	5-7/8	2-7/8	13
2	2-1/4	7-3/4	6-3/4	3-1/4	16
2-1/4	2-1/2	8-3/4	7-1/8	3-3/4	18
2-1/2	2-3/4	10	8	4-1/8	24

Stainless Steel Screw Pin "D" Shackles

Made of stainless steel which is suitable for using in corrosive surroundings.

Unit Per Pc.

CODE	Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. ton
23 35 01	7	14	23	7	0.17
02	8	17	29	8	0.23
03	9	18	32	9	0.3
04	12	24	40	12	0.5
05	13	26	40	12.6	0.65
23 35 06	16	32	52	16	0.8
07	19	38	64	19	1.0
08	22	44	75	22	1.5
09	25	50	83	25	2.0
10	28	56	97	28	2.5
23 35 11	32	64	102	32	3.2
12	38	76	125	38	4.5

Stainless Steel Straight Shackles-SB
with Hexagon Head Bolt
(Ref. JIS B 2801-1977)

Stainless steel shackle with a hexagon, metric coarse threaded bolt, which has a split pin hole at the end and a securing nut.

Unit Per Pc.

CODE	Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin Diam. mm	S.W.L. ton
23 35 21	12	20	M14	40	15	1.0
22	14	24	M16	47	17	1.25
23	16	26	M18	54	19	1.6
24	18	29	M20	61	21	2.0
25	20	31	M24	68	24	2.5
23 35 26	22	34	M24	75	26	3.15
27	24	39	M30	81	30	3.6
28	26	41	M30	88	32	4.0
29	28	43	M33	95	34	4.8
30	30	45	M36	102	36	5.0
23 35 31	32	48	M36	109	38	6.2
32	34	50	M39	116	40	7.0
33	36	54	M42	123	42	8.0
34	38	57	M45	129	46	9.0
35	40	60	M48	136	48	10.0

Stainless Steel Straight Shackles-SC
with Eye Bolt
(Ref. JIS B 2801-1977)

Made of stainless steel which is suitable for using in corrosive surroundings

Unit Per Pc.

CODE	Body Diam. mm	Opening mm	Clear Length mm	Pin Diam. mm	S.W.L. ton
23 35 51	6	11	20	8	0.2
52	8	14	27	19	0.32
53	10	17	34	12	0.6
54	12	20	40	15	1.0
55	14	24	47	17	1.25
23 35 56	16	26	54	19	1.6
57	18	29	61	21	2.0
58	20	31	68	24	2.5
59	22	34	75	26	3.15
60	24	39	81	30	3.6
23 35 61	26	41	88	32	4.0
62	28	43	95	34	4.8
63	30	45	102	36	5.0
64	32	48	109	38	6.2
65	34	50	116	40	7.0
23 35 66	36	54	123	42	8.0
67	38	57	129	46	9.0
68	40	60	136	48	10.0

Stainless Steel Bow Shackles-BB
with Hexagon Head Bolt
(Ref. JIS B 2801-1977)

A stainless steel shackle with a hexagon, metric coarse threaded bolt, nut, and a split pin hole at the other end.

Unit Per Pc.

CODE	Oval Body Diam. mm	Opening mm	Thread Bolt and Nut	Clear Length mm	Pin Diam. mm	S.W.L. ton
23 35 71	10	17	M12	34	12	0.6
72	12	20	M14	40	15	1.0
73	14	24	M16	47	17	1.25
74	16	26	M18	54	19	1.6
75	18	29	M20	61	21	2.0
23 35 76	20	31	M24	68	24	2.5
77	22	34	M24	75	26	3.15
78	24	39	M30	81	30	3.6
79	26	41	M30	88	32	4.0

Stainless Steel Bow Shackles-BC
with Eye Bolt
(Ref. JIS B 2801-1977)

Stainless steel shackle with an eye bolt which has a metric coarse threaded end.

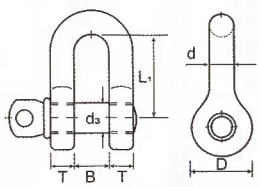
Unit Per Pc.

CODE	Oval Body Diam. mm	Opening mm	Screw Pin Thread	Clear Length mm	Pin Diam. mm	S.W.L. ton
23 36 01	6	11	M8	20	8	0.2
02	8	14	M10	27	10	0.32
03	10	17	M12	34	12	0.6
04	12	20	M14	40	15	1.0
05	14	24	M16	47	17	1.25
23 36 06	16	26	M18	54	19	1.6
07	18	29	M20	61	21	2.0
08	20	31	M24	68	24	2.5
09	22	34	M24	75	26	3.15
10	24	39	M30	81	30	3.6
23 36 11	26	41	M30	88	32	4.0

Green Pins Standard Shackles

High quality, high tensile "Green Pin" shackle can be identified by the green coloured pin and the marking on the shackle body and pin. Green pin shackles meet all relevant requirements of the Machinery Directive 2006/42/EC and all latest amendments.

Dee Shackles with Screw Collar Pin
G-4151



Material: Body and pin high tensile steel, Grade 6, quenched and tempered

Safety Factor: MBL equals 6 x WLL (Working Load Limit)

Standard: EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVB Class 2, Grade A

Finish: Hot dipped galvanized

Temperature Range: -20°C to + 200°C

Certification: At no extra charges this product can be supplied with a works certificate, material certificate, manufacturer test certificate, EC Declaration of Conformity and all shackles starting from 2t can be supplied with DNV 2.7-1 certificate.

Unit Per Pc.

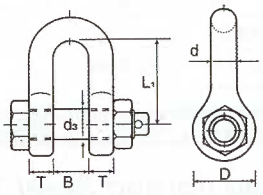
CODE	Diameter			Width Inside	Length Inside	Working Load Limit	Weight
	Body	Pin	Eye				
	d mm	d3 mm	D mm	B mm	L mm	Ton	kgs
23 45 01	5	6	12	8	22	0.33	0.02
02	7	8	16	10	26	0.5	0.05
03	9	10	20	12	31	0.75	0.09
04	10	11	22	15	37	1	0.14
05	11	13	26	17	43	1.5	0.19

Unit Per Pc.

CODE	Diameter			Width Inside	Length Inside	Working Load Limit	Weight
	Body	Pin	Eye				
	d mm	d3 mm	D mm	B mm	L mm	Ton	kgs
23 45 06	13	16	34	20	51	2	0.32
07	16	19	39	25	60	3.25	0.54
08	19	22	46	28	70	4.75	0.87
09	22	25	52	33	85	6.5	1.34
10	25	28	59	40	99	8.5	2.08
23 45 11	28	32	66	44	106	9.5	2.77
12	32	35	72	47	111	12	3.72
13	35	38	80	53	134	13.5	5.14
14	38	42	88	56	148	17	6.85
15	45	50	103	70	174	25	11.5
23 45 16	50	57	111	78	199	35	16.9
17	57	65	130	90	222	42.5	24.7
18	65	70	145	100	238	55	32.7

Name of Mfr. : Van Beest BV

Dee Shackles with Safety Bolt
G-4153



Material: Body and pin high tensile steel, Grade 6, quenched and tempered

Safety Factor: MBL equals 6 x WLL (Working Load Limit)

Standard: EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVB Class 3, Grade A

Finish: Hot dipped galvanized

Temperature Range: -20°C to + 200°C

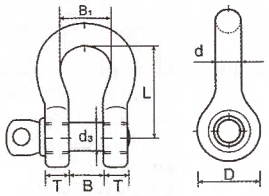
Certification: At no extra charges this product can be supplied with a works certificate, material certificate, manufacturer test certificate, EC Declaration of Conformity and all shackles starting from 2t can be supplied with DNV 2.7-1 certificate.

Unit Per Pc.

CODE	Diameter			Width Inside	Length Inside	Working Load Limit	Weight
	Body	Pin	Eye				
	d mm	d3 mm	D mm	B mm	L mm	Ton	kgs
23 45 21	13	16	34	20	51	2	0.39
22	16	19	39	25	60	3.25	0.67
23	19	22	46	28	70	4.75	1.08
24	22	25	52	33	85	6.5	1.66
25	25	28	59	40	99	8.5	2.46
23 45 26	28	32	66	44	106	9.5	3.4
27	32	35	72	47	111	12	4.51
28	35	38	80	53	134	13.5	6.1
29	38	42	88	56	148	17	7.63
30	45	50	103	70	174	25	13.3
23 45 31	50	57	111	78	199	35	18.6
32	57	65	130	90	222	42.5	26
33	65	70	145	100	238	55	35.4
34	75	83	162	122	270	85	53

Name of Mfr. : Van Beest BV

Bow Shackles with Screw Collar Pin
G-4161



Material: Body and pin high tensile steel, Grade 6, quenched and tempered

Safety Factor: MBL equals 6 x WLL (Working Load Limit)

Standard: EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVA Class 2, Grade A

Finish: Hot dipped galvanized

Temperature Range: -20°C to + 200°C

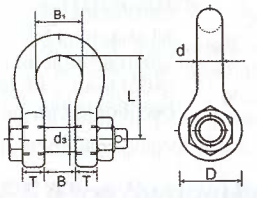
Certification: At no extra charges this product can be supplied with a works certificate, material certificate, manufacturer test certificate, EC Declaration of Conformity and all shackles starting from 2t can be supplied with DNV 2.7-1 certificate.

Unit Per Pc.

CODE	Diameter			Width Inside	Length Inside	Width Bow	Working Load Limit	Weight
	Body	Pin	Eye					
	d mm	d3 mm	D mm	B mm	L mm	B1 mm	Ton	kgs
23 45 41	5	6	12	8	25	16	0.33	0.02
42	7	8	16	10	33	20	0.5	0.05
43	9	10	20	12	37	22	0.75	0.1
44	10	11	22	15	42	26	1	0.14
45	11	13	26	17	49	29	1.5	0.19
23 45 46	13	16	34	20	59	32	2	0.36
47	16	19	39	25	73	43	3.25	0.63
48	19	22	46	28	87	51	4.75	1.01
49	22	25	52	33	95	58	6.5	1.5
50	25	28	59	40	109	68	8.5	2.21
23 45 51	28	32	66	44	124	75	9.5	3.16
52	32	35	72	47	132	83	12	4.31
53	35	38	80	53	152	92	13.5	5.55
54	38	42	88	56	167	99	17	7.43
55	45	50	103	70	203	126	25	12.9
23 45 56	50	57	111	78	225	138	35	18.2
57	57	65	130	90	254	160	42.5	26.3
58	65	69	145	100	294	180	55	37.6

Name of Mfr. : Van Beest BV

Bow Shackles with Safety Bolt
G-4163



Material: Body and pin high tensile steel, Grade 6, quenched and tempered

Safety Factor: MBL equals 6 x WLL (Working Load Limit)

Standard: EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVA Class 3, Grade A

Finish: Hot dipped galvanized

Temperature Range: -20°C to + 200°C

Certification: At no extra charges this product can be supplied with a works certificate, material certificate, manufacturer test certificate, EC Declaration of Conformity and all shackles starting from 2 t can be supplied with DNV 2.7-1 certificate.

Unit Per Pc.

CODE	Diameter			Width Inside	Length Inside	Width Bow	Working Load Limit	Weight
	Body	Pin	Eye					
	d mm	d3 mm	D mm	B mm	L mm	B1 mm	Ton	kgs
23 45 61	7	8	16	10	33	20	0.5	0.06
62	9	10	20	12	37	22	0.75	0.11
63	10	11	22	15	42	26	1	0.16
64	11	13	26	17	49	29	1.5	0.22
65	13	16	34	20	59	32	2	0.42
23 45 66	16	19	39	25	73	43	3.25	0.74
67	19	22	46	28	87	51	4.75	1.18
68	22	25	52	33	95	58	6.5	1.77
69	25	28	59	40	109	68	8.5	2.58
70	28	32	66	44	124	75	9.5	3.66
23 45 71	32	35	72	47	132	83	12	4.91
72	35	38	80	53	152	92	13.5	6.54
73	38	42	88	56	167	99	17	8.19
74	45	50	103	70	203	126	25	14.3
75	50	57	111	78	225	138	35	19.9
23 45 76	57	65	130	90	254	160	42.5	28.4
77	65	70	145	100	295	180	55	39.6
78	75	83	162	122	370	190	85	62

Name of Mfr. : Van Beest BV

Green Pin Sling Shackles

Bow Shackles with Safety Bolt

These shackles cover a range from WLL 7 tons up to 1,500 tons. Compared to the standard Green Pin shackles they have an increased bow radius for saving slings and improving wearability. These shackles are ideal for use with wire rope and synthetic sling applications.

Material: Body and pin alloy steel, Grade 8, quenched and tempered

Safety Factor: MBL equals 5 x WLL

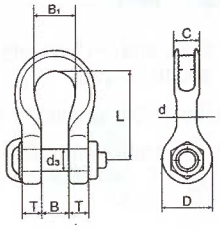
Finish: Shackle bow painted silver, pin painted green

Temperature Range: -20°C to + 200°C

Certification: Can be supplied with a works certificate, material certificate, manufacturer test certificate, EC declaration of Conformity and all shackles from 75 ton are supplied with a Lloyd's Register of Shipping Certificate on proof load. An MPI and/or US inspection certificate can be supplied on request.

Note: ± 5% forging tolerance on inside width and length

P-6033



Unit Per Pc.

CODE	Size mm					WLL	Weight
	Body Diam.	Pin Diam.	Eye Diam.	Inside Width	Inside Lengh		
	d	d3	D	B	L	ton	kgs
23 45 79	22	22	46	28	107	7	2
80	28	28	61	40	134	12.5	4
99	35	35	69	50	165	18	7
81	40	42	90	65	186	30	13
82	55	51	109	80	225	40	21
23 45 83	60	57	115	85	268	55	30
84	68	70	125	105	325	75	48
85	85	80	154	130	406	125	92
86	94	95	178	140	439	150	140
87	110	105	198	150	534	200	205
23 45 88	126	120	226	170	602	250	264
89	135	134	245	185	668	300	360
90	160	160	293	220	656	400	580
91	170	180	328	250	771	500	780
92	190	200	347	275	841	600	980
23 45 93	200	215	392	300	859	700	1,360
94	218	230	420	325	966	800	1,430
95	242	255	466	350	979	900	1,650
96	260	270	490	380	986	1,000	2,120
97	285	300	510	430	1,081	1,250	3,700
23 45 98	285	320	550	460	1,110	1,500	4,000

Name of Mfr. : Van Beest BV

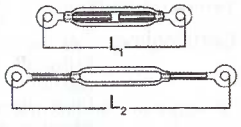
2. Turnbuckles

Drop Forged Steel Turnbuckles

Frame Type

Turnbuckle fittings are hot galvanized above the threading. When ordering this type of equipment, please specify the type of turnbuckle required such as "eye" and "eye", etc., and if the turnbuckle should be galvanized or ungalvanized.

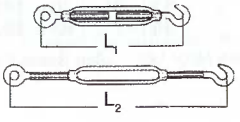
Turnbuckles Eye and Eye



Unit Per Pc.

Black	Thread Diam. mm	Frame Length mm	Length mm L_1	Length mm L_2	Breaking Strength kN	Breaking Strength tf	Galvanized	Thread Diam. mm	Frame Length mm
23 05 01	6	100	150	218	2.3	0.2	**23 05 16**	6	100
02	8	125	175	272	3.3	0.3	**17**	8	125
03	9	150	221	330	4.9	0.5	**18**	9	150
04	12	200	285	441	29.4	3.0	**19**	12	200
05	16	250	355	530	51.0	5.2	**20**	16	250
23 05 06	19	300	430	637	79.4	8.1	**23 05 21**	19	300
07	22	330	475	723	98.1	10.0	**22**	22	330
08	25	345	505	790	147.1	15.0	**23**	25	345
09	32	400	630	930	235.4	24.0	**24**	32	400
10	38	450	710	1,030	341.3	34.8	**25**	38	450

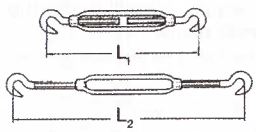
Turnbuckles Eye and Hook



Unit Per Pc.

Black						Galvanized	
CODE	Thread Frame Diam. x Length mm mm	L_1	L_2	Breaking Strength kN	Breaking Strength tf	CODE	Thread Frame Diam. x Length mm mm
23 05 31	6 × 100	150	220	1.5	0.15	**23 05 46**	6 × 100
32	8 × 125	180	275	2.0	0.2	**47**	8 × 125
33	9 × 150	210	330	3.9	0.4	**48**	9 × 150
34	12 × 200	285	430	6.9	0.7	**49**	12 × 200
35	16 × 250	345	530	10.8	1.1	**50**	16 × 250
23 05 36	19 × 300	410	630	19.6	2.0	**23 05 51**	19 × 300
37	22 × 330	460	695	31.4	3.2	**52**	22 × 325
38	25 × 345	505	750	42.2	4.3	**53**	25 × 350
39	32 × 400	655	970	65.7	6.7	**54**	32 × 400
40	38 × 450	720	1,050	94.1	9.6	**55**	38 × 450

Turnbuckles Hook and Hook



Unit Per Pc.

Black						Galvanized	
CODE	Thread Frame Diam. x Length mm mm	L_1	L_2	Breaking Strength kN	Breaking Strength tf	CODE	Thread Frame Diam. x Length mm mm
23 05 61	6 × 100	150	220	1.5	0.15	**23 05 76**	6 × 100
62	8 × 125	180	275	2.0	0.2	**77**	8 × 125
63	9 × 150	210	330	3.9	0.4	**78**	9 × 150
64	12 × 200	285	440	6.9	0.7	**79**	12 × 200
65	16 × 250	345	530	10.8	1.1	**80**	16 × 250
23 05 66	19 × 300	410	630	9.6	2.0	**23 05 81**	19 × 300
67	22 × 330	460	695	31.4	3.2	**82**	22 × 330
68	25 × 345	505	750	42.2	4.3	**83**	25 × 350
69	32 × 400	655	970	65.7	6.7	**84**	32 × 400
70	38 × 450	720	1,050	94.1	9.6	**85**	38 × 450

Turnbuckles Jaw and Jaw
U.S. Federal Spec FT-T-791b

Drop forged steel D6 Brand Turnbuckle of hex. neck frame bodies. All jaw end fittings are supplied with hex. head bolts & nuts. Weldless, self coloured, hot drip galvanized turnbuckle is available.

Galvanized Unit Per Pc.

CODE	Thread Diam. Inch	Frame Take up Inch	Breaking Strength kN	Breaking Strength tf	Weight kgs
23 06 21	3/8	6	26.4	2.7	0.41
23 06 22	1/2	6	49	5.0	0.74
23		9			0.93
24		12			1.12
23 06 25	5/8	6	78.4	8.0	1.37
26		9			1.57
27		12			1.92
23 06 29	3/4	6	117.6	12.0	1.98
30		9			2.24
31		12			2.55
32		18			3.28
23 06 33	7/8	12	161.7	16.5	3.72
34		18			4.6

Galvanized Unit Per Pc.

CODE	Thread Diam. Inch	Frame Take up Inch	Breaking Strength kN	Breaking Strength tf	Weight kgs
23 06 35	1	6	225.4	23	3.99
36		12			5.04
37		18			6.27
38		24			7.89
23 06 39	1-1/4	12	343	35	10.5
80		18			12.4
81		24			14.6
23 06 82	1-1/2	12	480.2	49	16.7
83		18			19.2
84		24			21.7

Turnbuckles Jaw and Eye
U.S. Federal Spec FT-T-791b

Galvanized Unit Per Pc.

CODE	Thread Diam. Inch	Frame Take up Inch	Breaking Strength kN	Breaking Strength tf	Weight kgs
23 06 61	3/8	6	26.4	2.7	0.41
23 06 62	1/2	6	49	5.0	0.74
63		9			0.93
64		12			1.12
23 06 65	5/8	6	78.4	8.0	1.37
66		9			1.57
67		12			1.92
23 06 69	3/4	6	117.6	12.0	1.98
70		9			2.24
71		12			2.55
72		18			3.28
23 06 73	7/8	12	161.7	16.5	3.72
74		18			4.6
23 06 75	1	6	225.4	23	3.99
76		12			5.04
77		18			6.27
78		24			7.89
23 06 79	1-1/4	12	343	35	10.5
85		18			12.4
86		24			14.6
23 06 87	1-1/2	12	480.2	49	16.7
88		18			19.2
89		24			21.7

Forged Steel Pipe Turnbuckles

These turnbuckle fittings are hot galvanized above the threading. When ordering, please specify what type of turnbuckle is required, i.e. "eye" and "eye", etc., and whether the turnbuckle should be black or galvanized steel.

Pipe Turnbuckles - PS (Pipe Swage)Type

Pipe frame turnbuckle with collapse at the middle of the frame for secure turning by the grip. Available ungalvanized (black) or galvanized (electric plated).

Pipe Turnbuckles Eye and Eye PS Type

Unit Per Pc.

CODE	Nom. Size	Thread Dia	Frame Length mm	Length Eye to Eye mm Min.	Length Eye to Eye mm Max.	Breaking Load kN	Breaking Load tf
Black							
23 04 41	9	W 3/8	150	180	300	13.7	1.4
42	12	W 1/2	200	265	430	21.6	2.2
43	16	W 5/8	250	335	540	31.4	3.2
44	19	W 3/4	300	395	640	47.1	4.8
45	22	W 7/8	320	430	695	62.8	6.4
23 04 46	25	W 1	350	470	750	84.3	8.6
47	32	W 1-1/4	400	520	810	357.9	36.5
Galvanized							
23 04 51	9	W 3/8	150	180	300	13.7	1.4
52	12	W 1/2	200	265	430	21.6	2.2
53	16	W 5/8	250	335	540	31.4	3.2
54	19	W 3/4	300	395	640	47.1	4.8
55	22	W 7/8	320	430	695	62.8	6.4
23 04 56	25	W 1	350	470	750	84.3	8.6
57	32	W 1-1/4	400	520	810	357.9	36.5

Pipe Turnbuckles Eye and Hook PS Type

Unit Per Pc.

CODE	Nom. Size	Thread Dia	Frame Length mm	Length Eye to Hook mm Min.	Length Eye to Hook mm Max.	Breaking Load kN	Breaking Load tf
Black							
23 04 61	9	W 3/8	150	180	300	6.9	0.7
62	12	W 1/2	200	265	430	10.8	1.1
63	16	W 5/8	250	335	540	13.7	1.4
64	19	W 3/4	300	395	640	24.5	2.5
65	22	W 7/8	320	430	695	33.3	3.4
23 04 66	25	W 1	350	470	750	42.2	4.3
67	32	W 1-1/4	400	520	810	73.5	7.5
Galvanized							
23 04 71	9	W 3/8	150	180	300	6.9	0.7
72	12	W 1/2	200	265	430	10.8	1.1
73	16	W 5/8	250	335	540	13.7	1.4
74	19	W 3/4	300	395	640	24.5	2.5
75	22	W 7/8	320	430	695	33.3	3.4
23 04 76	25	W 1	350	470	750	42.2	4.3
77	32	W 1-1/4	400	520	810	73.5	7.5

Pipe Turnbuckles Hook and Hook PS Type

Unit Per Pc.

CODE	Nom. Size	Thread Dia	Frame Length mm	Length Hook to Hook mm Min.	Length Hook to Hook mm Max.	Breaking Load kN	Breaking Load tf
Black							
23 04 81	9	W 3/8	150	180	300	6.9	0.7
82	12	W 1/2	200	265	430	10.8	1.1
83	16	W 5/8	250	335	540	13.7	1.4
84	19	W 3/4	300	395	640	24.5	2.5
85	22	W 7/8	320	430	695	33.3	3.4
23 04 86	25	W 1	350	470	750	42.2	4.3
87	32	W 1-1/4	400	520	810	73.5	7.5
Galvanized							
23 04 91	9	W 3/8	150	180	300	6.9	0.7
92	12	W 1/2	200	265	430	10.8	1.1
93	16	W 5/8	250	335	540	13.7	1.4
94	19	W 3/4	300	395	640	24.5	2.5
95	22	W 7/8	320	430	695	33.3	3.4
23 04 96	25	W 1	350	470	750	42.2	4.3
97	32	W 1-1/4	400	520	810	73.5	7.5

Pear Shape Lashing Links (Grab Links)

Pear shaped end links for chain or lashing turnbuckles. Forged steel, self-color or galvanized finish. Has 22 mm diam., 240 mm outside length and 130 mm outside width.

Unit Per Pc.

CODE	Description	Diam. mm	Overall Length mm × Width mm
23 11 81	Black	22	240 × 130
82	Galvanized	22	240 × 130

Turnbuckle Lashing Wrenches

Light to carry and easy to use to tighten the turnbuckles. Can be used for the final lashing in port, as well as the important task of retightening turnbuckles daily on the voyage. You'll make the job faster and easier, reducing your crew's time and exposure on deck.

Unit Per Pc.

CODE	Type	Opening mm	For	Weight kgs
23 07 73	30	105/30	Specially designed to fit the new style small turnbuckles.	2.4
74	45	105/45	Old style large turnbuckles, but can be used efficiency on all sizes.	2.4

Name of Mfr.: Lashing Logistics Ltd.

Chain Type Load Binders

Ratchet type lever operated device for tightening or binding pipes, logs, etc.

Unit Per Pc.

CODE	S.W.L. Ton	Max. Pull Distance mm	Min. Distance Hook to Hook mm	Chain Diam. mm	Weight kgs
23 07 76	0.5	1,350	350	6.3	3.7
77	1.0	1,420	420	6.3	6.0

Rigging Screws

Drop forged frame with a solid thimble and bolt ends. When ordering, please specify the diameter or circumference of the wire rope to be used with the rigging screw. Also specify whether Ungalvanized (Black) or Galvanized rigging screws will be required when ordering.

Unit Per Pc.

CODE		Nominal Size mm	Dia. of Rope Applied mm	Screw Rod		SWL Tons	Wt. kgs
Ungalv. (Black)	**Galv.**			Thread Size	Length mm		
23 07 81	**23 19 81**	14	14	M24	350	2.1	5.97
82	**82**	16	16	M27	380	2.6	8.58
83	**83**	18	18	M30	420	3.3	11.6
84	**84**	22	20 and 22.4	M33	450	5.1	14.8
85	**85**	24	24	M39	480	5.9	19.4
23 07 86	**23 19 86**	26	25	M42	500	6.9	23.9
87	**87**	30	28 and 30	M48	540	9.2	30.2
88	**88**	32	32	M48	560	10.5	36.2
89	**89**	34	34	M52	590	11.5	43.2
90	**90**	36	36	M56	620	13.0	51.1
23 07 91	**23 19 91**	38	38	M60	640	14.5	59.9
92	**92**	40	40	M64	670	16.5	70.7
93	**93**	42	42.5	M68	720	18.5	93.5
94	**94**	45	45	M68	740	21	105
95	**95**	48	47.5	M76×6	770	23	117
23 07 96	**23 19 96**	50	50	M76×6	780	25.5	124

3. Wire Clips/Thimbles/Sockets

Standard Wire Clips
Cast Iron

Made of cast iron and designed to hold one wire rope tight and securely to another. When ordering, please specify whether galvanized or black wire clips are required. Also, please specify the diameter of the wire rope to be used with the wire clip.

Unit Per Pc.

Black			Galvanized		
CODE	Wire Size Diam. mm	U-Bolt Diam. mm	CODE	Wire Size Diam. mm	U-Bolt Diam. mm
23 08 01	4.5	4.5	**23 08 16**	4.5	4.5
02	6	6	**17**	6	6
03	8	6	**18**	8	6
04	9	8	**19**	9	8
05	12	9	**20**	12	9
23 08 06	16	13	**23 08 21**	16	13
07	19	13	**22**	19	13
08	22	16	**23**	22	16
09	25	16	**24**	25	16
10	28	19	**25**	28	19
23 08 11	32	19	**23 08 26**	32	19
12	38	22	**27**	38	22
13	44	25	**28**	44	25
14	50	25	**29**	50	25

Wire Rope Clips
Malleable Iron
U.S. Federal Spec. FF-C-450b

Made of malleable iron with a grooved rope channel to hold the wire ropes securely together.

Unit Per Pc.

Black			Galvanized		
CODE	Wire Size Diam. mm	U-Bolt Diam. mm	CODE	Wire Size Diam. mm	U-Bolt Diam. mm
23 08 31	1/8	3/16	**23 08 46**	1/8	3/16
32	3/16	1/4	**47**	3/16	1/4
33	1/4	5/16	**48**	1/4	5/16
34	5/16	5/16	**49**	5/16	5/16
35	3/8	3/8	**50**	3/8	3/8
23 08 36	7/16	3/8	**23 08 51**	7/16	3/8
37	1/2	7/16	**52**	1/2	7/16
38	9/16	1/2	**53**	9/16	1/2
39	5/8	1/2	**54**	5/8	1/2
40	3/4	9/16	**55**	3/4	9/16
23 08 41	7/8	5/8	**23 08 56**	7/8	5/8
42	1	5/8	**57**	1	5/8

Wire Rope Clips
Drop Forged Steel (F Type)

Specially, designed with tapered wings at the base in order to assure a very tight and firm grip to wire ropes.

Unit Per Pc.

Black			Galvanized		
CODE	Wire Size Diam. mm	U-Bolt Th'd Diam.	CODE	Wire Size Diam. mm	U-Bolt Th'd Diam.
23 08 61	8	M8	**23 08 76**	8	M8
62	10	M10	**77**	10	M10
63	12	M12	**78**	12	M12
64	14	M12	**79**	14	M12
65	16	M14	**80**	16	M14

Unit Per Pc.

Black			Galvanized		
CODE	Wire Size Diam. mm	U-Bolt Th'd Diam.	CODE	Wire Size Diam. mm	U-Bolt Th'd Diam.
23 08 66	18	M14	**23 08 81**	18	M14
67	20-22	M18	**82**	20-22	M18
68	24-25	M20	**83**	24-25	M20
69	26-28	M22	**84**	26-28	M22
70	30-32	M22	**85**	30-32	M22
23 08 71	33-38	M27	**23 08 86**	33-38	M27
72	40-45	M30	**87**	40-45	M30
73	47-50	M33	**88**	47-50	M33

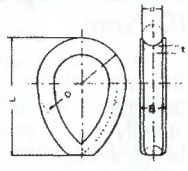
Standard Wire Clips
Stainless Steel

Made of stainless steel and desighed to hold one wire rope tight and securely to another. Please specify the diameter of the wire rope to be used with the wire clip.

Unit Per Pc.

CODE	Wire Size Diam mm.	U-Bolt		Weight grm
		Diam. mm	Thread	
23 36 51	1.5	1.7	M 1.8	5
52	2	2.5	M 3	8
53	3	3.0	M 3	11
54	4	3.5	M 4	19
55	5	5.0	M 5	26
23 36 56	6	5.3	M 6	35
57	8	7.1	M 8	78
58	10	8.9	M10	160
59	12	10.8	M12	240
60	14	10.8	M12	270
23 36 61	16	12.6	M14	410
62	18	12.6	M14	460
63	20-22	16.3	M18	800

Wire Rope Thimbles (A Type)



A wrought steel, galvanized type thimble for use with bare steel wire rope. Please specify the diameter of the wire rope to be used with the thimble when ordering.

Unit Per Pc.

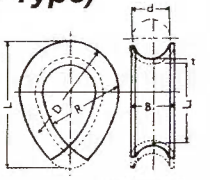
CODE	Nominal Size mm	Applicable Wire Rope Diam. mm	Dimensions mm		
			L	D	B
23 09 01	6	6	36	27	8
02	8	8	48	36	10
03	9	9	51	40	11
04	10	10	58	45	13
05	12	12	68	54	15
23 09 06	14	14	78	61	17
07	16	16	92	72	20
08	18	18	100	75	22
09	20	20	112	86	24
10	22	22	122	95	27
23 09 11	24	24	136	105	29
12	26	26	144	110	31
13	28	28	156	120	33
14	30	30	166	130	35
15	32	32	180	140	38
23 09 16	34	34	186	145	40
17	36	36	196	150	42
18	38	38	205	160	44
19	40	40	220	170	46
20	42	42	232	180	50

Unit Per Pc.

CODE	Nominal Size mm	Applicable Wire Rope Diam. mm	Dimensions mm		
			L	D	B
23 09 28	44	44	242	190	52
29	46	46	252	195	54
22	48	48	260	205	56
23	50	50	274	215	58
30	55	55	310	235	65
23 09 26	60	60	335	255	70
31	65	65	358	276	75

Manila Rope Thimbles (C Type)

A wrought steel, galvanized, C type thimble for use with manila rope. Please specify the diameter of the rope to be used with the thimble when ordering.

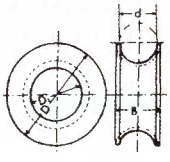


Unit Per Pc.

CODE	Nominal Size mm	Applicable Manila Rope Diam. mm	Dimensions mm		
			L	D	B
23 09 41	10	10	36	28	13
42	12	12	42	34	15
43	14	14	48	38	17
44	16	16	55	42	19
45	18	18	60	50	21
23 09 46	20	20	65	55	23
47	22	22	72	60	25
48	24	24	78	65	27
49	26	26	85	70	30
50	28	28	90	75	32
23 09 51	30	30	95	80	34
52	32	32	100	85	36
53	35	35	110	92	41
54	40	40	125	105	46
55	45	45	140	115	51
23 09 56	50	50	155	130	56

Manila Rope Round Thimbles (D Type)

D type round thimble for use with manila rope. Made of galvanized wrought steel. Please specify the diameter of the rope to be used with the thimble when ordering.

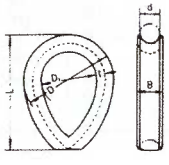


Unit Per Pc.

CODE	Nominal Size mm	Applicable Manila Rope Diam. mm	Dimensions mm	
			D	D1
23 09 72	10	10	38	23
73	12	12	38	23
75	16	16	48	27
86	19	19	48	27
78	22	22	55	35
23 09 87	25	25	55	35
81	28	28	73	40
83	32	32	73	40

Stainless Steel Wire Rope Thimbles (A Type)

A stainless steel thimble which resist deformation and collapse even in frequent use. Please specify the diameter of the wire rope to be used with the thimble when ordering.



Unit Per Pc.

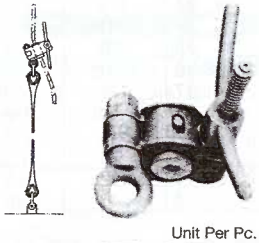
CODE	Nominal Size mm	Applicable Wire Rope Diam. mm	Dimensions mm		
			L	D	B
23 36 71	6	6	36	27	8
72	8	8	48	36	10
73	9	9	51	40	11
74	10	10	58	45	13
75	12	12	68	54	15
23 36 76	14	14	78	61	17
77	16	16	92	72	20
78	18	18	100	75	22
79	20	20	112	86	24
80	22	22	122	95	27
23 36 81	24	24	136	105	29
82	26	26	144	110	31
83	28	28	156	120	33
84	30	30	166	130	35
85	32	32	180	140	38
23 36 86	34	34	186	145	40
87	36	36	196	150	42
88	38	38	205	160	44
89	40	40	220	170	46
90	42	42	232	180	50

Corresponding Shackle Sizes to Wire Rope Thimble

Thimble Size	Shackle Size		
	SE	SD	SA
8	-	-	10
9	-	-	10
10	-	-	12
12	16	14/16	14/16
14	18	-	18
16	20	20	20
18	22	-	22
20	24	-	24
22	26	-	26
24	28	-	28
26	30	-	30
28	32	-	32
30	34	-	-
32	36	-	-
34	38	-	-
36	40	-	-

Wire Clamps for Topping Lift

Made of carbon steel for topping lifts. Used as temporary holders when the topping lifts are fastened to cleats or the like.

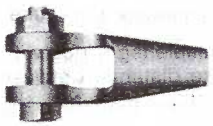


Unit Per Pc.

CODE	Nominal Size	Applicble Wire Rope Diam. mm	SWL Tons	Butterfly Nut torque kgf/cm²	Wt. kgs
23 10 11	14	14 (6×24)	0.4	400	3.46
12	16	16 (6×24)	0.4	400	3.46
13	18	18 (6×24)	0.4	400	3.46
01	20	20 (6×24)	0.4	400	3.46
02	22	22.4 (6×24)	0.4	400	3.46
23 10 05	25	25 (6×24)	0.4	500	13.7
06	28	28 (6×24)	0.4	500	13.7

Wire Rope Sockets

Drop forged carbon steel, self coloured wire socket for standing wire rope of a ships mast, post, etc.



Open type

Closed type

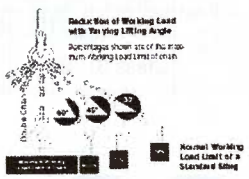
Unit Per Pc.

Open Type CODE	Applicable Wire rope Diam. mm	Rope Hole Size mm	Overall Length mm	Closed Type CODE
23 10 51	16	20	193	**23 10 76**
52	18	23	210	**77**
53	20	25	227	**78**
54	22.4	30	245	**79**
55	24	32	262	**80**
23 10 56	25	33	281	**23 10 81**
57	28	36	298	**82**
58	30	38	316	**83**
59	31.5	40	335	**84**
60	33.5	42	353	**85**
23 10 61	35.5	44	373	**23 10 86**
62	37.5	47	392	**87**
63	40	49	413	**88**
64	42.5	52	434	**89**
65	45	54	474	**90**
23 10 66	47.5	57	494	**23 10 91**
67	50	60	516	**92**
68	53	63	536	**93**
69	56	66	567	**94**
70	60	70	619	**95**
23 10 71	63	74	641	**23 10 96**

Sling Chains

Available single leg type, 2-leg type, or 3-leg type sling chain suitable for overhead lifting. Slings are furnished preassembled to the alloy steel chain with link or hook at both ends. 2-leg and 3-leg type chain slings provide more stability and strength than single leg chain sling. All attachments are mechanically connected to chain. The drop forged identification tag is attached to the master end coupling link of each chain sling. Please specify chain size, type and reach when ordering.

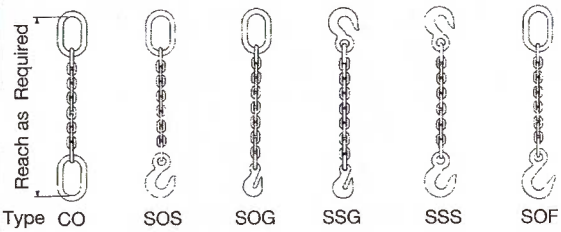
How Lifting Angles Reduce Working Load Limits of Slings



Cam-Alloy Chain Specifications

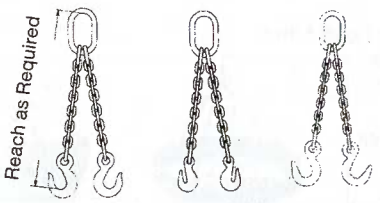
Trade Size Inch	mm	Nominal Dimensions Material Diam. mm	Inside Dimensions mm Length	Width	Working Load Limit Lbs	Kgs	Weight Lbs/ 100ft.	Links/ ft.
7/32	5.5	6	18	8	2,100	970	43	17.5
9/32	7	7	22	10	4,300	1,950	74	13.8
3/8	10	10	31	14	8,800	3,990	148	10.0
1/2	13	13	40	19	15,000	6,800	250	7.8
5/8	16	16	49	22	22,600	10,250	379	6.5
3/4	20	20	61	26	35,300	16,000	610	4.9
7/8	22	22	69	31	42,700	19,400	775	4.4
1	26	25	71	36	47,700	21,600	965	4.3
1-1/4	32	32	89	44	72,300	32,800	1,525	3.5

Single Leg Type



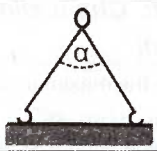
Chain Size Inch	mm	Oblong Link Nominal Size Material mm	Inside Dimensions mm Width	Length	Working Load Limit Lbs	Kgs
7/32	5.5	10	38	76	2,100	970
9/32	7	15	64	127	4,300	1,950
3/8	10	21	76	152	8,800	4,000
1/2	13	29	102	203	15,000	6,800
5/8	16	29	102	203	22,600	10,300
3/4	20	32	102	203	35,300	16,000
7/8	22	41	133	267	42,700	19,400
1	26	48	152	305	47,700	21,600
1-1/4	32	51	178	356	72,300	32,800

2-Leg Type



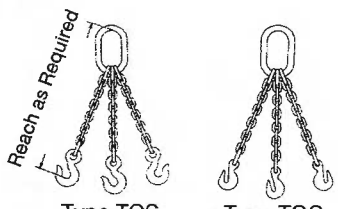
Chain Size Inch	mm	Oblong Master Link Nominal Size Material mm	Inside Dimensions mm Width	Length
7/32	5.5	10	38	76
9/32	7	15	64	127
3/8	10	21	76	152
1/2	13	29	102	203
5/8	16	32	102	203
3/4	20	41	133	267
7/8	22	48	152	305
1	26	51	178	356
1-1/4	32	57	203	406

Working Load Limit



Chain Size Inch	mm	(a) at 60° Lbs	Kgs	(a) at 90° Lbs	Kgs	(a) at 120° Lbs	Kgs
7/32	5.5	3,600	1,630	3,000	1,360	2,100	970
9/32	7	7,400	3,400	6,100	2,700	4,300	1,950
3/8	10	15,200	6,900	12,400	6,900	8,800	3,990
1/2	13	26,000	11,800	21,200	9,600	15,000	6,800
5/8	16	39,100	17,700	32,000	14,500	22,600	10,300
3/4	20	61,100	27,700	49,900	22,600	35,300	16,000
7/8	22	74,000	33,500	60,400	27,350	42,700	19,400
1	26	82,600	37,900	67,400	31,000	47,700	21,600
1-1/4	32	125,200	56,800	102,200	46,400	72,300	32,800

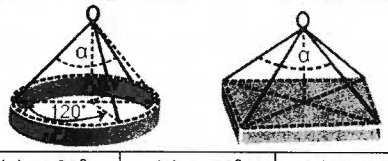
3-Leg, 4-Leg Type



Type TOS Type TOG

Chain Size		Oblong Master Link		
Inch	mm	Nominal Size Material mm	Inside Dimensions mm Width	Length
7/32	5.5	15	64	127
9/32	7	21	76	152
3/8	10	29	102	203
1/2	13	32	102	203
5/8	16	41	133	267
3/4	20	48	152	305
7/8	22	57	203	406
1	26	57	203	406
1-1/4	32	70	229	406

Working Load Limit



Chain Size							
Inch	mm	(a) at 60°		(a) at 90°		(a) at 120°	
		Lbs	Kgs	Lbs	Kgs	Lbs	Kgs
7/32	5.5	5,450	2,470	4,450	2,020	3,150	1,430
9/32	7	11,200	5,100	9,100	4,100	6,450	2,900
3/8	10	22,800	10,300	18,600	8,400	13,200	6,000
1/2	13	39,000	17,700	31,800	14,400	22,500	10,200
5/8	16	58,700	26,600	47,900	21,700	33,900	15,400
3/4	20	91,700	41,600	74,900	34,000	53,000	24,000
7/8	22	110,900	50,250	90,600	41,050	64,000	29,050
1	26	123,900	56,900	101,200	46,500	71,500	32,800
1-1/4	32	187,800	85,200	153,400	69,600	108,400	49,200

How to order chain slings.
23 - 11 - 77: Chain sling with the following information;

1. Determine the maximum load to be lifted.
2. Refer to the table above and choose the proper type of chain sling (single, double, etc) dictated by the size, shape and weight of the load.
3. Estimate the approximate angle between a leg of the sling and the load during operation.
4. Select proper attachments (hooks and master links) for your chain sling.
5. Determine the overall reach from bearing point on master link to bearing point on attachment.
6. Refer to the Working Load Limit Chart and to your predetermined angle of the type sling you have selected.
7. Choose the chain size which meets your requirements.

Note: Angle to the load on multiple leg slings will be 60° or greater as long as the distance between lifting eyes of load is not greater than reach shown on identification tag.

4. Chains/Links

Stud Link Anchor Chain Cables
Flush Butt Welded
(Ref.JIS F 3303-1993)

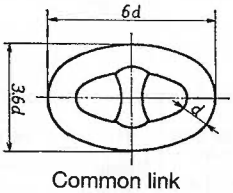
The specifications of these flush butt welded Anchor Chain Cables and their accessories for ship and harbour use are as follows.

Nominal Size	Denoted by the diameter "d" shown in the sketch.
One Length	One length of the chain is 25 or 27.5 mtrs between the farther point end of the inner side of the end link and that of the opposite end link. May be also including the joining shackle and kenter shackle.
Nos. of Link	The total number of links for each length is odd except where it includes a swivel.
Shape & Size of Link, Shackle, etc.	The shape of each link, shackle and swivel must be determined in proportion to the size as shown in the sketches. They must be uniform in shape, and those next to each other must fit properly and move freely.

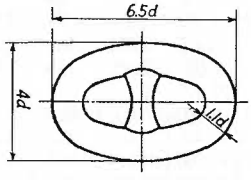
Specification

Kind of Chain		Symbol	Material
Stud Link Chain	Class 1	ST 1	SBC 300 : Steel bars for chains SS-400 : Rolled steel got general structure S20C : Cold rolled special steel strip
	Class 2	ST 2	SBC 490 : Steel bars for structure
	Class 3	ST 3	SBC 690 : Steel bars for structure (or KBC)

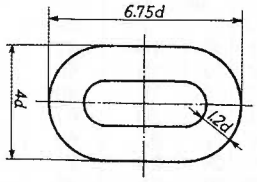
Swivel



Common link



Enlarged link

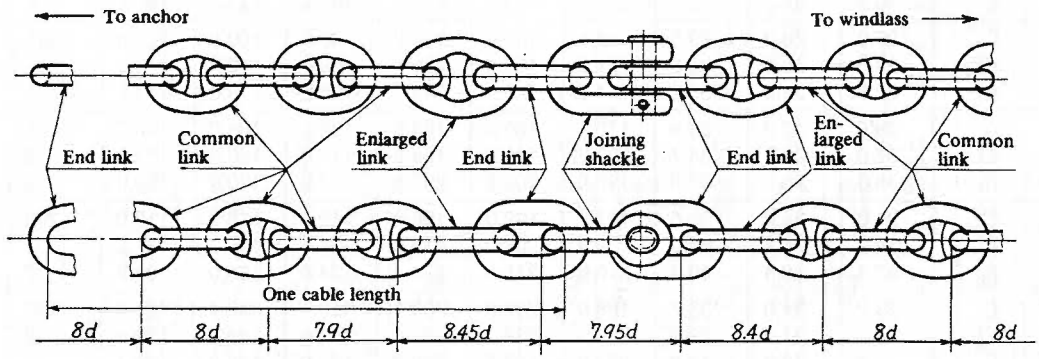


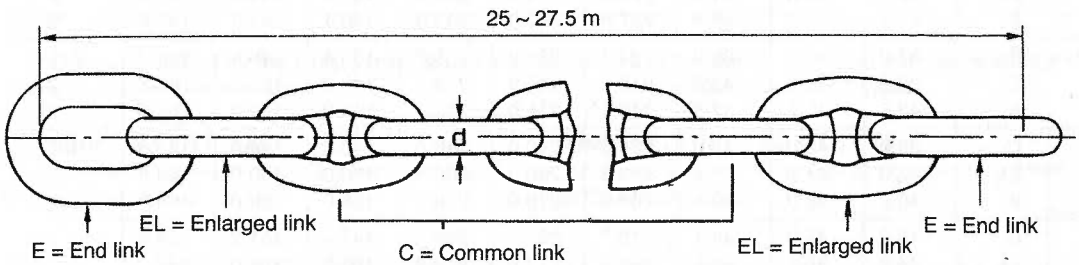
End link

Chain Dia (d)	Outside Length of Common Link (6d)	Outside Width of Common Link (3.6d)	Class II		Class III	
			Proof Test Load	Breaking Test Load	Proof Test Load	Breaking Test Load
mm	mm	mm	kN	kN	kN	kN
28	168	100.8	321	449	449	642
30	180	108.0	368	514	514	735
32	192	115.2	417	583	583	833
34	204	122.4	468	655	655	937
36	216	129.6	523	732	732	1,050
38	228	136.8	581	812	812	1,160
40	240	144.0	640	896	896	1,280
42	252	151.2	703	981	981	1,400
44	264	158.4	769	1,080	1,080	1,540
46	276	165.6	837	1,170	1,170	1,680
48	288	172.8	908	1,270	1,270	1,810
50	300	180.0	981	1,370	1,370	1,960
52	312	187.2	1,060	1,480	1,480	2,110
54	324	194.4	1,140	1,590	1,590	2,270
56	336	201.6	1,220	1,710	1,710	2,430
58	348	208.8	1,290	1,810	1,810	2,600
60	360	216.0	1,380	1,940	1,940	2,770
62	372	223.2	1,470	2,060	2,060	2,940
64	384	230.4	1,560	2,190	2,190	3,130
66	396	237.6	1,660	2,310	2,310	3,300
68	408	244.8	1,750	2,450	2,450	3,500
70	420	252.0	1,840	2,580	2,580	3,690
73	438	262.8	1,990	2,790	2,790	3,990
76	456	273.6	2,150	3,010	3,010	4,300
78	468	280.8	2,260	3,160	3,160	4,500
81	486	291.6	2,410	3,380	3,380	4,820
84	504	302.4	2,580	3,610	3,610	5,160
87	522	313.2	2,750	3,850	3,850	5,500

Remark: Larger or smaller sizes than the above list are also available.

Joining with Joining Shackle



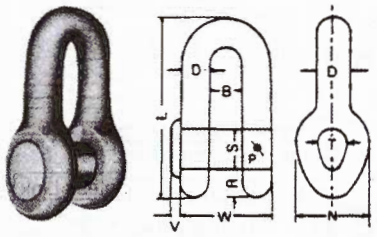


INTERNATIONAL MARINE PURCHASING ASSOCIATION

Nominal Diametr d mm	Kind of Link	Size mm									Approx. No. of Link	
		Diameter			Length			Width			Per 27.5 mtr	Per 25 mtr
		Min.	Sta	Max.	Min.	Sta	Max.	Min.	Sta	Max.		
14	C	13.0	14.0	15.5	81.9	84.0	86.1	49.2	50.4	51.6	487	441
	EL	14.4	15.4	16.9	88.8	91.0	93.2	54.6	56.0	57.4	2	2
	E	15.8	16.8	18.3	89.3	91.5	93.7	54.6	56.0	57.4	2	2
16	C	15.0	16.0	17.5	93.6	96.0	98.4	56.2	57.6	59.0	423	385
	EL	16.6	17,6	19.1	101.4	104.0	106.6	62.4	64.0	65.6	2	2
	E	18.2	19.2	20.7	105.3	108.0	110.7	62.4	64.0	65.6	2	2
17.5	C	16.5	17.5	19.0	102.4	105.0	107.6	61.5	63.0	64.5	387	353
	EL	18.2	19.2	20.7	111.0	113.8	116.6	68.3	70.0	71.7	2	2
	E	20.0	21.0	22.5	115.2	118.1	121.0	68.3	70.0	71.7	2	2
19	C	18.0	19.0	20.5	111.2	114.0	116.8	66.6	68.4	70.1	357	323
	EL	19.9	20.9	22.4	120.5	123.5	126.5	74.1	76.0	77.9	2	2
	E	21.8	22.8	24.3	125.1	128.3	131.5	74.1	76.0	77.9	2	2
20.5	C	19.5	20.5	22.0	120.0	123.0	126.0	71.9	73.8	75.6	331	301
	EL	21.5	22.5	24.0	130.0	133.3	136.6	80.0	82.0	84.0	2	2
	E	23.6	24.6	26.1	135.0	138.4	141.8	80.0	82.0	84.0	2	2
22	C	21.0	22.0	23.5	128.7	132.0	135.3	77.2	79.2	81.1	307	279
	EL	23.2	24.2	25.7	139.5	143.0	146.5	85.8	88.0	90.2	2	2
	E	25.4	26.4	27.9	144.8	148.5	152.2	85.8	88.0	90.2	2	2
24	C	23.0	24.0	25.5	140.4	144.0	147.6	84.3	86.4	88.5	281	255
	EL	25.4	26.4	27.9	152.1	156.0	159.9	93.6	96.0	98.4	2	2
	E	27.8	28.8	30.3	158.0	162.0	166.0	93.6	96.0	98.4	2	2
25	C	24.0	25.0	26.5	146.3	150.0	153.7	87.8	90.0	92.2	269	245
	EL	26.5	27.5	29.0	158.5	162.5	166.5	97.5	100.0	102.5	2	2
	E	29.0	30.0	31.5	164.6	168.8	173.0	97.5	100.0	102.5	2	2
26	C	25.0	26.0	27.5	152.1	156.0	159.9	91.3	93.6	95.9	259	235
	EL	27.6	28.6	30.1	164.8	169.0	173.2	101.4	104.0	106.6	2	2
	E	30.2	31.2	32.7	171.2	175.5	179.8	101.4	104.0	106.6	2	2
28	C	27.0	28.0	29.5	163.8	168.0	172.2	98.3	100.8	103.3	241	219
	EL	29.8	30.8	32.3	177.5	182.0	186.5	109.2	112.0	114.8	2	2
	E	32.6	33.6	35.2	184.3	189.0	193.7	109.2	112.0	114.8	2	2
30	C	29.0	30.0	31.5	175.5	180.0	184.5	105.3	108.0	110.7	225	203
	EL	32.0	33.0	34.7	190.2	195.0	199.8	117.0	120.0	123.0	2	2
	E	35.0	36.0	37.8	197.5	202.5	207.5	117.0	120.0	123.0	2	2
32	C	31.0	32.0	33.6	187.2	192.0	196.8	112.4	115.2	118.0	209	191
	EL	34.2	35.2	37.0	202.8	208.0	213.2	124.8	128.0	131.2	2	2
	E	37.4	38.4	40.3	210.6	216.0	221.4	124.8	128.0	131.2	2	2
34	C	33.0	34.0	35.7	198.9	204.0	209.1	119.4	122.4	125.4	197	179
	EL	36.4	37.4	39.3	216.5	222.0	227.5	132.6	136.0	139.4	2	2
	E	38.8	40.8	42.8	223.8	229.5	235.2	132.6	136.0	139.4	2	2
36	C	35.0	36.0	37.8	210.6	216.0	221.4	126.4	129.6	132.8	185	169
	EL	38.6	39.6	41.6	228.2	234.0	239.8	140.4	144.0	147.6	2	2
	E	41.2	43.2	45.4	237.0	243.0	249.0	140.4	144.0	147.6	2	2
38	C	37.0	38.0	39.9	222.3	228.0	233.7	133.4	136.8	140.2	175	159
	EL	39.8	41.8	43.7	240.9	247.0	253.1	148.2	152.0	155.8	2	2
	E	43.6	45.6	47.5	249.6	256.0	262.4	148.2	152.0	155.8	2	2
40	C	39.0	40.0	42.0	234.0	240.0	246.0	140.4	144.0	147.6	167	151
	EL	42.0	44.0	46.2	253.5	260.0	266.5	156.0	160.0	164.0	2	2
	E	46.0	48.0	50.4	263.3	270.0	276.7	156.0	160.0	164.0	2	2
42	C	40.0	42.0	44.1	245.7	252.0	258.3	147.5	151.2	154.9	159	143
	EL	44.2	46.2	48.5	266.2	273.0	279.8	163.8	168.0	172.2	2	2
	E	48.4	50.4	52.9	276.5	283.5	290.6	163.8	168.0	172.2	2	2
44	C	42.0	44.0	46.2	257.4	264.0	270.6	154.5	158.4	162.3	151	137
	EL	46.4	48.4	50.8	278.9	286.0	293.1	171.6	176.0	180.4	2	2
	E	50.8	52.8	55.4	289.6	297.0	304.4	171.6	176.0	180.4	2	2

Joining Shackles

D = 1.3d + Tolerance
L = 7.1d
W = 4d
P = 0.3d
R = 0.8d
N = 2.8d
S = 1.6d
V = 0.2d
T = 1.2d
B = 1.4d



Size of chain Applied (d)		D 1.3d	L 7.1d	W 1.6d	W 4d	B 1.4d	Weight/ pce
m/m	in	m/m	m/m	m/m	m/m	m/m	kgs
28	1-1/8	36	199	45	112	39	5.6
30	1-3/16	39	213	48	120	42	6.8
32	1-1/4	42	227	51	128	45	7.9
34	1-5/16	44	241	54	136	48	10.0
36	1-3/8	47	256	58	144	50	12.0
38	1-1/2	49	270	61	152	53	13.9
40	1-9/16	52	284	64	160	56	15.6
42	1-5/8	55	298	67	168	59	17
44	1-3/4	57	312	70	176	62	20
46	1-13/16	60	327	74	184	64	23
48	1-7/8	62	341	77	192	67	25
50	2	65	355	80	200	70	30
52	2-1/16	68	370	83	208	73	35
54	2-1/8	70	383	86	216	76	40
56	2-3/16	73	398	90	224	78	45
58	2-1/4	75	412	93	232	81	50
60	2-3/8	78	426	96	240	84	53
62	2-1/2	81	440	99	248	87	60
64	2-9/16	83	454	102	256	90	65
66	2-5/8	86	469	106	264	92	70
68	2-11/16	88	483	109	272	95	80
70	2-3/4	91	497	112	280	98	87
73	2-7/8	95	518	117	292	102	95
76	3	99	540	122	304	106	110
78	3-1/16	101	554	125	312	109	120
81	3-3/16	105	575	130	324	113	130
84	3-5/16	109	596	134	336	118	147
87	3-7/16	113	618	139	348	122	160

Remark: Shackles of sizes other than those listed above are also available upon request.

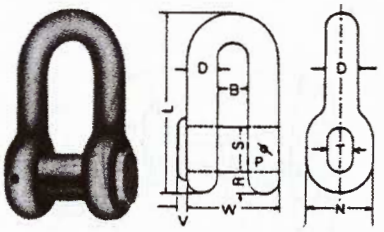
How to order : 23 - 11 - 78

Joining shackle for 28(d) mm stud link anchor chain cable, ST2 with certificate

Note: When ordering, be sure to state the size of the anchor chain for which these shackles are to be used. These shackles are proof and break tested to the same specification loads as the anchor chain with which they are used.

Anchor Shackles

D = 1.4d + Tolerance
L = 9d
W = 5.05d + α
P = 0.4d
R = 0.8d
N = 3.0d
S = 2.1d
V = 0.3d
T = 1.4d



Size of chain Applied (d)		D 1.4d	L 9d	S 2.1d	W 5.0 5d+ α	B	Weight/ pce
m/m	in	m/m	m/m	m/m	m/m	m/m	kgs
28	1-1/8	39	252	59	151	73	9.4
30	1-3/16	42	270	63	160	76	11.6
32	1-1/4	45	288	67	169	79	12.7
34	1-5/16	48	306	71	180	85	15.8
36	1-3/8	50	324	76	187	86	18.4
38	1-1/2	53	342	80	196	90	21.4
40	1-9/16	56	360	84	210	98	25.1
42	1-5/8	59	378	88	219	101	30
44	1-3/4	62	396	92	226	103	35
46	1-13/16	64	414	97	236	107	40
48	1-7/8	67	432	101	244	110	45
50	2	70	450	105	255	115	55
52	2-1/16	73	468	109	263	118	60
54	2-1/8	76	486	113	273	122	65
56	2-3/16	78	504	118	283	127	70
58	2-1/4	81	522	122	293	131	80
60	2-3/8	84	540	126	303	135	90
62	2-1/2	87	558	130	314	140	100
64	2-9/16	90	576	134	324	141	115
66	2-5/8	92	594	139	334	149	130
68	2-11/16	95	612	143	344	153	140
70	2-3/4	98	630	147	354	158	150
73	2-7/8	102	657	153	369	165	165
76	3	106	684	160	384	171	185
78	3-1/16	109	702	164	394	176	200
81	3-3/16	113	729	170	410	180	220
84	3-5/16	118	756	176	425	188	245
87	3-7/16	122	783	183	440	195	270

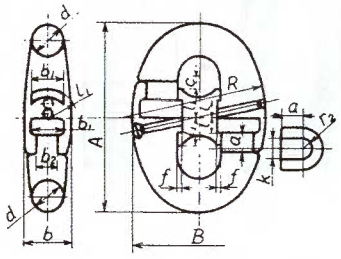
Remark: Shackles of sizes other than those listed above are also available upon request.

How to order : 23 - 11 - 79

Anchor shackle for 28(d) mm stud link anchor chain cable, ST2 with certificate

Note: When ordering, be sure to state the size of the anchor chain for which these shackles are to be used. These shackles are proof and break tested to the same specification loads as the anchor chain with which they are used.

Kenter Shackles



Dimension

Unit: mm

A	B	a	b	b_1	b_2	C
6d	4.2d	0.67d	1.52d	1.1d	0.73d	Approx. 0.415d
f	k	l	l_1		R	r_2
0.106d	0.73d	0.5d	Approx. 0.915d		4.4d	0.36d

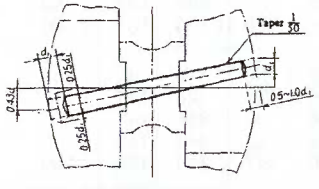
Remark: "d" is the nominal diameter of the chain.

How to order : 23 - 11 - 80

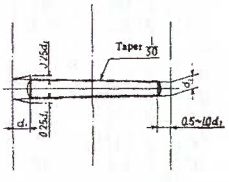
Kenter shackle for diam. mm(d) stud link anchor chain cable, (class of chain) with certificate

Taper Pins

For Kenter Shackle



For Joining Shackle and Anchor Shackle



Dimension

Unit: mm

Kind of shackle \ Nominal dia. of chain	24-28	30-38	40-46	48-54	56-62	64-70	73-78	80-87
Joining shackle d_1	6	8	10	12	14	16	18	20
Kenter shackle and anchor shackle d_1	8	10	12	14	16	20	22	24

Chain & Shackle

Anchor Cable ← Sizes must be determined in proportion to the "d" size and fit properly and move freely → Kenter Shackle, Joining Shackle, Anchor Shackle, Swivel

Guide of How to order

When ordering, please fill the following column.

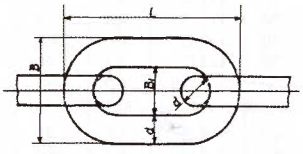
A	B	C	D	E	F	G

A. Name : Anchor Chain
B. Kind : Stud Link, Studless Link
C. Size : Nominal Dia. "d"
D. Length : 27.5 Mtrs. 25 Mtrs
E. Class & Proof Test Load : ST2, ST3
F. Accessory : Kenter Shackle, Joining Shackle, Anchor Shackle, Swivel
G. Certificate : NK, ABS, Lloyd, NV, etc.

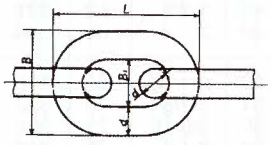
Chains for General Use

(Ref. JIS F 2106-1988)

Galvanized, rolled steel chains for general uses such as for guard or fence chains or for accommodation chain ladder slings. Two types of chains, short link and long link are available. Please specify the total length of the chain required in meters when ordering.



Long Chain



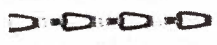
Short Chain

Unit Per Mtr.

CODE	Nom. Size	Dimensions mm d	L	B	B1	SWL Tons	Wt. Kgs. Per Mtr.
Long Link							
23 11 01	6	6	36	21	9	0.2	0.7
02	8	8	48	28	12	0.4	1.2
03	9	9	54	32	14	0.6	1.6
04	11	11	66	39	17	0.8	2.6
05	13	13	78	46	20	1.2	3.4
23 11 06	16	16	96	56	24	1.8	5.1
07	19	19	114	67	29	2.5	7.3
Short Link							
23 11 11	6	6	30	21	9	0.2	0.8
12	8	8	40	28	12	0.4	1.4
13	9	9	45	32	14	0.6	1.8
14	11	11	55	39	17	0.8	2.9
15	13	13	65	46	20	1.2	4.0
23 11 16	16	16	80	56	24	1.8	5.9
17	19	19	95	67	29	2.5	8.3

General Purpose Chains

General purpose chain for ordinary applications not required high tensile strength. Used for tow chains, binding or tie down chains made of stainless steel or brass. Please specify type of chain, kind of material, size of link, required working load, required overall length, etc.

Type No.	Type Name	Appearance	Size
1	Welded Curb		
2	Double Loop Coil		
3	Heavy Link		
4	Sash		

Stainless Steel

Unit Per Mtr.

CODE	Type No.	Type Name	Body Diam. mm	A×B×C mm	Weight grm/ mtr	Recommendable Working Load Kgs
23 11 21	1	Welded Curb	2.0	8.7×3.4	82	60
23 11 22	2	Double Loop Coil	2.0	28×5.5	86	80
23 11 23	3	Heavy Link	4.0	26×6.0	266	200
24			5.0	27×8.0	430	250
25			6.0	31×9.0	633	350
23 11 26	4	Sash	0.5 (Thick)	15.2×2.2×5.5	24	35
27			0.7 (Thick)	14.8×2.7×6.4	46	70
28			0.8 (Thick)	14.4×4.0×8.0	52	70

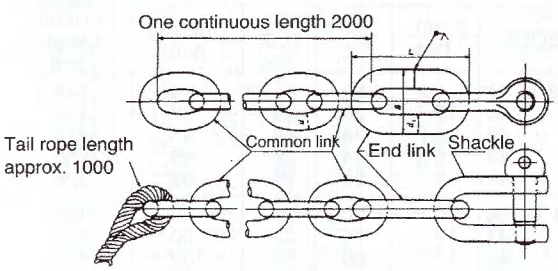
Brass

Unit Per Mtr.

CODE	Type No.	Type Name	Body Diam. mm	A×B×C mm	Weight grm/ mtr	Recommendable Working Load Kgs
23 11 41	1	Welded Curb	2.0	8.9×3.4	88	50
23 11 42	2	Double Loop Coil	2.0	28×5.5	88	60
23 11 43	4	Sash	0.5(Thick)	15.2×2.2×5.5	28	15
44			0.7(Thick)	14.8×2.7×6.4	46	30
45			0.8(Thick)	14.4×4.0×8.0	66	40

Chain Stoppers
(Ref. JIS F3406-1990)

A length of chain, usually 2 mtrs, used for wire ropes for cargo handling or the mooring of ships. One end is furnished with a tail rope and the other end with an end link and shackle.



Unit Per Lgh.

CODE	Chain Diam. mm	End Link Diam. mm	Shackle Type & Size mm	S.W.L. Tons	Wt. Per Lgth. Kgs	Applicable with rope Diam. mm
Cargo Handling (Chain Length 2 mtrs)						
23 11 31	8	9	SC 10	0.6	3.66	16 - 18
32	10	13	SC 12	0.8	5.44	-
Mooring (Chain Length 2 mtrs)						
23 11 35	6	8	SD 10	0.3	2.28	16
36	8	9	SD 12	0.6	3.66	18
37	10	13	SD 14	0.8	5.44	20-22.4
38	12	13	SD 16	1.0	8.24	24-28
39	14	16	SD 20	1.5	10.70	24-28
23 11 40	16	19	SD 22	2.0	13.80	24-28

Connecting Links
(Missing Links)

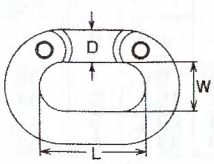
Drop forged, heat treated steel. Used for the temporary or permanent repair of chains through the replacement of individual lengths. When ordering, please specify whether galvanized or black steel links will be required.

Unit Per Pc.

Black			Galvanized		
CODE	Link Diam. mm	Overall Dimension mm	CODE	Link Diam. mm	Overall Dimension mm
23 11 51	8	40 × 28	**23 11 66**	8	40 × 28
52	9	45 × 32	**67**	9	45 × 32
53	11	56 × 38	**68**	11	56 × 38
54	13	59 × 42	**69**	13	59 × 42
55	16	77 × 54	**70**	16	77 × 54
23 11 56	19	95 × 65	**23 11 71**	19	95 × 65
57	22	112 × 75	**72**	22	112 × 75
58	25	124 × 88	**73**	25	124 × 88
59	28	138 × 97	**74**	28	138 × 97
60	32	158 ×113	**75**	32	158 ×113
23 11 61	38	187 ×135	**23 11 76**	38	187 ×135

Stainless Steel Connecting Links

Made of stainless steel to resist rust. Used for the temporary or permanent repair of chains through the replacement of individual lengths.



Unit Per Pc.

CODE	Working Load Limit		Size mm			Weight grm
	kgf	kN	D	L	W	
23 11 85	200	1.96	8	24	12	35
86	300	2.94	10	30	14.5	60
87	400	3.92	11	33	17	86
88	550	5.39	13	37	19	128
89	800	7.84	16	48	24	259

Steel Round Rings

Flush butt welded steel ring for use with a cargo sling, cargo hook, chain, etc. Available in original black steel colour only.

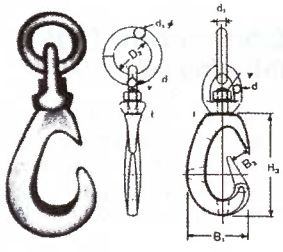
Unit Per Pc.

CODE	Diam. × I.D. mm	Wt. kgs	CODE	Diam. × I.D. mm	Wt. kgs
23 11 91	25 × 125	1.82	**23 11 95**	36 × 150	4.70
92	28 × 125	2.32	**96**	38 × 150	5.30
93	32 × 125	3.11	**97**	50 × 200	12.0
94	32 × 150	3.60			

5. Cargo Hooks

Cargo Hooks with Swivel Eye

(Ref. JIS F2105-1990)



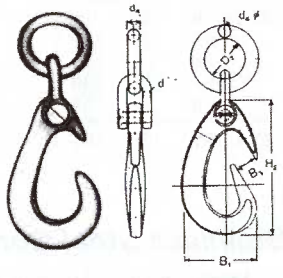
Made of high tensile, heat treated carbon steel. Provided in its original color with a swivel and ring. Specify the required S.W.L. when ordering.

Unit Per Pc.

CODE	SWL		Size mm			Weight kgs
			Hook	Ring		
	kN	tf	B_3	D_1	D_2	
23 12 01	9.8	1	38	22	75	6.0
02	19.6	2	44	25	85	12.0
03	29.4	3	47	32	95	20.0
04	49	5	50	42	120	36.3

Cargo Hooks with Shackle

(Ref. JIS F2105-1990)



Made of high tensile, heat treated carbon steel. Provided in its original colour with a countersunk screw pin shackle and ring. Please specify the required S.W.L. when ordering.

Unit Per Pc.

CODE	SWL		Size mm			Weight kgs
			Hook	Ring		
	kN	tf	B_3	D_4	D_2	
23 12 06	9.8	1	38	22	75	6.0
07	19.6	2	44	25	85	11.0
08	29.4	3	47	32	95	18.0
09	49	5	50	42	120	33.0

Seattle Pattern Cargo Hooks

Drop forged steel provided in its original colour. Composed of a swivel eye and ring connected to two eyes and swivels. When ordering, please specify the required safe working load of the cargo hook from the sample given below.

Unit Per Pc.

CODE	S.W.L. Ton	Estimated Weight Kgs.	Hook Inner Length mm.	Ring I.D. mm.
23 12 11	3	20	180	100
12	5	40	220	140
13	10	60	250	160

Hoist Hooks with Eye

Made of drop forged, heat treated steel and provided in its original colour. Regular type hoist hook without a safety pin.

Unit Per Pc.

CODE	S.W.L. Ton	Eye ID mm	Opening mm	Oveerall Length mm
23 12 21	1/2	19	25	127
22	1	25	32	150
23	2	33	36	183
24	3	37	40	219
25	5	49	52	277
23 12 26	8	60	64	356
27	10	68	71	397

Hoist Eye Hooks with Latch

Drop forged and heat treated. Fitted with a safety spring latch.

Unit Per Pc.

CODE	S.W.L. Ton	Eye ID mm	Opening mm	Oveerall Length mm
23 12 31	1/2	19	25	127
32	1	25	32	150
33	2	33	36	183
34	3	37	40	219
35	5	49	52	277
23 12 36	8	60	64	356
37	10	68	71	397

Safety Latch Hooks

Drop forged and heat treated. When released, the latch closes automatically and will not open unless a release button on the body is pushed. When ordering, please specify the safe working load from the examples in the table below.

Unit Per Pc.

CODE	S.W.L. Ton	Eye Diam.		Opening mm	Overall Length mm
		I.D. mm	O.D. mm		
23 12 41	1.2	22	11.5	29	141.5
45	2	28	14	37	176
42	3.2	34	16	45	214
43	5.3	44	20	55	266
44	8	56	26	62	328
23 12 46	10	60	30	68	382
47	12	70	32	80	414
48	17	80	35	100	445
49	20	90	40	120	526

Swivel Eye Cargo Hooks with Latch

Drop forged and heat treated from a special bar steel. When ordering, please specify the safe working load required for the use of the cargo hooks.

Unit Per Pc.

CODE	S.W.L. Ton	Overall Length mm	Overall Width mm	Throat Opening mm	Swivel Ring Clear Width mm
23 12 51	1	168	81	26	38
52	1-1/2	194	92	27	44
53	2	206	104	31	44
54	3	244	125	38	51
55	5	315	165	48	64

Swivel Type Latch Lock Hooks

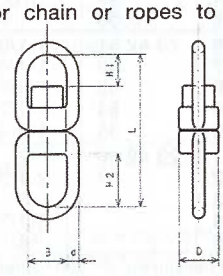
Drop forged and heat treated from a special bar steel. Safety hook with latch type closing mechanism which automatically closes when hook is loaded. Unlocking the trigger button on the hook will easily release the lock and open the hook. When ordering, please specify the safety working load required for the use of the cargo hooks.

Unit Per Pc.

CODE	Working Load Limit Ton	Overall Length mm	Throat Opening mm	Swivel Ring ID mm
23 12 61	1.2	181	29	33 x 22.5
62	2.0	220	37	38 x 27
63	3.2	263	45	44 x 37
64	5.3	339	55	47 x 47
65	8.0	412	62	62 x 65
23 12 66	10.0	462	68	69 x 72

Forged Steel Regular Swivels

Forged steel swivel for chain or ropes to prevent tangling.



Unit Per Pc.

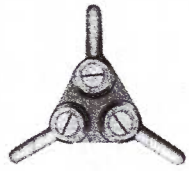
CODE	Nominal Size	Size mm L	Size mm B	Size mm D	Working Load Limit Ton	Weight kgs
23 12 71	9	95	30	30	0.4	0.32
72	13	125	32	35	0.7	0.65
73	16	145	37	38	1.0	1.2
74	19	180	42	50	1.5	2.1
75	22	200	47	55	2.0	2.9
23 12 76	25	228	54	60	2.5	4.2
77	28	250	59	65	3.0	6.4
78	32	285	65	80	4.5	10.0
79	38	335	75	85	6.0	15.6
80	44	362	84	102	8.0	19.0

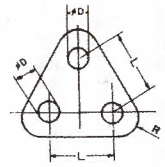
6. Delta Plates

Delta Plates

(Monkey Face)

Equilateral triangles designed for cargo working or towing. Made from drop forged, natural coloured steel plate with 3 holes for attaching shackles.





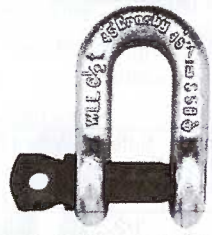
Unit Per Pc.

CODE	S.W.L. ton	Dimensions mm L	Dimensions mm Dϕ	Dimensions mm R	Dimensions mm Thick	Countersink Shackle mm
23 12 81	2.0	54	23	25	22	18
82	3.0	66	28	30	25	22
83	4.8	84	36	39	35	28
84	7.0	102	42	47	40	34
85	10.0	120	50	55	45	40

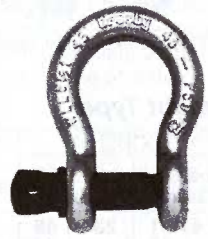
7. Crosby Products

Forged Screw Pin Shackles

G-210, S-210, G-209, S-209



G-210, S-210 Straight Type



G-209, S-209 Bow Type

Straight Shackle

Unit Per Pc.

CODE G-210 (Galv)	CODE S-210 (Black)	Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs) G-210, S-210
23 41 01	**23 41 16**	1/4	1/2	0.05
02	**17**	5/16	3/4	0.08
03	**18**	3/8	1	0.13
04	**19**	7/16	1-1/2	0.20
05	**20**	1/2	2	0.27
23 41 06	**23 41 21**	5/8	3-1/4	0.57
07	**22**	3/4	4-3/4	1.20
08	**23**	7/8	6-1/2	1.43
09	**24**	1	8-1/2	2.15
10	**25**	1-1/8	9-1/2	3.06
23 41 11	**23 41 26**	1-1/4	12	4.11
12	**27**	1-3/8	13-1/2	5.28
13	**28**	1-1/2	17	7.23
14	**29**	1-3/4	25	12.10
15	**45**	2	35	19.20
23 41 30	**23 41 60**	2-1/2	55	32.50

Note : G - Galvanized, S - Self Coloured
Name of Mfr.: Crosby®

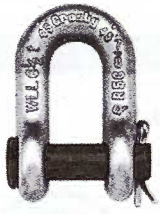
Bow Shackle

Unit Per Pc.

CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs)
G-209 (Galv)	S-209 (Black)			G-209, S-209
23 41 61	**23 41 76**	3/16	1/3	0.03
62	**77**	1/4	1/2	0.05
63	**78**	5/16	3/4	0.09
64	**79**	3/8	1	0.14
65	**80**	7/16	1-1/2	0.17
23 41 66	**23 41 81**	1/2	2	0.33
67	**82**	5/8	3-1/4	0.62
68	**83**	3/4	4-3/4	1.07
69	**84**	7/8	6-1/2	1.64
70	**85**	1	8-1/2	2.28
23 41 71	**23 41 86**	1-1/8	9-1/2	3.36
72	**87**	1-1/4	12	4.31
73	**88**	1-3/8	13-1/2	6.14
74	**89**	1-1/2	17	7.80
75	**90**	1-3/4	25	12.60
23 41 91	**23 41 93**	2	35	20.40
92	**94**	2-1/2	55	38.90

Note : G - Galvanized, S - Self Coloured (Black)
Name of Mfr.: Crosby®

Forged Round Pin Shackles
G-215, S-219, G-213, S-213



G-215, S-215 Straight Type

G-213, S-213 Bow Type

Straight Type

Unit Per Pc.

CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs)
G-215 (Galv)	S-215 (Black)			G-215, S-215
23 41 31	**23 41 46**	1/4	1/2	0.05
32	**47**	5/16	3/4	0.08
33	**48**	3/8	1	0.11
34	**49**	7/16	1-1/2	0.18
35	**50**	1/2	2	0.23
23 41 36	**23 41 51**	5/8	3-1/4	0.55
37	**52**	3/4	4-3/4	0.91
38	**53**	7/8	6-1/2	1.49
39	**54**	1	8-1/2	2.15
40	**55**	1-1/8	9-1/2	2.86
23 41 41	**23 41 56**	1-1/4	12	4.08
42	**57**	1-3/8	13-1/2	5.44
43	**58**	1-1/2	17	7.33
44	**59**	1-3/4	25	13.60
95	**96**	2	35	19.60

Note : G - Galvanized, S - Self Coloured (Black)
Name of Mfr.: Crosby®

Bow Type

Unit Per Pc.

CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs)
G-213 (Galv)	S-213 (Black)			G-213 S-213
23 42 01	**23 42 16**	1/4	1/2	0.06
02	**17**	5/16	3/4	0.08
03	**18**	3/8	1	0.13
04	**19**	7/16	1-1/2	0.17
05	**20**	1/2	2	0.32

(to be continued)

Unit Per Pc.

CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs)
G-213 (Galv)	S-213 (Black)			G-213 S-213
23 42 06	**23 42 21**	5/8	3-1/4	0.68
07	**22**	3/4	4-3/4	1.05
08	**23**	7/8	6-1/2	1.58
09	**24**	1	8-1/2	2.27
10	**25**	1-1/8	9-1/2	3.16
23 42 11	**23 42 26**	1-1/4	12	4.42
12	**27**	1-3/8	13-1/2	6.01
13	**28**	1-1/2	17	7.82
14	**29**	1-3/4	25	13.40
15	**30**	2	35	20.80

Note : G - Galvanized, S - Self Coloured (Black)
Name of Mfr.: Crosby®

Bolt Type Anchor & Chain Shackles
G-2130, S-2130, G-2150, S-2150

G-2130,S-2130
Anchor Shackle

G-2150,S-2150
Chain Shackle

Anchor Shackle

Unit Per Pc.

CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs)
G-2130 (Galv)	S-2130 (Black)			G-2130, S-2130
23 42 74	—	3/16	1/3	0.03
75	—	1/4	1/2	0.05
88	—	5/16	3/4	0.10
89	—	3/8	1	0.15
90	—	7/16	1-1/2	0.22
23 42 31	**23 42 46**	1/2	2	0.36
32	**47**	5/8	3-1/4	0.62
33	**48**	3/4	4-3/4	1.23
34	**49**	7/8	6-1/2	1.79
35	**50**	1	8-1/2	2.28
23 42 36	**23 42 51**	1-1/8	9-1/2	3.75
37	**52**	1-1/4	12	5.31
38	**53**	1-3/8	13-1/2	7.18
39	**54**	1-1/2	17	8.62
40	**55**	1-3/4	25	15.40
23 42 41	**23 42 56**	2	35	23.70
42	**57**	2-1/2	55	44.60
43		3	85	70
44		3-1/2	120	120
45		4	150	153

Note : G - Galvanized, S - Self Coloured (Black)
Name of Mfr.: Crosby®

Chain Shackle

Unit Per Pc.

CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs)
G-2150 (Galv)	S-2150 (Black)			G-2150, S-2150
23 42 91	—	1/4	1/2	0.06
92	—	5/16	3/4	0.10
93	—	3/8	1	0.15
94	—	7/16	1-1/2	0.22
61	**23 42 76**	1/2	2	0.34

(to be continued)

Unit Per Pc.

CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight (kgs)
G-2150 (Galv)	S-2150 (Black)			G-2150, S-2150
23 42 62	**23 42 77**	5/8	3-1/4	0.67
63	**78**	3/4	4-3/4	1.14
64	**79**	7/8	6-1/2	1.74
65	**80**	1	8-1/2	2.52
66	**81**	1-1/8	9-1/2	3.45
23 42 67	**23 42 82**	1-1/4	12	4.90
68	**83**	1-3/8	13-1/2	6.24
69	**84**	1-1/2	17	8.39
70	**85**	1-3/4	25	14.20
71	**86**	2	35	21.20
23 42 72	**23 42 87**	2-1/2	55	38.60
73	—	3	85	56

Note : G - Galvanized, S - Self Coloured (Black)
Name of Mfr.: Crosby®

Anchor Shackles
Alloy Bolt Type
G-2140, S-2140

G-2140,S-2140

Meets the performance requirements of Federal Specification RR-C-271F, Type IVA, Grade B, Class 3. Quenched and tempered alloy bows and alloy bolts.

Sizes from 1-1/2 to 4 are made from forged alloy, and sizes 4-3/4 to 7 are made from cast alloy steel.

Unit Per Pc.

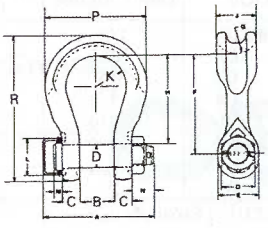
CODE		Nominal Shackle Size Inches	Safe Working Load (t)	Weight Pounds Each
G-2140 (Galv)	S-2140 (Black)			
23 43 01	**23 43 11**	1-1/2	30	20.8
02	**12**	1-3/4	40	33.9
03	**13**	2	50	52
04	**14**	2-1/2	80	96
05	—	3	110	178
23 43 06	—	3-1/2	140	265
07	—	4	175	338
16	—	4-3/4	200	209
17	—	5	250	276
18	—	6	300	362
23 43 19	—	7	400	500

Note : G - Galvanized, S - Self Coloured (Black)
Name of Mfr.: Crosby®

Wide Body Shackles
G-2160

Greatly improves the durability of wire rope slings. The increase in shackle bow radius provides a 58 % gain in the sling bearing surface and eliminates the need for a thimble. Increases the usable sling strength 15 %. Forged alloy steel from 75 through 300 metric tons, and cast alloy steel from 400 through 1,000 metric tons.

G-2160



CODE	Safe Working Load	Dimensions in Millimeters					Weight
	(t)	B	C	D	K	R	(kgs)
23 43 08	7	31.8	17.5	22.4	31.8	149	1.81
09	12.5	42.9	23.4	28.7	41.4	194	4.54
10	18	51.6	29.5	35.1	50.8	238	6.80
15	30	60.2	35.1	41.4	63.5	289	11.34
20	40	73.2	41.4	50.8	76.2	346	20.90
23 43 32	55	82.6	50.8	57.2	88.9	397	32.21
21	75	105	53.8	69.9	92.5	468	45
22	125	130	67.6	80	110	584	88.5
23	200	150	74.7	105	138	773	191
24	300	187	97.5	133	160	957	365
23 43 25	400	220	131	160	185	985	500
26	500	250	146	180	225	1,085	650
27	600	275	158	200	247	1,200	860
28	700	300	167	215	270	1,275	1,109
29	800	325	185	230	277	1,323	1,368
23 43 30	900	350	198	250	293	1,387	1,559
31	1,000	380	212	270	308	1,405	1,824
33	1,250	432	233	300	323	1,660	2,588
34	1,550	465	282	320	338	1,896	3,650

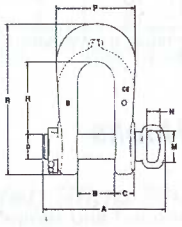
Name of Mfr.: Crosby®

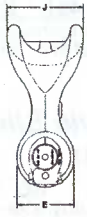
Grommet Shackles
G-2170

Designed for use with single or double large diameter grommets. Made of cast alloy steel, and quenched and Tempered for maximum strength. G-2170 bows are furnished Dimetcoted and pins are Dimetcoted, then painted red.

All sizes are RFID (Radio Frequency Identification) equipped in bow and pin, and bow and bolt are certified to meet Charpy impact testing of 42 joules (31 ft-lbs.) min. avg. at -20 degrees C (-4 degrees F).

Shackles requiring ABS, Lloyds, and other certifications are available upon special request and must be specified at time of order. All 2170 shackles can meet requirements of DNV Rules for Certification of Lifting Appliances upon special request and must be specified at time of order.





Unit Per Pc.

CODE	Effective Body Dia.	Dimensions (in)						Working Load Limit (t)	Weight Each (lbs)
		A	B	C	D	E	H		
23 43 35	11.25	15.04	4.13	2.39	2.75	5.50	7.77	75	115
36	13.50	17.01	5.13	2.75	3.15	6.72	9.31	125	179
37	18.45	19.35	5.91	3.39	4.12	9.00	11.64	200	374
38	22.75	22.61	7.38	4.30	5.25	11.13	15.20	300	692
39	30.00	29.95	9.84	6.00	7.09	13.75	19.72	500	1,671

Note: Maximum Proof Load is 2.0 times the Working Load Limit on 75 thru 300 metric tons. Maximum Proof Load is 1.33 times the Working Load Limit on 500 metric tons.
Name of Mfr.: Crosby®

Eliminator Single/Double Hooks
A-1361/A-1362

The Crosby® ELIMINATOR® combines selected features and functionality of a master link, connecting link, grab hook and adjuster legs to provide you with one fitting that is suitable for applications that require an adjustable length

chain sling. Made of forged alloy steel - quenched and tempered. It can be used for personnel lifting applications and meets the intent of OSHA Rule 1926.1431(g)(1)(i) (A) and 926.1501(g)(4)(iv)(B). Suitable for use with Grade 100 and Grade 80 chain. Use the A-1361 and A-1362 in combination to make 3 leg chain slings. All sizes are RFID (Radio Frequency Identification) equipped.

A-1361 Single Hook

A-1362 Double Hook

A-1361 Single Hook

Unit Per Pc.

CODE	Chain Size		Frame Size	Working Load Limit (lbs)	Weight Each (lbs)
	Inch	mm			
23 43 40	1/4	7	2	4,300	3.9
41	5/16	8	2	5,700	3.9
42	3/8	10	3	8,800	6.5
43	1/2	13	4	15,000	13.5
44	5/8	16	5	22,600	24.1

Note : Proof tested at 2.5 times the Working Load Limit
Name of Mfr. : Crosby®

A-1362 Double Hook

Unit Per Pc.

CODE	Chain Size		Frame Size	Working Load Limit (lbs)	Weight Each (lbs)
	Inch	mm			
23 43 45	1/4	7	2	8,600	4.7
46	5/16	8	2	11,400	4.7
47	3/8	10	3	17,600	8.1
48	1/2	13	4	30,000	17.3
49	5/8	16	5	45,200	31.5

Note : Proof tested at 2 times the Working Load Limit
Name of Mfr. : Crosby®

Clevis Sling Hooks
A-331

Alloy steel quenched and tempered. Pin locking requires no special tools.

A-331

Unit Per Pc.

CODE	Chain Size (mm)	Working Load Limit (t)	Weight (kgs)
23 43 51	7	1.25	0.25
52	8	1.95	0.36
53	10	2.38	0.55
54	11	3.18	0.93
55	13	4.08	1.25
23 43 56	16	6.12	2.15
57	19	8.73	5.12

Name of Mfr. : Crosby®

Clevis Grab Hooks
A-330

Alloy steel quenched and tempered. Pin locking requires no special tools.

A-330

Unit Per Pc.

CODE	Chain Size (mm)	Working Load Limit (t)	Weight (kgs)
23 43 61	7	1.59	0.16
62	8	2.04	0.29
63	10	3.22	0.45
64	11	4.54	0.59
65	13	5.44	0.95
23 43 66	16	8.20	1.91
67	19	11.20	2.95

Name of Mfr. : Crosby®

Eye Slip Hooks
H-324

Alloy steel quenched and tempered.

H-324

Unit Per Pc.

CODE	Chain Size (mm)	Working Load Limit (t)	Weight (kgs)
23 43 71	7	0.89	0.18
72	8	1.30	0.29
73	10	1.81	0.50
74	11	2.27	0.71
75	13	2.95	0.95
23 43 76	16	4.20	1.77
77	19	8.73	3.14

Name of Mfr. : Crosby®

Latching Eye Hooks
S-315A

Hook is forged alloy steel, quenched and tempered with integrated heavy duty latch.

S-315A

Unit Per Pc.

CODE	Chain Size (mm)	Working Load Limit (t)	Overall Length mm	Weight (kgs)
23 43 81	6	1	104.6	0.25
82	7 - 8	2	144.9	0.59
83	10	3	186.5	1.18
84	13	5	228.4	2.13
85	16	7	279	3.88

Name of Mfr. : Crosby®

Master Links
A-342

Made of a solid, weldless alloy.

A-342

Unit Per Pc.

CODE	Diam. inches	Working Load Limit (t)	Weight (kgs)
23 44 01	1/2	1.50	0.59
02	5/8	2.00	0.69
03	3/4	3.15	0.91
04	1	5.30	2.77
05	1-1/4	8.00	5.44
23 44 06	1-1/2	11.2	8.44
07	1-3/4	15.0	11.40
08	2	21.2	16.80

Name of Mfr. : Crosby®

Weldless Sling Links
G-341, S-341

G-341, S-341

Forged from a special quality carbon and alloy bar steel. Weldless and available in a self coloured (Black) (S) or dip galvanized (G) alloy steel.

Unit Per Pc.

CODE		Diam. (mm)	Working Load Limit Single Pull (t)	Weight (kgs)
G-341 (Galv)	S-341 (Black)			
23 44 11	**23 44 21**	10	0.82	0.10
12	**22**	13	1.32	0.25
13	**23**	16	1.91	0.48
14	**24**	19	2.72	0.85
15	**25**	22	3.76	1.25
23 44 16	**23 44 26**	25	4.90	1.97
17	**27**	32	7.60	3.45
18	**28**	35	9.30	5.13

Name of Mfr. : Crosby®

Connecting Links
A-336

A-336

Forged alloy steel, quenched and tempered. An exclusive locking sleeve allows for simple assembly without any special tools.

Unit Per Pc.

CODE	Chain Size (mm)	Working Load Limit (t)	Weight (kgs)
23 44 31	6 – 7	1.47	0.11
32	8 – 10	3.00	0.27
33	13	5.10	0.54
34	16	7.48	1.10
35	19	10.45	1.76
23 44 36	22	13.04	2.75
37	26	17.58	3.19
38	32	26.00	6.00

Name of Mfr. : Crosby®

Alloy Chain
Spectrum 8

Made from a heat treated alloy steel. Finished self coloured and permanently embossed with CG (Crosby Group) and 8 (Grade).

Unit Per Mtr.

CODE	Chain Size (mm)	Working Load Limit (t)	Meters per Drum	Weight per Meter (kgs)
23 44 41	6	1.1	200	0.80
42	8	2.0	200	1.25
43	10	3.2	200	2.20
44	13	5.3	150	3.80
45	16	8.0	100	5.70
23 44 46	19	12.5	50	8.03
47	22	15.0	50	10.90

*Available Size up to 32mm on request
Name of Mfr. : Crosby®

Forged Regular Swivels
G-402

G-402

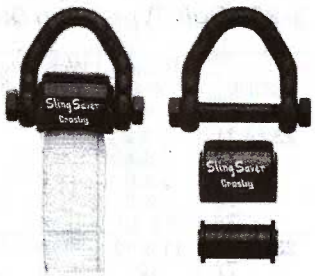
Quenched, tempered and hot dip galvanized.

Unit Per Pc.

CODE	Body Size (mm)	Safe Working Load - (t)	Weight (kgs)
23 44 51	6	0.39	0.10
52	8	0.57	0.18
53	10	1.02	0.32
54	13	1.63	0.60
55	16	2.36	1.13
23 44 56	19	3.27	1.82
57	22	4.54	2.83
58	25	5.67	4.06
59	32	8.16	7.42
60	38	20.50	20.80

Name of Mfr. : Crosby®

Sling Saver Web Connectors
S-280



Increasing Synthetic Sling efficiency as compared to standard anchor and chain shackle bows and conventional eye hooks. This allows 100% of the slings rated Working Load Limit to be achieved. Allowing better load distribution on internal fibers.

Durable vinyl cover that protects sling at eye, and keeps sling positioned correctly on spool.

Unit Per Pc.

CODE	Round Sling Size (No.)	Web Slings			Working Load Limit (Ton)	Weight Each (lbs)
		Webbing Width (in)	Eye Width (in)	Ply		
23 44 61	1 & 2	2	2	2	3-1/4	1.5
62	3	3	1.5	2	4-1/2	1.9
63	4	4	2	2	6-1/4	2.9
64	5 & 6	6	3	2	8-1/2	5.1

Note : Maximum Proof Load is 2 times the Working Load Limit.
Name of Mfr. : Crosby®

Sling Saver Web Sling Shackles
S-281

Designed to connect Synthetic Web Slings and Synthetic Round Slings to eyebolts, pad eyes, and lifting lugs. All Alloy Construction.

Increased radius of bow gives wider sling bearing surface resulting in an increased area for load distribution, thus: Increasing Synthetic Sling efficiency as compared to standard anchor and chain shackle bows and conventional eye hooks.

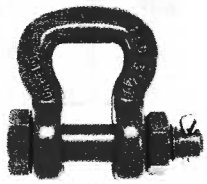
Unit Per Pc.

CODE	Round Sling Size (No.)	Web Slings			Working Load Limit (Ton)	Weight Each (lbs)
		Webbing Width (in)	Eye Width (in)	Ply		
23 44 65	1 & 2	2	2	2	3-1/4	1.2
66	3	3	1.5	2	4-1/2	1.5
67	4	4	2	2	6-1/4	2.5
68	5 & 6	6	3	2	8-1/2	4.3

Note : Maximum Proof Load is 2 times the Working Load Limit.
Name of Mfr. : Crosby®

Sling Saver Web Sling Shackles
S-252/S-253

Same shackle to model S-280, but available in size 3-1/4 to 50 metric tons and in both a Screw Pin and Bolt, Nut and Cotter Pin configuration. Bolt (Pin) has a larger diameter that provides better load distribution.



S-252

S-253

S-252 Bolt Type Sling Shackle

Unit Per Pc.

CODE	Round Sling Size (No.)	Web Slings Eye Width (in)	Working Load Limit (ton)	Weight Each (lbs)
23 44 71	1 & 2	1	3-1/4	1.4
72	3 & 4	1.5	6-1/2	2.4
73	5 & 6	2	8-3/4	4.1
74	7 & 8	3	12-1/2	8.0
75	9 & 10	4	20-1/2	16.9
23 44 76	11 & 12	5	35	35.0
77	13	6	50	57.5

Note : Maximum Proof Load is 2.5 times the Working Load Limit.
Name of Mfr. : Crosby®

S-253 Screw Pin Sling Shackle

Unit Per Pc.

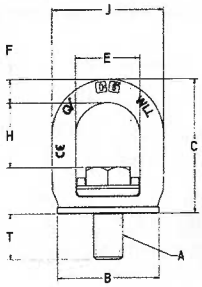
CODE	Round Sling Size (No.)	Web Slings Eye Width (in)	Working Load Limit (ton)	Weight Each (lbs)
23 44 78	1 & 2	1	3-1/4	1.4
79	3 & 4	1.5	6-1/2	2.2
80	5 & 6	2	8-3/4	3.8
81	7 & 8	3	12-1/2	7.3
82	9 & 10	4	20-1/2	15.2
23 44 83	11 & 12	5	35	30.8
84	13	6	50	52.0

Note : Maximum Proof Load is 2.5 times the Working Load Limit.
Name of Mfr. : Crosby®

Slide-loc Lifting Points
SL-150

Available in capacities from 0.5 to 3.2 metric tons. Bail is Forged Alloy Steel – Quenched and Tempered, and swivels 360° degree. Meets the Machinery Directive 2006/42/EC guidelines and is marked with CE accordingly.

Unique locking mechanism makes the lifting point well suited for quick attachment to load surface. No need for tools.



UNC Thread

Unit Per Pc.

CODE	Bolt Size	Dimensions (inch) E	Dimensions (inch) H	Effective Thread Projection Length T	Working Load Limit (Ton)	Weight Each (lbs)
23 44 85	3/8–16 x 1	1.10	1.11	0.60	0.50	0.30
86	1/2–13 x 1-1/4	1.30	1.30	0.79	0.75	0.53
87	5/8–11 x 1-5/8	1.46	1.46	1.01	1.50	1.10
88	3/4–10 x 2	1.72	1.72	1.26	2.30	2.05
89	7/8– 9 x 2	1.72	1.72	1.23	2.30	2.16
23 44 90	1– 8 x 3	2.08	1.93	1.59	3.20	3.73

Note : Ultimate load is 4 times the Working Load Limit.
Name of Mfr. : Crosby®

Metric Thread

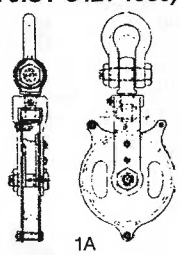
Unit Per Pc.

CODE	Bolt Size	Dimensions (mm) E	Dimensions (mm) H	Effective Thread Projection Length T	Working Load Limit (Ton)	Weight Each (kgs)
23 44 91	M10 x 1.5 x 25	28.0	27.8	14.6	0.50	0.14
92	M12 x 1.75 x 30	33.0	32.9	18.3	0.75	0.23
93	M16 x 2 x 40	37.0	37.0	24.5	1.50	0.50
94	M20 x 2.5 x 50	43.9	43.6	31.0	2.30	0.94
95	M24 x 3 x 60	52.8	52.8	37.0	3.20	1.60

Note : Ultimate load is 4 times the Working Load Limit.
Name of Mfr. : Crosby®

8. Steel Cargo Blocks

Steel Cargo Blocks
without Becket
(Ref. JIS F 3421-1989)



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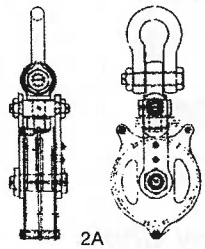
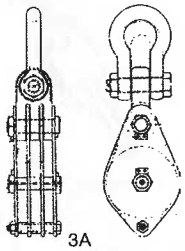
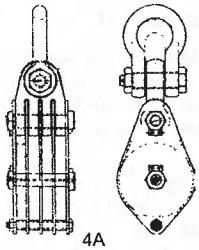


2A



3A



4A

How to order : CODE

Cargo block, steel, without becket, TYPE, NO. of SHEAVE and SHEAVE DIA.

Without Becket

Unit Per Pc.

CODE	Type	Sheave No.	Sheave Dia. mm	Wire Rope Dia mm	Shackle SB or BB	SWL kN	SWL tf	Weight kgs
23 15 01	1A	1	220	12.5	22	13.7	1.4	16
02			240	14	26	17.2	1.75	21
03			280	16	30	22.1	2.25	33
04			340	20	34	34.3	3.5	52
05			430	25	42	53.9	5.5	84
06			480	28	48	68.6	7.0	123

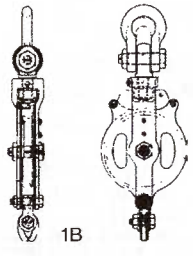
Without Becket

Unit Per Pc.

CODE	Type	Sheave No.	Sheave Dia. mm	Wire Rope Dia mm	Shackle SB or BB	SWL kN	SWL tf	Weight kgs
23 15 07			240	14	34	63.7	6.5	47
08			280	16	38	83.4	8.5	67.5
09	2A	2	340	20	46	127.5	13	114
10			430	25	60	206	21	205
11			480	28	70	275	28	314
23 15 12	3A	3	430	25	75	314	32	382
23 15 13	4A	4	430	25	80	392	40	490
23 15 14	1A	1	410	24	40	49	5	74
15	2A	2	410	24	60	186	19	145
16	3A	3	410	24	70	284	29	302
17	4A	4	410	24	80	353	36	370

Denotes: 1-Single Block, 2-Double, 3-Triple, 4-Quadruple
A-Without Becket

Steel Cargo Blocks
with Becket
(Ref. JIS F 3421-1989)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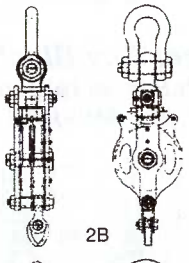
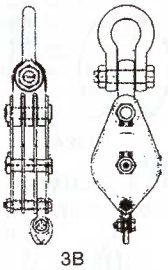

2B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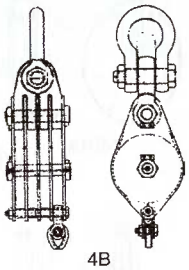

4B

How to order: CODE
Cargo block, steel, with becket,TYPE, NO. of SHEAVE and SHEAVE DIA.

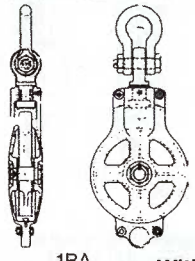
With Becket

Unit Per Pc.

CODE	Type	Sheave No.	Sheave Dia mm	Wire Rope Dia mm	Shackle SB or BB	SWL kN	SWL tf	Weight kgs
23 15 21			220	12.5	26	13.7	1.4	21
22			240	14	30	17.2	1.75	29
23	1B	1	280	16	34	22.1	2.25	45
24			340	20	42	34.3	3.5	73
25			430	25	55	53.9	5.5	135
26			480	28	60	68.6	7.0	188
23 15 27			240	14	38	78	8	59
28			280	16	40	98	10	79
29	2B	2	340	20	55	157	16	155
30			430	25	65	245	25	253
31			480	28	75	333	34	381
23 15 32	3B	3	430	25	80	353	36	416
23 15 33	4B	4	430	25	85	431	44	527
23 15 34	1B	1	410	24	50	49	5	81
35	2B	2	410	24	65	226	23	190
36	3B	3	410	24	75	324	33	309
37	4B	4	410	24	80	392	40	398

Denotes: 1-Single Block, 2-Double, 3-Triple, 4-Quadruple
B-With Becket

Cast Steel Cargo Blocks
with Roller Bearing
(Ref. JIS F 3428-1995)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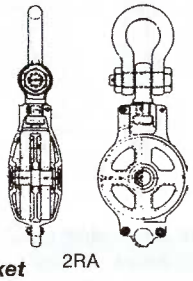
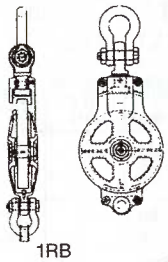

2RA

Without Becket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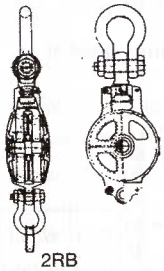

2RB

With Becket

How to order : CODE
Cargo block, cast steel, with roller bearing, WITHOUT or WITH BECKET, TYPE, NO. of SHEAVE and SHEAVE DIA

Without Becket

Unit Per Pc.

CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia W.R. mm	Shackle SB or BB	SWL tons	Wgt. kgs
23 15 41	1RA	W/out	S'gle	340	20	34	3.5	55
42				430	25	42	5.5	98
23 15 43	2RA	W/out	D'ble	340	20	46	13.0	105
44				430	25	60	21.0	213

Denotes: 1-Single Block, 2-Double Block
R-With Roller Bearing, A-Without Becket

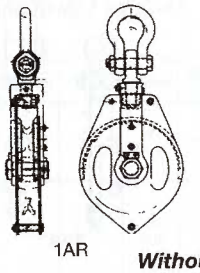
With Becket

Unit Per Pc.

CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia W.R. mm	Shackle SB or BB	SWL tons	Wgt. kgs
23 15 45	1RB	With	S'gle	340	20	42	3.5	74
46				430	25	55	5.5	135
23 15 47	2RB	With	D'ble	340	20	55	16.0	93
48				430	25	65	25.0	253

Denotes: 1-Single Block, 2-Double
R-With Roller Bearing, B-With Becket

Steel Plate Cargo Blocks
with Roller Bearing
(Ref. JIS F 3429-1995)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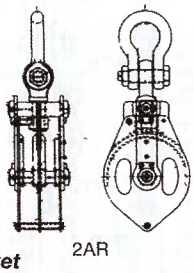
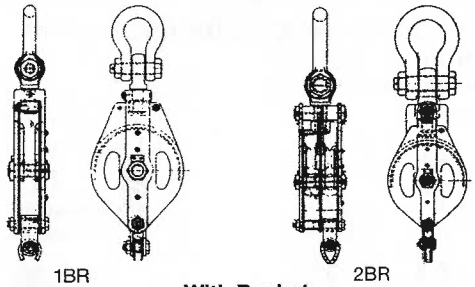

2AR

Without Becket



1BR 2BR

With Becket

How to order : CODE

Cargo block, steel plate, with roller bearing, WITHOUT or WITH BECKET, TYPE, NO. of SHEAVE and SHEAVE DIA

Without Becket

Unit Per Pc.

CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia W.R. mm	Shackle SB or BB	SWL Tons	Wgt. kgs
23 15 51	1AR	W/out	S'gle	340	20	34	3.5	58
52				430	25	42	5.5	96
53				480	28	48	7.0	131
23 15 54	2AR	W/out	D'ble	340	20	46	13.0	122
55				430	25	60	21.0	227

Denotes: 1-Single Block, 2-Double Block
R-With Roller Bearing, A-Without Becket

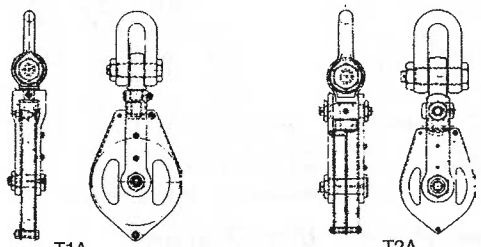
With Becket

Unit Per Pc.

CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia W.R. mm	Shackle SB or BB	SWL Tons	Wgt. kgs
23 15 56	1BR	With	S'gle	340	20	42	3.5	77
57				430	25	55	5.5	147
58				480	28	60	7.0	198
23 15 59	2BR	With	D'ble	340	20	55	16.0	160
60				430	25	65	25.0	259

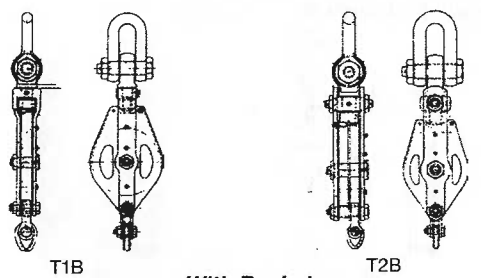
Denotes: 1-Single Block, 2-Double Block
B-With Becket, R-With Roller Bearing

Steel Blocks
for Topping Unit
(Ref. JIS F 3427-1990)



T1A T2A

Without Becket



T1B T2B

With Becket

How to order : CODE

Block, steel, for topping unit, WITHOUT or WITH BECKET, TYPE, NO. of SHEAVE and SHEAVE DIA.

Without Becket

Unit Per Pc.

CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia W.R. mm	Shackle	SWL Tons	Wgt. kgs
23 15 66	T1A	W/out	S'gle	460	33.5	SB 60	11	143
67	T2A		D'ble	460	33.5	SB 85	42	330

Denotes: T - For Topping Unit
1 - Single Block, 2 - Double Block
A - Without Becket

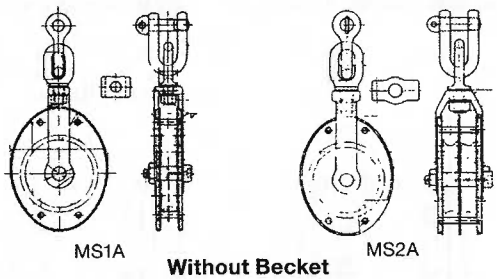
With Becket

Unit Per Pc.

CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia W.R. mm	Shackle	SWL Tons	Wgt. kgs
23 15 68	T1B	With	S'gle	460	33.5	SB 75	11	217
69	T2B		D'ble	460	33.5	SB 90	50	350

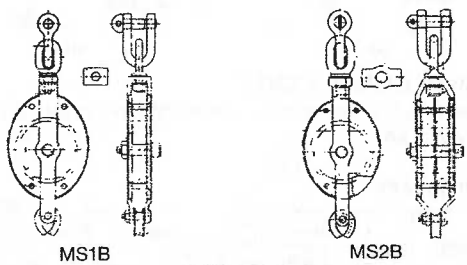
Denotes: T - For Topping Unit
1 - Single Block, 2 - Double Block
B - With Becket

Steel Guy Blocks
with Swivel for Fibre Rope
(Ref. JIS F 3419-1990)



MS1A MS2A

Without Becket



MS1B MS2B

With Becket

How to order : CODE

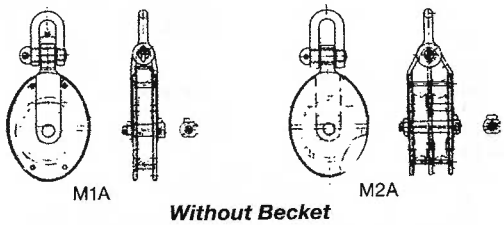
Guy block, steel, with swivel for fibre rope, WITHOUT or WITH BECKET, TYPE, NO. of SHEAVE and SHEAVE DIAM.

Unit Per Pc.

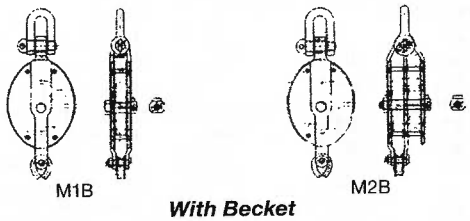
CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia W.R. mm	Shackle	SWL Tons	Wgt. kgs
23 15 71	MS1A	W/out	S'gle	160	24	SD 22	0.50	10.4
72	MS2A	"	D'ble	160	24	SD 24	1.80	14.5
73	MS1B	With	S'gle	160	24	SD 22	0.47	11.49
74	MS2B	"	D'ble	160	24	SD 24	2.20	15.50

Denotes: M - For Hemp or Synthetic Fibre Rope
S - Wih Swivel
1 - Single Block, 2 - Double Block
A - Without Becket, B - With Becket

Steel Blocks
for Fibre Rope Guy
(Ref. JIS F 3424-1990)



Without Becket



With Becket

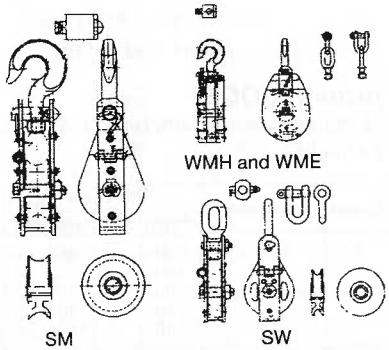
How to order : CODE
Block, steel, for fibre rope guy, WITHOUT or WITH BECKET, TYPE, No. of SHEAVE and SHEAVE DIAM.

Unit Per Pc.

CODE	Type	Becket	Sheave Nos	Sheave Dia mm	Dia F.R. mm	Shackle	SWL Tons	Wgt. kg
23 15 76	M1A	W/out	S'gle	160	24	SD 22	0.50	8.88
77	M2A	"	D'ble	160	24	SD 24	1.80	14.4
78	M1B	With	S'gle	160	24	SD 22	0.47	10.0
79	M2B	"	D'ble	160	24	SD 24	2.20	15.0

Denotes: M - For Hemp or Synthetic Fibre Rope
1 - Single Block, 2 - Double Block
A - Without Becket, B - With Becket

Steel Snatch Blocks
(Ref. JIS F 3422-1990)



How to order : CODE
Snatch block, steel, for USE, TYPE, SHEAVE DIAM.

Unit Per Pc.

CODE	Accessory	Nominal Size mm	Sheave Dia mm	Rope Dia mm	SWL kN	SWL tf	Wgt. kgs
Type SM - Steel Snatch Block for Hemp or Synthetic Fibre Rope							
23 15 81	With Hook	200	200	65	12.3	1.25	30
Type SW - Steel Snatch Block for Wire Rope							
23 15 82	With Eye	160	160	20	9.8	1.0	12.1
83		200	200	25	19.6	2.0	27.1
84		240	240	28	29.4	3.0	47.6

(to be continued)

Unit Per Pc.

CODE	Accessory	Nominal Size mm	Sheave Dia mm	Rope Dia mm	SWL kN	SWL tf	Wgt. kgs
Type WM - Wooden Snatch Block for Hemp or Synthetic Fibre Rope							
23 15 85	With Hook	260	160	24	4.9	0.5	10.0
86		330	200	30	7.4	0.75	17.8
23 15 87	With Eye	260	160	24	4.9	0.5	10.8
88		330	200	30	7.4	0.75	17.2

Denotes: S - Steel, W - Wood, M - Hemp or Synthetic Fibre Rope
2nd W - Wire Rope, H-Hook, E-Eye
Note: SM, SW - Nominal size is diameter of sheave.
WMH, WME - Nominal size is height of shell.

9. Wood Cargo Blocks

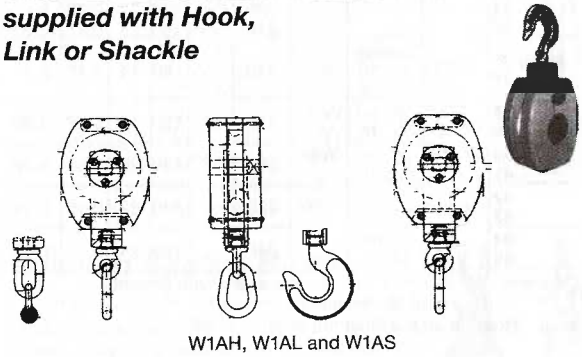
Internal Bound Wood Blocks
(Ref. JIS F 3426-1990)

Code Table for Internal Bound Wood Blocks

Becket	Accessory	Model	Code No.
Without Becket	With Hook	W1AH	23 16 01 - 05
		W2AH	23 16 51 - 55
	With Link	W1AL	23 16 06 - 11
		W2AL	23 16 56 - 59
		W3AL	23 17 01 - 05
	With Shackle	W1AS	23 16 12 - 25
		W2AS	23 16 60 - 69
		W3AS	23 17 06 - 15
With Becket	With Hook	W1BH	23 16 31 - 35
		W2BH	23 16 71 - 75
	With Shackle	W1BS	23 16 36 - 45
		W2BS	23 16 76 - 85
		W3BS	23 17 21 - 30

Denotes: A - Without Becket, B - With Becket
H - With Hook, L - With Link
S - With Shackle

Single Sheave without Becket supplied with Hook, Link or Shackle



How to order : CODE
Wood block, single sheave, without becket, SYMBOL, TYPE, and SHELL HEIGHT

Unit Per Pc.

CODE	Symbol	Type	Becket	Shell Height	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kgs
23 16 01	W1AH	Hook	W/ out	140	S'gle	90	14	0.18	2.32
02				180		120	18	0.29	3.62
03				200		130	20	0.35	4.73
04				220		140	22	0.42	6.48
05				240		160	24	0.50	8.44
23 16 06	W1AL	Link	W/ out	180	S'gle	120	18	0.29	3.62
07				200		130	20	0.35	4.73
08				220		140	22	0.42	6.48
09				240		160	24	0.50	8.44
10				280		180	28	0.66	12.11
11				300		200	30	0.75	14.24

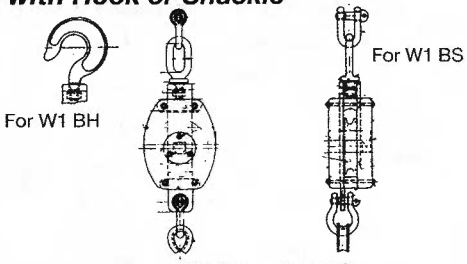
Unit Per Pc.

CODE	Symbol	Type	Becket	Shell Height	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kgs
23 16 12 13	W1AS	Shackle SC 10 SD 12	W/ out	140	S'gle	90	14	0.18	2.32
14 15		SC 10 SD 12		180		120	18	0.29	3.62
16 17		SC 12 SD 14		200		130	20	0.35	4.73
18 19		SC 12 SD 16		220		140	22	0.42	6.48
20 21		SC 14 SD 20		240		160	24	0.50	8.44
22 23		SC 16 SD 20		280		180	28	0.66	12.11
24 25		SC 18 SD 22		300		200	30	0.75	14.24

Denotes: W - Wood, 1 - Single Block, L - Link, H - Hook
S - Shackle, A - Without Becket

Note: Nominal size is height of shell.

Single Sheave with Becket supplied with Hook or Shackle



W1BH and W1BS

How to order : CODE

Wood block, single sheave, with becket, SYMBOL, TYPE, and SHELL HEIGHT

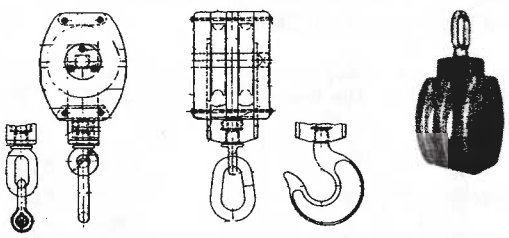
Unit Per Pc.

CODE	Symbol	Type	Becket	Shell Height	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kgs
23 16 31	W1BH	Hook	With	140	S'gle	90	14	0.17	2.77
32				180		120	18	0.27	4.82
33				200		130	20	0.37	5.77
34				220		140	22	0.40	8.16
35				240		160	24	0.47	10.33
23 16 36 37	W1BS	Shackle SC 10 SD 12	With	140	S'gle	90	14	0.17	2.77
38 39		SC 12 SD 16		180		120	18	0.27	4.82
40 41		SC 14 SD 16		200		130	20	0.33	5.77
42 43		SC 14 SD 20		220		140	22	0.40	8.16
44 45		SC 18 SD 22		240		160	24	0.47	10.33

Denotes: W - Wood, 1 - Single Block, B - With Becket,
H - Hook, S - Shackle

Note: Nominal size is height of shell.

Double Sheaves without Becket supplied with Hook, Link or Shackle



W2AH, W2AL and W2AS

How to order : CODE

Wood block, double sheave, without becket, SYMBOL, TYPE, and SHELL HEIGHT

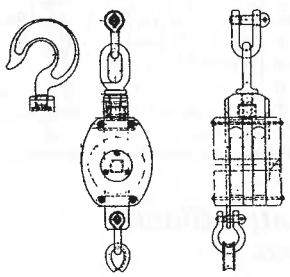
Unit Per Pc.

CODE	Symbol	Type	Becket	Shell Height	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kg
23 16 51	W2AH	Hook	W/out	140	D'ble	90	14	0.66	3.69
52				180		120	18	1.10	6.30
53				200		130	20	1.30	8.96
54				220		140	22	1.60	10.55
55				240		160	24	1.60	14.18
23 16 56	W2AL	Link	W/out	180	D'ble	120	18	1.10	6.30
57				200		130	20	1.30	8.96
58				220		140	22	1.60	10.55
59				240		160	24	1.80	14.18
23 16 60 61	W2AS	Shackle SC 12 SD 14	W/out	140	D'ble	90	14	0.66	3.69
62 63		SC14 SD20		180		120	18	1.10	6.30
64 65		SC16 SD20		200		130	20	1.30	8.96
66 67		SC18 SD22		220		140	22	1.60	10.55
68 69		SC18 SD22		240		160	24	1.80	14.18

Denotes: W - Wood, 2 - Double Block,
A - Without Becket, H - Hook, L - Link,
S - Shackle

Note: Nominal size is height of shell.

Double Sheaves with Becket supplied with Hook or Shackle



W2BH and W2BS

How to order : CODE

Wood block, double sheave, with becket, SYMBOL, TYPE, and SHELL HEIGHT

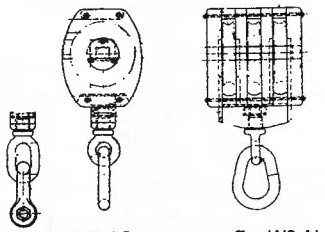
Unit Per Pc.

CODE	Symbol	Type	Becket	Shell Height	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kgs
23 16 71	W2BH	Hook	With	140	D'ble	90	14	0.79	4.39
72				180		120	18	1.30	7.30
73				200		130	20	1.60	10.11
74				220		140	22	1.90	12.12
75				240		160	24	2.20	17.04
23 16 76 77	W2BS	Shackle SC 12 SD 16	With	140	D'ble	90	14	0.79	4.39
78 79		SC 16 SD 20		180		120	18	1.30	7.30
80 81		SC 18 SD 22		200		130	20	1.60	10.11
82 83		SC 18 SD 22		220		140	22	1.90	12.12
84 85		SC 20 SD 24		240		160	24	2.20	17.04

Denotes: W - Wood, 2 - Double Block, B - With Becket,
H - Hook, S - Shackle

Note: Nominal size is height of shell.

Triple Sheaves without Becket supplied with Link or Shackle



For W3 AS For W3 AL

W3AS and W3AL

How to order : CODE

Wood block, triple sheave, without becket, SYMBOL, TYPE, and SHELL HEIGHT

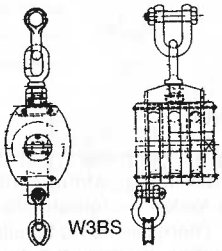
Unit Per Pc.

CODE	Symbol	Type	Becket	Shell Height	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kgs
23 17 01	W3AL	Link	W/out	200	T'ple	130	20	1.8	12.25
02				220		140	22	2.1	16.24
03				240		160	24	2.5	20.65
04				280		180	28	3.3	29.08
05				300		200	30	3.8	35.89
23 17 06	W3AS	Shackle SC 18 SD 22	W/out	200	T'ple	130	20	1.8	12.25
07									
08		SB 20 SD 24		220		140	22	2.1	16.24
09									
10		SB 22 SD 26		240		160	24	2.5	20.65
11									
12		SB 24 SD 28		280		180	28	3.3	29.08
13									
14		SB 26 SD 30		300		200	30	3.8	35.89
15									

Denotes: W - Wood, 3 - Triple Block, A - Without Becket, L - Link, S - Shackle

Note: Nominal size is height of shell.

Triple Sheaves with Becket supplied with Shackle



W3BS

How to order : CODE

Wood block, triple sheave, with becket, SYMBOL, TYPE, and SHELL HEIGHT

Unit Per Pc.

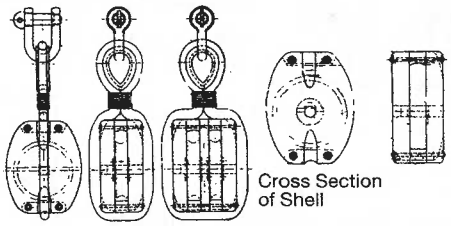
CODE	Symbol	Type	Becket	Shell Height	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kgs
23 17 21	W3BS	Shackle SC 18 SD 22	With	200	T'ple	130	20	2.0	13.61
22									
23		SB 20 SD 24		220		140	22	2.4	17.72
24									
25		SB 22 SD 26		240		160	24	2.8	22.87
26									
27		SB 26 SD 30		280		180	28	3.7	32.95
28									
29		SB 26 SD 34		300		200	30	4.2	42.28
30									

Denotes: W - Wood, 3 - Triple Block, B - With Becket, S - Shackle

Note: Nominal size is height of shell.

External Bound Wood Blocks with Thimble and Shackle

(Ref. JIS F3423-1982)



W1 and W2 W1

How to order : CODE

Wood block, external bound, with thimble and shackle, TYPE, SHELL HEIGHT, TYPE of SHACKLE and THIMBLE, and NO. of SHEAVE

Unit Per Pc.

CODE	Type	Shell Height	Shackle	Thimble	Sheave Nos	Sheave Size	Rope Size	SWL Tons	Wgt. kgs
23 17 41	W1	100	SD 10	B 8	S'gle	65	10	0.40	0.62
42		120	SD 12	B 10		80	12	0.52	1.10
43		140	SD 14	B 12		90	14	0.72	2.74
44		180	SD 20	B 16		120	18	1.16	3.90
23 17 45	W2	100	SD 10	B 8	D'ble	65	10	0.70	0.72
46		120	SD 12	B 10		80	12	0.98	1.44
47		140	SD 14	B 12		90	14	1.32	4.48
48		180	SD 20	B 16		120	18	2.20	8.58

Denotes: W - Wood, 1 - Single Block, 2 - Double Block

Note: Nominal size is height of shell.

Handy Billy

A tackle comprising of a rope and a double and single block. Used in light lifting work around the ship.

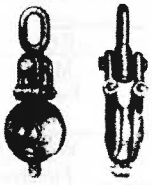
Combination Table

Rope Diam mm	Block Type Upper	Block Type Lower	S.W.L. Ton
14	140W2AS	140W1BS	0.17
18	180W2AS	180W1BS	0.27
20	200W2AS	200W1BS	0.33
22	220W2AS	220W1BS	0.40
24	240W2AS	240W1BS	0.47

Note: Length of rope is indefinite.

Denotes: W - Wood, 1 - Single Block, 2 - Double Block
A - Without Becket, B - With Becket, S - Shackle

Lashing Snatch Blocks



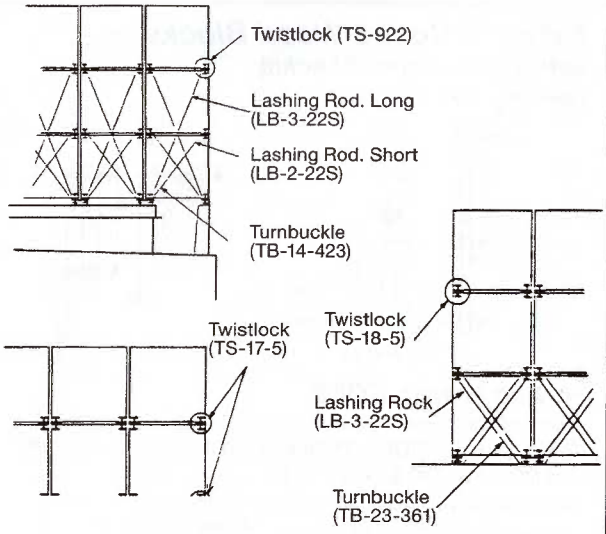
Has a safe and easily operated locking device with a 150 mm sheave diam. Applicable wire rope sizes are 18, 20 and 22 mm diameter. Weight 12 kgs. S.W.L. 5 tons. Test load 15 tons.

23 17 51	Lashing snatch block, 150 mm S.W.L. 5 tons	Pc.

10. Container Lashings

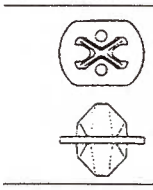
Container Lashing and Securing Gears

The lashing gear and lashing systems described below will ensure the safety of cargo during transport, secured efficiently with the minimum amount of lashing used. From among a wide range of products, the most popular models are illustrated below with the respective specifications.



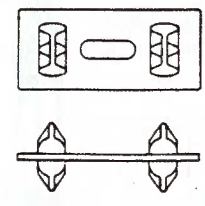
Stackers

Unit Per Pc.



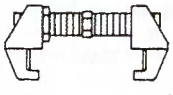
CODE	23 18 01
Model	SS-881
Type	Single Stacker
Flange Thickness	12 mm
Weight	2.3 kgs
Finish	Galvanized

Unit Per Pc.



CODE	23 18 02
Model	DS-2
Type	Double Stacker
Flange Thickness	12 mm
Pitch of Cone to Cone	203 mm
Weight	9.0 kgs
Finish	Painted with Primer

Bridge Fittings

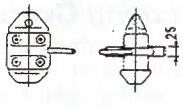


Unit Per Pc.

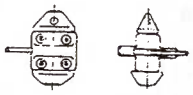
CODE	23 18 06
Model	BF - 1
Feature	Allowable container distance: 0-95mm trans. 30-130 mm long.
Weight	4.8 kgs
Finish	Galvanized

Twistlocks

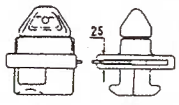
Unit Per Pc.



CODE	23 18 11
Model	TS-17-5
Feature	Right Hand Lock
Flange Thickness	25 mm
Weight	5.7 kgs
Min. B.L.	50.0 Tons
Finish	Galvanized



CODE	23 18 12
Model	TS-18-5
Feature	Left Hand Lock
Flange Thickness	25 mm
Weight	5.7 kgs
Min. B.L.	50.0 Tons
Finish	Galvanized



CODE	23 18 13
Model	TS-922
Feature	Right Hand Lock
Flange Thickness	25 mm
Weight	6.8 kgs
Min. B.L.	42.0 Tons
Finish	Galvanized

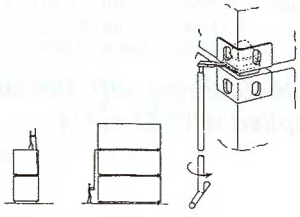
Actuator Poles

Unit Per Pc.

	CODE	Model	Length	Material
	23 18 16	AP-850-06	6'	Steel
	17	-14	14'	Aluminium
	18	-22	22'	"
	23 18 21	AP-1-06	6'	Steel
	22	-14	14'	Aluminium
	23	-22	22'	"
	23 18 26	AP-5-06	6'	Steel
	27	-14	14'	Aluminium
	28	-22	22'	"

Note: Length of 22' for above all models can be separated into 2 Pcs.

Handling Method of Actuator Pole



Auto Twistlocks

When loading the containers, put the Auto Twistlocks in the bottom corner fittings of the containers at quay, the twistlocks will be locked automatically by putting on the other containers. There will be no twistlocks with the locks left open because they are locked automatically.

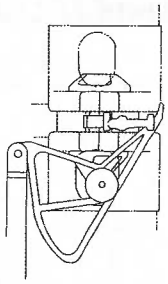
When unloading the containers, unlock the lock of the twistlocks by turning the bar and remove the Auto Twistlocks from the containers at quay.

Unit Per Pc.

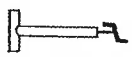
CODE	23 18 31
Model	SK-21-H
Feature	Right Hand Lock
Flange Thickness	25 mm
Weight	6.9 kgs
Min. B.L.	50.0 Tons
Finish	Galvanized

Note: Model SK-24 is also available as reversible type. The actuator pole for the exclusive use of these Auto Twistlocks if necessary.

Actuator Poles for Auto Twistlocks Model SK-21-H



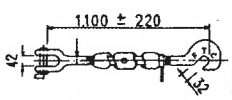
Unit Per Pc.

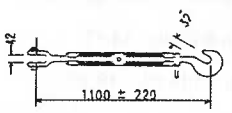
	CODE	Model	Length	Material
	**23 18 33**	AP-7-06	6'	Steel
	34	-25	14' - 25'	Carbon Glass Fibre
	35	-34	14' - 35'	Carbon Glass Fibre

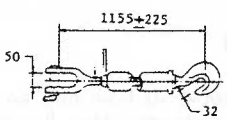
Note: A pole for unlocking the twistlocks, as shown below, is also available upon request.

Turnbuckles

Unit Per Pc.

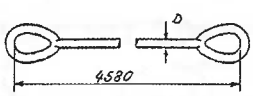
Size: mm	CODE	**23 18 36**
	Model	TB-23-361
	Feature	Jaw Bolt, Hook Bolt, Pipe Body
	Size	As Per Sketch
	Weight	13 kgs
	Min. B.L.	36.0 Tons
	Finish	Galvanized

Size: mm	CODE	**23 18 37**
	Model	TB-21-361
	Feature	Jaw Bolt, Hook Bolt, Flame Body
	Size	As Peer Sketch
	Weight	13 kgs
	Min. B.L.	36.0 Tons
	Finish	Galvanized

Size: mm	CODE	**23 18 38**
	Model	TB-14-423
	Feature	Jaw Bolt, Swivel Hook, Pipe Body
	Size	As Per Sketch
	Weight	15 kgs
	Min. B.L.	42.0 Tons
	Finish	Galvanized

Lashing Rods

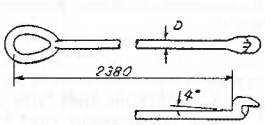
Single Rod LB-1



Unit Per Pc.

CODE	Model	Rod Diam. mm	Length mm	Proof Test Load Tons	Min. B/L Tons
23 18 51	LB-1-20S	20	4,580	24.0	32.0
52	22S	22		28.5	38.0
53	23S	23		31.5	42.0
54	25S	25		37.5	50.0

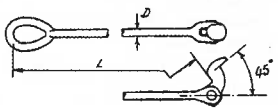
Cross Rod LB-2



Unit Per Pc.

CODE	Model	Rod Diam. mm	Length mm	Proof Test Load Tons	Min. B/L Tons
23 18 61	LB-2-20S	20	2,380	24.0	32.0
62	22S	22		28.5	38.0
63	23S	23		31.5	42.0
64	25S	25		37.5	50.0

Hinge Rod LB-3

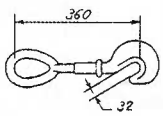


Unit Per Pc.

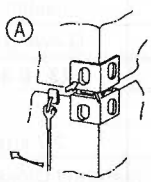
CODE	Model	Rod Diam. mm	Length mm	Proof Test Load Tons	Min. B/L Tons
		Short			
23 18 71	LB-3-20S	20	2,350	24.0	32.0
72	22S	22		28.5	38.0
73	23S	23		31.5	42.0
74	25S	25		37.5	50.0
		Long			
23 18 75	LB-3-20S	20	4,560	24.0	32.0
76	22S	22		28.5	38.0
77	23S	23		31.5	42.0
78	25S	25		37.5	50.0

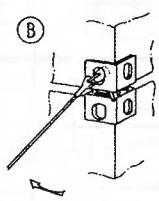
Extension Rods

Unit Per Pc.

Size: mm	CODE	**23 18 81**
	Model	EX-40-42
	Size	As Per Sketch
	Weight	3.5 kgs
	Min. B.L.	42.0 Tons
	Finish	Galvanized

Handling Method of Lashing Rod

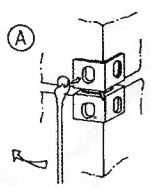


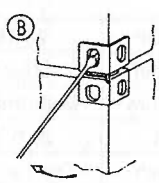


Upper Lashing

A Insert hinge rod into the lower end hole of third tier container.

B Swing the other end to cross lashing direction and tighten with the turnbuckle.





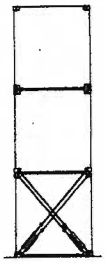
Lower Lashing

A Insert the hook of a short lashing rod into the lower end hole of the second tier container.

B Swing the other end to cross the lash and tighten it with the turnbuckle.

Handling method of the Hinged Lashing Rod. Same lashing rods and turnbuckles as mentioned above.

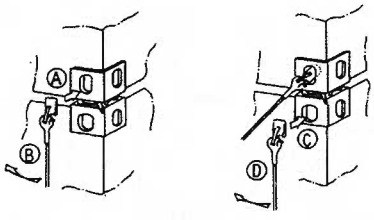
"Parallel Lashing System"



When the parallel lashing system is used, the lashing is made by applying the hinge rod to the lower end hole of the second tier container. The same hinge rod should also be applied to the upper end hole of the first tier container.

The lashing length is adjusted with the turnbuckle. A sagged, slacked, or overfastened lashing is not desirable.

The lashing should be adjusted to the proper level with the turnbuckle.



A. Insert the hinge rod into the bottom hole of the second tier container.

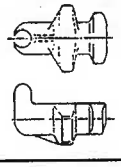
B. Turn the fitting to secure the internal cross lashing.

C. Insert the hinge rods into the upper end hole of the first tier container.

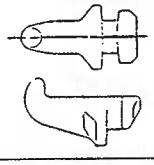
D. Turn the fitting to secure the internal cross lashing with the turnbuckle.

Corner Hooks

Unit Per Pc.



CODE	**23 18 83**
Model	CH-1
Weight	2.7 kgs
Feature	Preferable for Bar Lashing
Finish	Galvanized

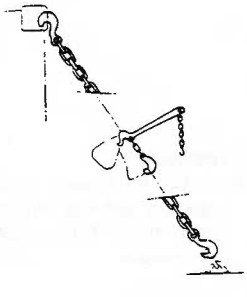


CODE	**23 18 84**
Model	CH-2
Weight	2.7 kgs
Feature	Permit Crossing of 2 Lashing Bars
Finish	Galvanized

Lashing Chains

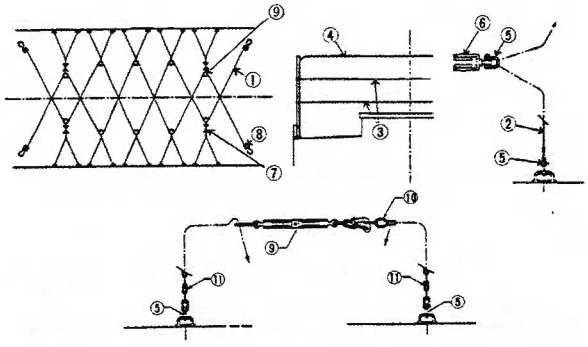
Unit Per Pc.

CODE	**23 18 91**
Model	LC-23-20
Feature	Both End Hook
B. L.	20.0 Tons
Finish	Dip Tar Epoxy
Length	As Per Request
Chain Tensioners	
CODE	**23 18 92**
Model	CT-1-20
B. L.	20.0 Tons
Finish	Dip Tar Epoxy



Lumber Lashing Gears

Following illustrations will be of guidance in how to order lumber lashing gears.



① ③④ Lashing Wire, Standard size is 22-26 mm ø, 6x24

② Pendant Wire
Loop at both ends, Standard size is 20 mm ø,6 x 24

⑤ Shackle B/L 20T or 30T

⑥ Snatch Block

⑦ Turnbuckle

⑧ Wire Rope Clip

⑨ Turnbuckle for Lumber Lashing, PTL: 8.0T, BL: 20.1T

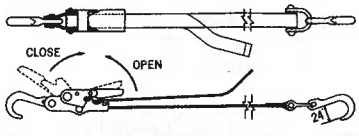
⑩ Grab Link with long link, PTL: 5.6T, BL: 14.1T

⑪ Lashing Chain End Link at both ends BL: 18.0T

11. Car Claspers

Belt Type Car Claspers

Made of polyester belt with hooks at both end and used for fixing cars on deck for car careers. Max. length between hook and hook will be 1,350 mm and firmly secured by tightening lever.



Safe Working Load	400 kgs
Max. Breaking Load	1,600 kgs
Length	Max. 1,400 mm
	Min. 400 mm
Weight	0.9 kgs

23 19 01	Car clasper, belt type, normal working load 400 kgs	Pc.

12. Ladders

Pilot Ladders

(Ref. JIS F 2615-2006)

Manufactured in compliance with JIS-F rules, the 1974 SOLAS conditions and the ISO recommended dimensions.

Excerpt of Pilot Ladder Rules (SOLAS)

1. Side Ropes
   Ropes should be mold-resistant manila or heat-treated polyester rope with polypropylene core and should not be covered. Ropes shall be of a diameter which is no less than 18 mm dia (57 mm in circumference), and have a breaking strength more than 24 kN.

2 Steps
The distance of inner edge of side ropes should be more than 400mm. The width of step is no less than 115 mm, and thickness no less than 25 mm. The steps should be non-slip, hard wood steps without knot and equally spaced at 330±20mm.

3. The bottom 4 steps may be made of resilient synthetic raw material or rubber if it is of sufficient strength and stiffness. Rubber steps should be of the same required dimensions as the wooden steps.

4. Preventer Steps
   Preventer steps shall have the same specifications as normal steps, but the length of preventer steps shall not be less than 1.8 meter.

   Position of Preventer Steps
   correspond to the total number of Pilot Ladder steps.

No. of Steps	The position of Preventer Steps	No. of Steps	The position of Preventer Steps
6	5	19	5, 14
7	5	20	5, 14
8	5	21	5, 14
9	5	22	5, 14
10	5	23	5, 14, 21
11	5	24	5, 14, 22
12	5	25	5, 14, 23
13	5	26	5, 14, 23
14	5, 12	27	5, 14, 23
15	5, 13	28	5, 14, 23
16	5, 14	29	5, 14, 23
17	5, 14	30	5, 14, 23
18	5, 14		

Remark: The position of preventer step is started from the lowest step.

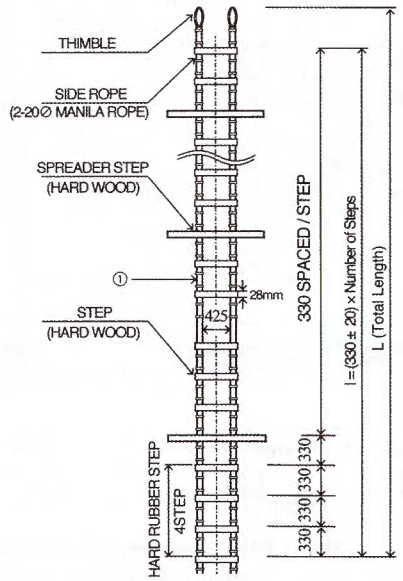
5. Replacement Steps
   Repairs to pilot ladder shall be made to the steps and preventer steps only. The repaired steps and preventer steps shall have the form and dimensions specified in item (2) and (4), and not more than 2 such steps shall be used in any pilot ladder. Repaired steps and preventer steps shall be replaced by new ones as soon as possible.

6. Step Fixing Piece
   Step fixing piece must be made of wood or plastic.

7. Fastening Hardware
   Fastening hardware for rope and steps must be corrosion resistant, or made of similar material treated corrosion resistance.

The construction of the pilot ladder

A type pilot ladder

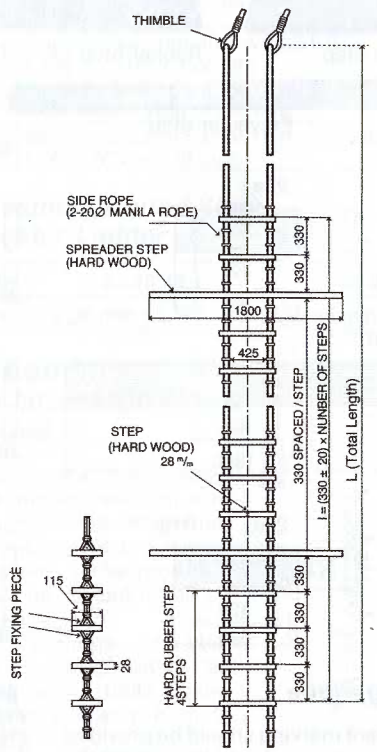


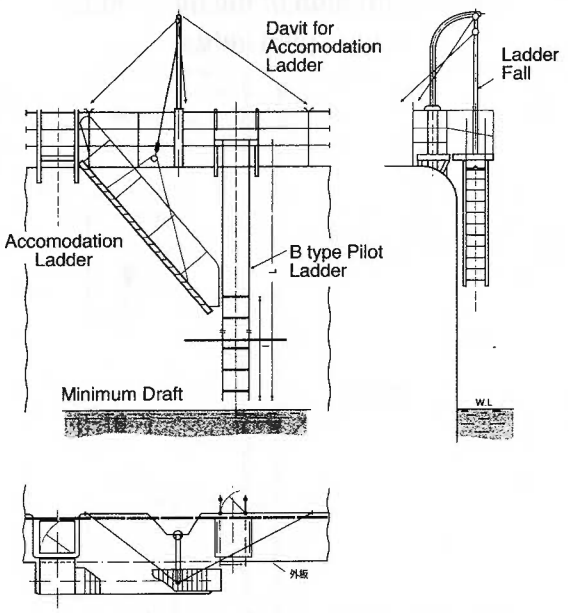
Unit Per Set

CODE	Type	Length	Numbers of	
			Total Steps	Preventer Steps
23 20 03	A	15 Mtr	45	5
04		12 Mtr	36	4
01		9 Mtr	27	3
02		6 Mtr	18	2

* Other length is also available on request.

B type pilot ladder



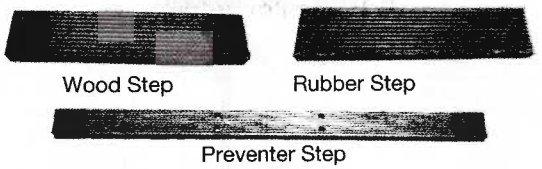


Unit Per Set

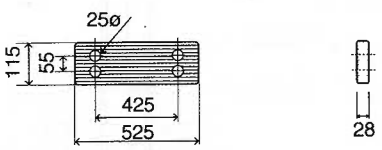
CODE	Type	Length	Numbers of	
			Total Steps	Preventer Steps
23 20 05	B	15 Mtr	45	5
06		12 Mtr	36	4
07		9 Mtr	27	3
08		6 Mtr	18	2

Remark: This length means "Step Length". Please specify the "Total length" and "Step length" when ordering B type pilot ladder

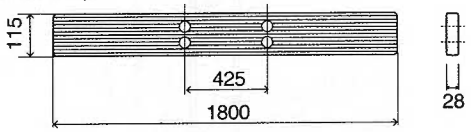
Steps



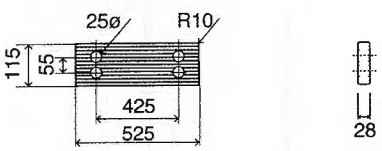
Wood Step



Preventer Step

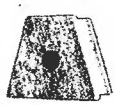


Rubber Step



Step Fixing Piece

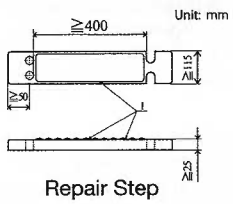
A permanent marking should be provided at regular intervals (e.g. 1 mtr) throughout the length of the ladder consistent with ladder design, use and maintenance in order to facilitate the rigging of the ladder to the required height.



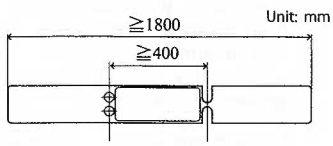
Unit Per Pc.

CODE	Description	Material	Size L×W×TH mm
23 20 11 16	Step	Hard Wood Rubber	525 × 115 × 28
12	Preventer Step	Hard Wood	1,800 × 115 × 28
13	Step Fixing	Hard Wood	—

Repair Steps and Preventer Steps



Repair Step



Repair Preventer Step

Unit Per Pc.

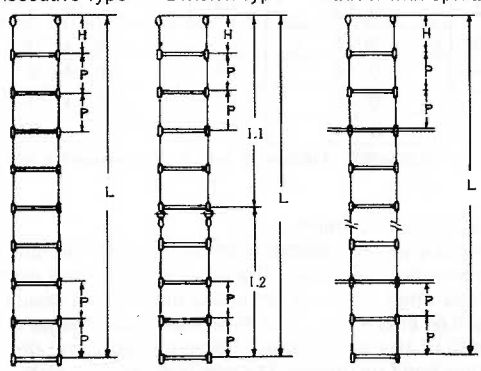
CODE	Description	Material	Size L×W×TH mm
23 20 14	RepairStep	Hard Wood	525 × 115 × 25
15	Repair Preventer Step		1,800 × 115 × 25

Aluminium Alloy Rope Ladders
with GS Type Oval Step

Aluminium alloy steps with synthetic fibre side rope. Light weight, easy handling, long life, non-corrosive, unbreakable, and very safe to the user. Suitable for various uses such as: – embarkation, liferaft, chain locker, draft survey, painting, etc.

Length of ladder, type of step, number of spreaders are optional, and are made to order according to the user's specifications.

Consecutive Type | Division Type | Ladder with Spreader



Standard Specifications for the Rope Ladders

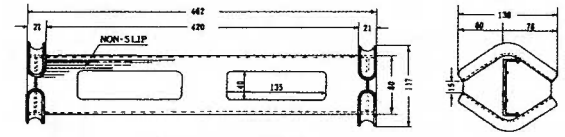
Step Pitch	35 mmφ
Side Rope	14 mmφ Synthetic Fibre Rope
Step Type	GS-A, GS-B, GS-C, SD
Length	Option
Ladder Type	Consecutive Type Division Type Ladder with Spreader

How to order : 23 - 20 - 20

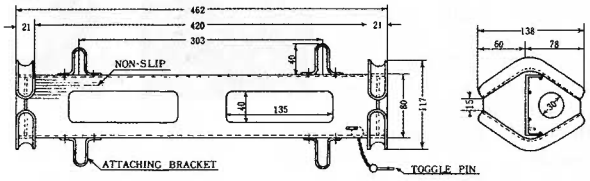
Rope Ladder, alum-alloy. (step type) x (ladder type) x (length)

Replacement Steps

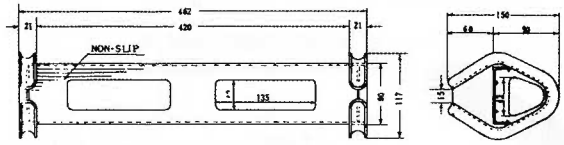
GS - A



GS - B

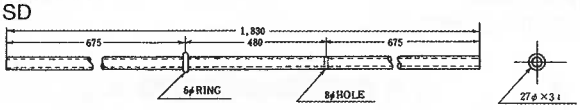


GS - C



Preventer

SD



Step Specification

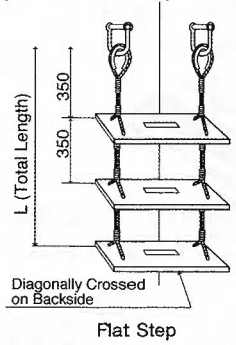
CODE	Type	Size mm	Weight	Application
23 20 21	GS -A	117 × 462	580 grm	Step for general use
22	GS -B	117 × 462	650 grm	Step for using the SD
23	GS -C	117 × 462	800 grm	Step for use as the lowest step of the rope ladder and connecting another rope ladder with shackle
24	SD	27φ 1,830	1,150 grm	A bar to prevent twisting the rope ladder, using with GS-B, IS-B type steps detachable when not required

Rope Ladders

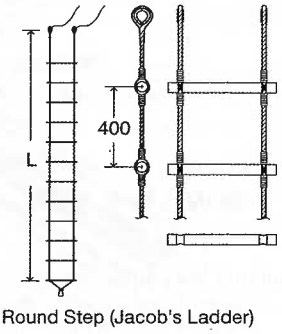
(Jacob's Ladders)

(Ref. JIS F3612-1990)

Flat or round wooden rungs supported with Manila or Synthetic Fibre rope. Ideal for general purpose use.



Flat Step



Round Step (Jacob's Ladder)

Specifications

Type	Flat Step (Ref. JIS F3612-1995)	Round Step (Jacob's Ladder)	
Size	L460 × W100 ×T22 mm	Dia 36mm × L460mm	Dia 35mm × L400mm
Step Space	350 mm	400 mm	330 mm
Side Rope	Manila: 2×Φ16mm or Synthetic Rope: 2×Φ14mm	Manila: 2×Φ18mm or Synthetic Rope: 2×Φ18mm	
Length	User's Option		

How to order : 23 - 20 - 26

Ladder, rope, flat step, LENGTH

23 - 20 - 27

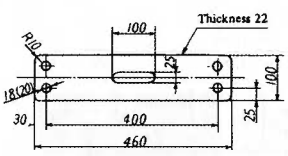
Ladder, Jacob's, round step (Dia 36mm x L 460mm), LENGTH

23 - 20 - 28

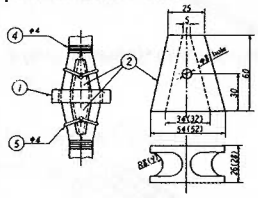
Ladder, Jacob's, round step (Dia 35mm x L 400mm), LENGTH (Normally supplied in European countries)

Replacement Steps and Split Distance Pieces for Flat Step Ladder

Step



Split Distance Piece



Made of hard wood and tested to withstand 735 N (75 kgf) load at the middle of the step.

23 20 41	Rope ladder step,hard wood, flat, L460 × W100 × T22 mm	Pc.
42	Split distance piece for 14 mm synthetic fibre rope, H60 × W54 × T26 mm	„
43	Split distance piece for 16 mm manila rope, H60 × W52 × T28 mm	„

Replacement Round Steps for Jacob's Ladder

Unit Per Pc.

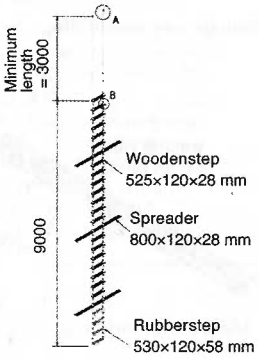
CODE	23 20 44	23 20 45
Size mm	Dia 36 mm × L 460 mm	Dia 35 mm × L 400 mm

Pilot Ladders

as per latest MED/USCG Approved

Steps have nonskidding surface and are secured with aluminium clamps. Ropes not painted or coated or covered and thimbles will be provided. Rope will be spliced to top on the ladder.

Two patterns of step thickness are available as indicated in the table below, but thinner size step is most common..

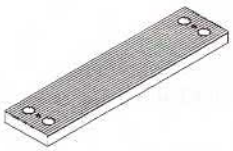


	Regular Step	Normalisation Step
Wooden Step	525 × 120 × 28 mm	525 × 115 × 63 mm
Spreader	1,800 × 120 × 28 mm	1,800 × 115 × 63 mm
Rubber Step	530 × 120 × 80 mm	530 × 120 × 80 mm

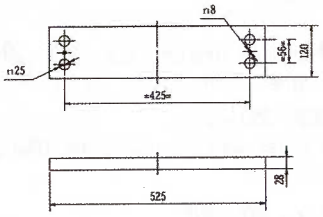
Unit Per Set

CODE	Length	Step Size
23 20 29	3 mtr	Regular
31	6 mtr	
32	9 mtr	
23 20 30	3 mtr	Normalisation
33	6 mtr	
34	9 mtr	

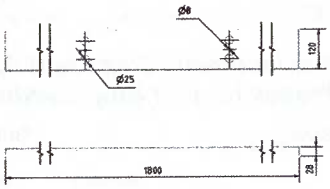
Regular Size Steps

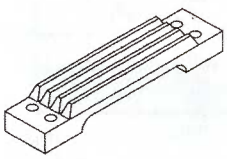


Regular Size Wooden Step

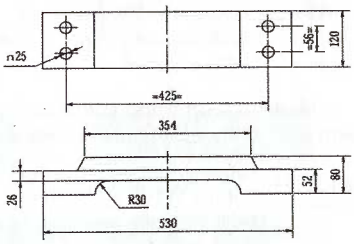


Regular Size Spreader Step



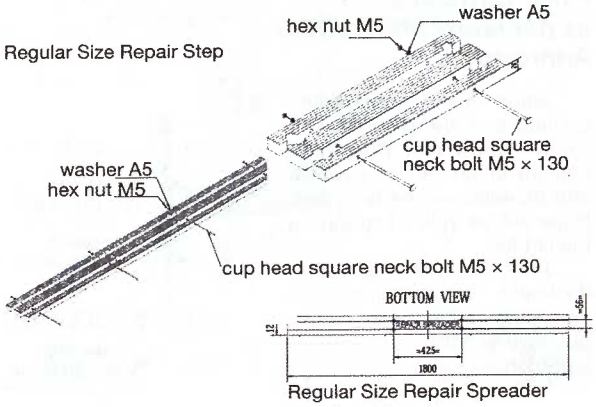


Regular Size Rubber Step



Regular Size Repair Steps

Regular Size Repair Step



Regular Size Repair Spreader

Regular Size Steps

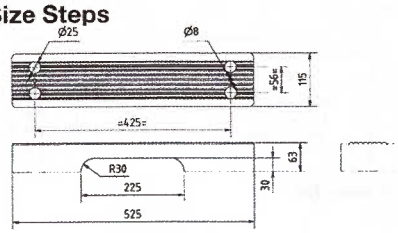
Unit Per Pc.

CODE	Items	Size mm
23 20 35	Wooden Step	525 × 120 × 28
36	Spreader	1,800 × 120 × 28
37	Rubber Step	530 × 120 × 80
23 20 38	Repair Wooden Step	525 × 120 × 28
39	Repair Spreader	1,800 × 120 × 28

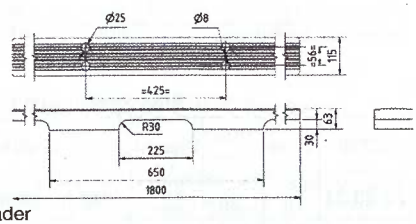
A permanent marking should be provided at regular intervals (e.g. 1 mtr) throughout the length of the ladder consistent with ladder design, use and maintenance in order to facilitate the rigging of the ladder to the required height.

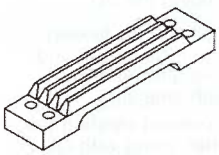
Normalisation Size Steps

Normalisation Size Wooden Step

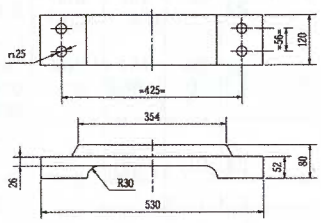


Normalisation Size Wooden Spreader

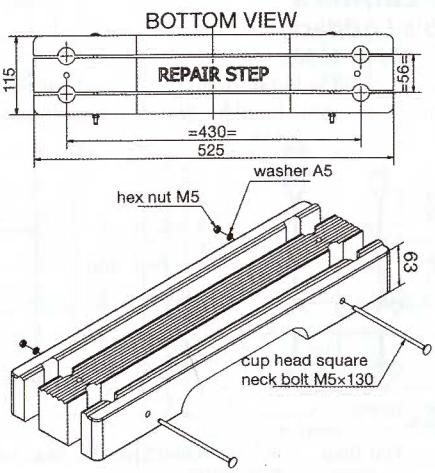




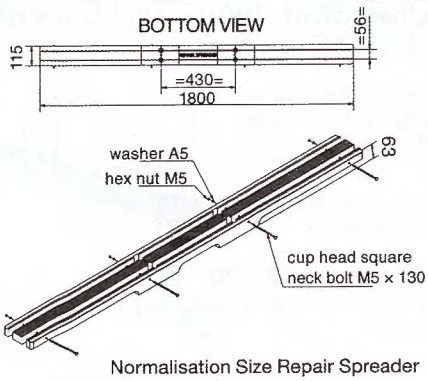
Normalisation Size Rubber Step



Normalisation Size Repair Steps



Normalisation Size Repair Step



Normalisation Size Repair Spreader

Normalisation Size Steps

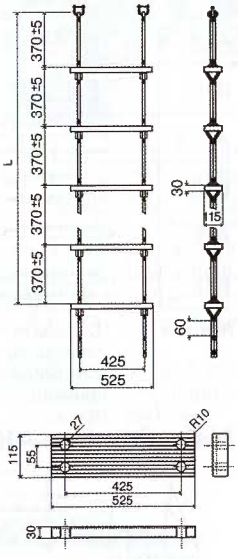
Unit Per Pc.

CODE	Items	Size mm
23 20 46	Wooden Step	525 × 115 × 63
47	Spreader	1,800 × 115 × 63
48	Rubber Step	530 × 120 × 80
23 20 49	Repair Wooden Step	525 × 115 × 63
50	Repair Spreader	1,800 × 115 × 63

Embarkation Ladders (Ref. E.L.M. J 2000)

The embarkation ladder is used on a merchant vessels to embark survival crafts.

Each wooden part must be hardwood that is free from knots, and each metal fastener must be made of a corrosion metal. Each side rope must be continuous from the top of the ladder to the bottom and must not be painted or otherwise coated or covered.



Specifications

Side Rope	Manila (or synthetic) rope with 2-3/4" cir. (22 mm dia)
Clear space between side rope	370 mm ± 5 mm
Step Size	W:115 mm x TH:30 mm x L:525 mm
Distance of center hole for each side rope	425 mm

23 20 52	Ladder, embarkation, length mtr, with further details	Set

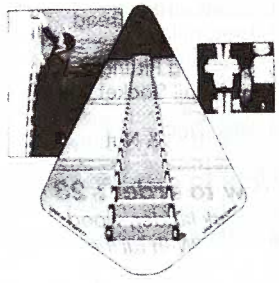
Synthetic Step/Spreader and Rope Pilot Ladders

Steps and spreaders have hand holes and are molded from high-impact elastomer. Assembled with white dacron ropes, which have double the strength of manila ropes.

Connected by stainless steel bolts and nuts. Will resist fracturing and parting under severe conditions. Also this rope ladder conforms to USCG and meets the international requirements of the convention for SOLAS 1974.

. HIGH STRENGTH ALLOY
. STAINLESS STEEL FASTENINGS
. ELIMINATES UNRELIABLE MARLIN MOUSINGS
. EXCEEDS 2000 LB. REQUIRED LOAD TEST BY 100%

MOLDED SYNTHETIC STEPS AND SPREADERS



Name of Mfr. : Coast Marine & Industrial Supply, Inc.

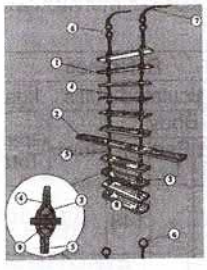
How to order : 23 - 20 - 56

Pilot ladder synthetic step/spreader and rope, finished length

Pilot Ladder with Step Brace Type SOLAS Approved

Fully comply with and exceed SOLAS Regulations and IMO Standards. These ladders are designed with new stainless steel clamping device tested to withstand loads up to 2,000 lbs (907.2 kilos). This new clamp will not slip or loosen with age. Manila rope and steps are fixed with hardwood step brace.

All steps are made from Ash hardwood, but the bottom 4 steps are furnished with in synthetic.



Pilot Ladder with all wood steps
Model No. PW

Pilot Ladder with bottom 4 - steps in synthetic
Model No. PWS

Specifications

1	Step	Ash hardwood 4.5" (115 mm) wide x 20.5" (520 mm) long x 1" (25 mm) thick.
2	Spreader	Ash hardwood 4.5" (115 mm) wide x 70" (1.8 m) long x 1" (25 mm) thick.
3	Step Brace	Ash hard wood
4	Clamp	Corrosion resistant stainless steel
5	Rope	Mildew-retardant manila 0.75" (19 mm) dia., 2.25" (65 mm) circ.
6	Lashing Ring & Thimble	Hot dipped galvanized lashing rings and thimble
7	Lanyard	10 ft. (3 mtr) lanyards with spliced in hot dipped galvanized ring and thimble for easy rope replacement
8	Lower 4 Steps	The 4 lower steps of pilot ladders are made with high impact Ultra-Poly synthetic 4.5" (115 mm) wide x 20.5" (520 mm) long x 1" (25 mm) thick with non-skid surface. Coloured safety orange.
9	Ties	High strength nylon-UV stabilized for longer life

How to order : 23 - 20 - 61

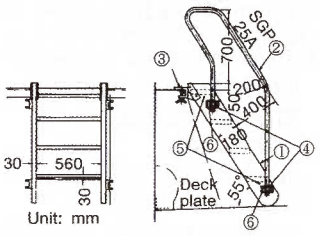
Pilot ladder with step brace type, SOLAS approved, TOTAL LENGTH (mtr)

Bulwark Ladders

(Ref. JIS F2614-1967)

WOOD

1. Sideboard & Tread
2. Handrail
3. Securing Fitting
4. Handrail Socket
5. Tie Bolt
6. Hex. Bolt & Nut

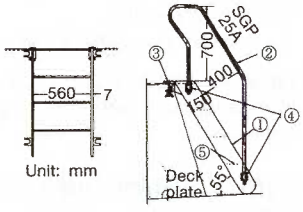


How to order : 23 - 20 - 66

Bulwark ladder, wood, HEIGHT x WIDTH x HOOK TYPE & SIZE, (With further details if necessary)

STEEL

1. Side Plate
2. Handrail
3. Securing Fitting
4. Handrail Socket
5. Tread



How to order : 23 - 20 - 67

Bulwark ladder, steel, HEIGHT x WIDTH x HOOK TYPE & SIZE, (With further details if necessary)

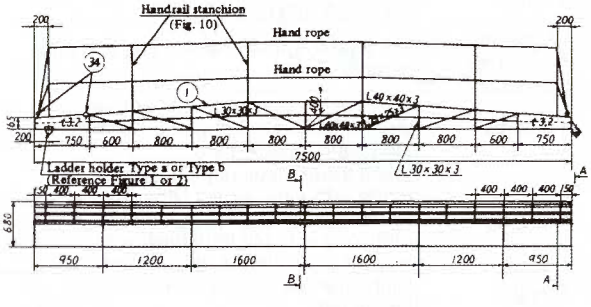
Steel Wharf Ladders

(Ref. JIS F2612-1990)

These steel wharf ladders are classified into two types A (one body) and B (jointed).

Type	Shape	Dimensions m			Reference Calculated mass kgs				
					Body				
		L	L_1	L_2	Part L_1	Part L_2	Total	Roller	Grand Total
A5		5	-	-	-	-	148	13	161
A7.5		7.5	-	-	-	-	188	13	201
B10		10	7	3	176	93	269	21	290
B12.5		12.5	8	4.5	262	179	441	21	462
B15		15	9	6	318	225	543	21	564

Type A-7.5



How to order : 23 - 20 - 71

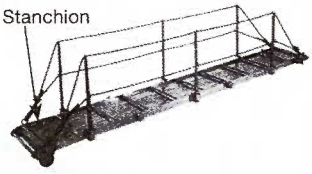
Wharf ladder, steel, TYPE x OVERALL LENGTH x WIDTH, (With further details if necessary)

Handrail Stanchions and Sockets

for Steel Wharf Ladder

Steel made round bar for hanging hand rope at both sides of wharf ladder.

Please specify length "H" when ordering.



How to order : 23 - 20 - 72

Handrail stanchion and socket, steel for steel wharf ladder LENGTH "H"

Aluminium Alloy Wharf Ladders

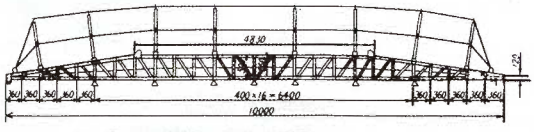
(Ref. JIS F2613-1990)

These aluminium alloy wharf ladders are classified into two types A (one body) and B (jointed).

Type	Shape	Dimensions (m)			Calculated mass (kgs)
		L	L1	L2	
A5		5	-	-	118
A7.5		7.5	-	-	168
A10		10	-	-	221
B10		-	5	5	244
A12.5		12.5	-	-	296
B12.5		-	6.25	6.25	319
A15		15	-	-	362
B15		-	7.5	7.5	388

Remarks : 1. Calculated mass does not include that of the handrail rope.
2. Calculated mass shows that of the ladder 600 mm in breadth.

Main structure A10



How to order : 23 - 20 - 76

Wharf ladder, aluminium alloy, TYPE x OVERALL LENGTH x WIDTH, (With further details if necessary)

Handrail Stanchions and Sockets

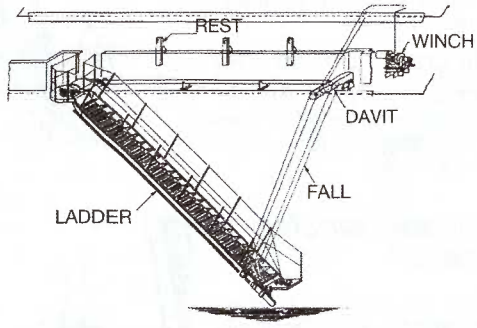
for Aluminium Alloy Wharf Ladder

Aluminium alloy made round bar for hanging hand rope at both sides of wharf ladder. Standard length between center of the eye for handrail rope and other end is 990mm for JIS type aluminium alloy wharf ladder, but in other case please specify the length according to the specification of the wharf ladder in use.

How to order : 23 - 20 - 77

Handrail stanchion and socket, aluminium alloy, for aluminium alloy wharf ladder, LENGTH

Aluminium Alloy Accommodation Ladders



How to order : 23 - 20 - 81

Accommodation ladder, aluminium alloy, NOMINAL SIZE (LENGTH) x WIDTH, (Further details are available upon request)

Securing Suction Pads
for Accomodation Ladder "Blue Box"

Used to secure the bottom of the accommodation ladder to the ship's side and insures the accommodation ladder rests firmly against the ships side. (Requested by the amendments 2000 to the SOLAS regulation, Chapter V, Regulation 23 'Pilot Transfer Arrangement') The arrangement shall be provided to enable the pilot to embark and disembark safely on either side of the ship by an accommodation ladder in conjunction with the pilot ladder, or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 meters.

Can be operated from free supplied deck air at 6 to 7 kgf/cm^2, and the unit is made from non ferrous material therefore is resistant to corrosion. Class ABS certified.

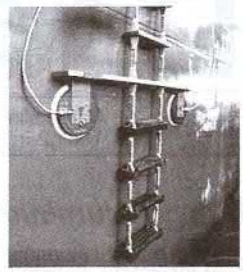
Specifications:

Pressure range: 25 to 102 p.s.i.
Consumption of compressed air: 26.4 Nl/min
Right angle holding force: About 3,200 N at 80& vacuum
Weight: 7 kgs

23 20 91	Securing suction pad for accommodation ladder,'Blue Box'	Pc.

Name of Mfr.: PTR Holland Group

Securing Device
for Pilot Ladder



Developed to make sure the pilot ladder is stabile for the pilot and can safely board and disembark from the ship. By using two vacuum generated spreaders can always secure the ladder firmly regardless the thickness of the paint on the ship, even if the surface is not smooth and has chipped paint. The required pressure range to this device is 1.4 – 4.0 bar, and has holding force at 715 kg.

The device complies with the new SOLAS regulations 1045 (27), and Class Lloyd's certified.

23 20 92	Securing suction pad for ladder, SPT-928	Set

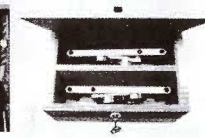
Name of Mfr.: PTR Holland Group

Holding Magnets
for Pilot Ladder

Specially developed to make life safer for sea harbor pilots by providing removable anchor points for the ladder on the ship's side. Designed to withstand aggressive marine environments, and powder-coating in safety yellow for high visibility. Resin encapsulation of magnetic elements makes the product seaworthy.

They are lightweight at around 3 kgs, providing more than 800 kgs of clamping force even through many layers of paint and salt scale and grime on a ship's hull. A derlin roller makes the hull magnet simple to attach and release. Class ABS certified.

The holding magnet is sold in piece, and tightening belt and storing wooden box are separate order.



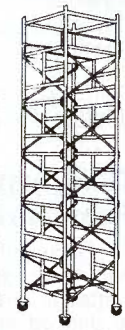
Magnet Tightening Belt Storing Box

CODE	Descriptions	Unit
23 20 93	Holding magnet for pilot ladder	Pc.
94	Tightening belt for holding magnet	Lgth
95	Storing wooden box only for two holding magnets	Pc.

Name of Mfr.: PTR Holland Group

13. Scaffolds/Stages/Boatswain's Chairs

Prefabricated Steel Pipe Scaffolds



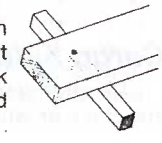
A safe, movable, prefabricated scaffold made of galvanized high tensile steel pipe frames; easy to assemble and disassemble.

Each step set comprises 4 wheels attached with jacks for moving and adjusting the height of the feet for use on a rough surface. Each section is fitted with 2 steel step plates and safety rails. The floor is made of checkered steel plate. Dimensions are 1,500 x 1,800 mm.

Unit Per Set

CODE	Number of Nominal Steps	Height mm	Numbers of Main Frames
23 21 01	2	3,200 ~ 3,660	4
02	3	4,700 ~ 5,160	6
03	4	6,200 ~ 6,660	8
04	5	7,700 ~ 8,160	10
05	6	9,200 ~ 9,660	12

Stages



A floor or a platform of planks fitted with transverse bearers, slung by ropes and put over ship's side or in holds, for men to work on when cleaning and painting. Standard dimension is W300 x T40 x L4,000 mm.

23 21 11	Stage, 300(W) x 40(T) x 4,000(L) mm with transverse bearer	Pc.

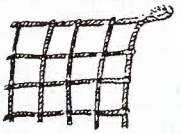
Boatswain's Chairs

Narrow wooden seat, suspended by rope and used by seamen when working aloft or over the side of the ship. Standard size is L 620 x W 160 x T 25 mm with ø20 mm rope.

23 21 21	Boatswain's chair	Set

14. Cargo Nets/Safety Nets

Polypropylene Rope Cargo Net Slings



Can be made to the desired specifications. Some common sizes are listed below.

Unit per Pc.

Description \ CODE	23 21 51	23 21 52
Net Size	2.5 x 2.5 Mtrs	3 x 3 Mtrs
Mesh Size	200 x 200 mm	
Rim Rope Size	24 mm dia.	
Mesh Rope Size	18 mm dia.	
Name of Synthetic Fibre Rope	Polypropylene (P.P.)	

Wire Rope Cargo Net Slings

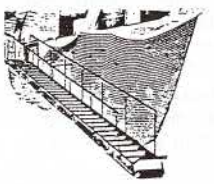
Can be made to the desired specifications. Some common sizes are listed below.

Unit per Pc.

Description \ CODE	23 21 56	23 21 57
Net Size	2.5 x 2.5 Mtrs	3 x 3 Mtrs
Mesh Size	200 x 200 mm	
Wire Rope Construction	6 x 24 Galv.	
Rim Rope Size	12 mm diam.	
Mesh Rope Size	9 mm diam.	

Gangway Safety Nets

Polypropylene



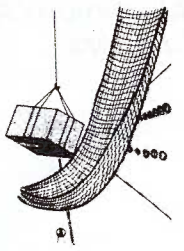
For security of life and property. All mesh ropes are securely knitted in position. Can be made to desired specifications. Some common sizes are listed below.

Unit per Sht

Description \ CODE	23 21 61	23 21 62
Net Size	5 x 10 Mtrs	4 x 16 Mtrs
Mesh Size	150 mm	
Rim Rope Size	10 mm dia.	
Mesh Rope Size	8 mm dia.	
Name of Synthetic Fibre Rope	Polypropylene (P.P.)	

Cargo Safety Nets

Usually made of synthetic rope. To hang between ship and dock or wharf to catch and prevent packages from dropping overboard into the water when loading or discharging freight. Made to order. When ordering, please specify the following points :



How to order : 23 - 21 - 65

Net, safety, cargo, Name of synthetic rope, Size of overall length and width, Size of mesh opening, Rope size of rim, Rope size of mesh.

Personnel Transfer Device

Personnel transfer device is used to quickly and effectively transport personnel on and off of platforms. Passengers are encompassed with tightened stainless steel ropes that protects from any side impact that may occur. It is equipped with quick release safety lanyards to provide safety and give the passengers confidence while in transit. Made of sturdy and very durable aluminum skeleton to protect them from falling objects, also shock absorbing feet is equipped to protect from hard landing. Available for 4, 6 & 8 persons capacity and also loaded a stretcher in the event of emergency situation. ABS Certification report is available.

Model	Capacity	Size(inch)	Weight
X-904-4	4 persons	90" x 90" x 34"	600 lbs
X-904-6	6 persons	102" x 102" x 36"	700 lbs
X-904-8	8 persons	102" x 102" x 36"	900 lbs

Name of Mfr. : Billy Pugh Co. Inc.

How to order: 23 - 21 - 66

Personnel Transfer Device, Model number., capacity etc.

15. Cargo Bags/Sling Belts

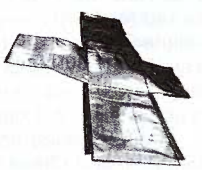
Cargo Sling Bags

Made of polyester, light weight, handy foldable cargo sling bag. Very useful for storage.

Size : 1 x 1.2 x 1.2 mtrs
Capacity : 1 ton

23 21 81	Cargo sling bag, polyester 1 x 1.2 x 1.2 Mtr	Pc.

Cargo Aluminium Bags



Made of aluminium sheet for heat insulation, keeping fresh/frozen provisions cool during transportation. Foldable, easy to set up with Velcro fastener.

Size: 1,080 x 970 x 1,350 mm

23 21 83	Cargo bag, aluminium 1,080 × 970 × 1,350 mm	Pc.

One Way Flexible Containers

A one way type flexible container makes the transport, delivery, and loading of blasting sand, copper bits, or other bulk materials fast and easy. It reduces the costs and extra effort for loading bulk materials because the slings are loaded and then stay on deck until the material is used. Several types are available, but the most common types are shown below.

Unit per Pc.

CODE	**23 21 86**	**23 21 87**
Type	Draw string with bottom release	Without bottom release
Material	Polypropylene/Polyester	
Cubic Volume Capacity	1,000 - 2,000 Ltr	
Weight Capacity	500 - 1,000 kgs.	

Belt Slings

Belt & endless types are available, and they weigh about one third the weight of a wire sling. The seamed part is so soft that it is easier to handle than other sling types.

Polyester Slings

Easy to handle by lighter and more flexible character of polyester.

Belt Type Sling

Specification

Width of Sling (mm)		25 mm	35 mm	50 mm	75 mm
Breaking Strength kN (Ton)		48 (4.8)	75 (7.5)	96 (9.6)	150 (15.0)
Style of Sling	Angle	Working Strength Ton			
Straight	-	0.80	1.25	1.60	2.50
Choke	-	0.64	1.00	1.28	2.00
Basket	α = 0°	1.60	2.50	3.20	5.00
Basket	α≦45°	1.44	2.25	2.88	4.50
Basket	45°<α≦90°	1.12	1.75	2.24	3.50

How to order : 23 - 21 - 31

Sling, Polyester, belt type, width 25 mm x length 1 mtr

Unit Per Pc.

CODE	Length mtr	CODE	Length mtr
Width: 25 mm		Width: 50 mm	
23 21 31	1	**23 21 43**	1
32	2	**44**	2
33	3	**45**	3
34	4	**46**	4
35	5	**47**	5
36	6	**48**	6

(to be continued)

Unit Per Pc.

CODE	Length mtr	CODE	Length mtr
Width: 35 mm		Width: 75 mm	
23 21 37	1	**23 21 71**	1
38	2	**72**	2
39	3	**73**	3
40	4	**74**	4
41	5	**75**	5
42	6	**76**	6

Other than listed size;

How to order : 23 - 21 - 95

Sling, Polyester, belt type, width x length

Endless Type Sling

How to order : 23 - 21 - 96

Sling, Polyester, endless type, width x length

16. Canvas/Canvas Maintenance Items

White Cotton Canvas

For the partial renewal, repairing or patch work of canvas products such as awnings, hatch tents, etc. The standard width is 915 mm (36") and one bundle is supplied in a length of 50 mtr or cut to size.

Unit Per Mtr.

CODE	No.	Thickness mm	Grams Per m²	Test Strength Wrap × Fill (kgs / 3 cm)
23 22 01	2	1.43	941	180 × 140
02	3	1.25	867	160 × 140
03	4	1.23	794	160 × 120
04	6	1.07	647	120 × 120
05	8	0.93	510	80 × 80
23 22 06	9	0.78	500	80 × 120
07	10	0.74	428	80 × 90
08	11	0.67	348	80 × 40

Remark: Colour is usually white.

Waterproof Cotton Canvas

Constructed and spun in the same way as the above cotton repair canvas but the material is water proofed in order to give it resistance to seawater, sunlight and assure a long lasting service. Standard width is 915 mm (36"), length 50 mtrs or cut to order.

Unit Per Mtr.

CODE	No.	Thickness mm	Grams Per m²	Test Strength Wrap × Fill (kgs / 3cm)	Color
23 22 11	4	1.23	940	178 × 148	W. OD
12	6	1.07	845	126 × 125	"
13	9	0.78	620	84 × 123	"
14	10	0.74	555	81 × 78	"
15	11	0.67	480	81 × 45	"

Denotes: W - White, O.D. - Olive Drab

Synthetic Fibre Tarpaulin Canvas

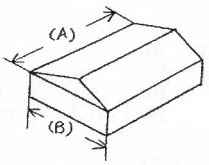
Light in weight but a strong and rigid material for covers, awnings, tents, etc. Resistant to seawater, sunlight and other effects. Constructed with a special synthetic resin compound. It is necessary to seal the needle holes with a waterproof agent or modified polythene resin. Standard length of bolt is 50 mtr and random.

Unit Per Mtr.

CODE	Thick mm	Width mm	Grm/m²	Colour
		Polyester		
23 22 21	0.82	1,040	700	G
23 22 22	0.73	920	640	Gr. O. OD
23 22 23	0.65	930	575	Gr. O. OD. G. W
24	"	1,030	"	
23 22 25	0.60	930	525	Gr. O. OD. G. W
26	"	1,030	"	
23 22 27	0.54	930	470	Gr. O. OD. G. W.
28	"	1,030	"	Gr. O. OD. G
23 22 29	0.54	1,830	535	Gr. W
23 22 30	0.47	930	465	Gr. W
		Vinylon		
23 22 41	0.88	1,040	760	G
42	0.75	920	645	Gr. G. O
43	0.65	920	550	"
44	0.73	1,020	580	"
23 22 45	0.53	920	450	Gr. G. O
46	0.63	1,020	500	"
47	0.50	920	440	"
		Nylon		
23 22 51	0.70	1,370	810	G.O
23 22 52	0.52	1,370	620	Gr. G. B. O. OD. W
53	"	1,850	"	OD. O
23 22 54	0.42	1,370	490	Gr. G. B. O. OD. W
55	"	1,850	"	OD. O
23 22 56	0.35	1,370	480	Gr. G. B. O. OD. W
57	"	1,850	"	OD. O

Denotes: Gr - Green, O - Orange, W - White, G - Gray, OD - Olive Drab, B - Blue

Hatch Covers



Made to your specifications with advance notice. Material is synthetic fibre tarpaulin. When ordering, please specify the hatch coaming size, (A) and (B). The finished size of the hatch cover will be (A) + 1.7 mtr and (B) + 2.2 mtr.

Canvas thickness is usually No. 4. Available in green or gray.

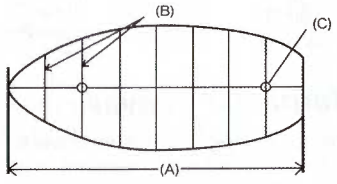
How to order : 23 - 22 - 58

Hatch cover, synthetic fibre tarpaulin, colour, coaming size
(A) _____, *(B)* _____.

Lifeboat Covers

Made to your specifications with advance notice. The material is synthetic fibre tarpaulin.

When ordering, please specify the (A) overall length, (B) beam length at several intervals, and (C) position of boat fall wire holes. Canvas thickness is usually No. 4 and available in green, gray, orange, and white colours.



(A) - Overall Length
(B) - Beam length at several intervals
(C) - Position of Boat Fall Wire Hole

How to order : 23 - 22 - 59

Lifeboat cover, synthetic fibre tarpaulin, colour, colour, size
(A) _____, *(B)* _____, *(C)* _____.

Note: Before making the above items, sailmaker specialists will come aboard ship upon request to take proper measurements. This is to avoid errors with the finished size.

Sail Makers Leather Palms

Designed for repair work of canvas and similar clothes in connection with sail needles. Hide mounted. Furnished for righthand use unless otherwise specified.

Unit Per Pc.

CODE	Description
23 22 61	Right hand use
62	Left hand use

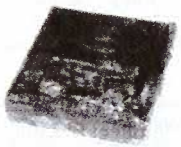
Sail Makers Needles

For canvas repair work. Packed in 12 pcs per paper container.

Unit Per Pc.

CODE	No.	O'all Length	CODE	No.	O'all Length
23 22 66	10	95 mm	**23 22 69**	15	65 mm
67	12	80 "	**70**	16	60 "
68	14	75 "			

Beewax



Commercial grade beewax weighing about 250 or 500 gram. For waxing twine or thread used in sewing or stitching canvas, leather, etc.

Unit Per Pc.

CODE	**23 22 76**	**23 22 77**
Weight gram.	250	500

Grommet Dies (Setting Dies)

Drop forged steel made for inserting sheet brass washer and teeth grommets. When ordering, specify the number and size as listed below due to various existing standards in different countries.

Unit Per Pc.

CODE	No.	Diam. mm	CODE	No.	Diam. mm
23 22 81	25	10	**23 22 83**	30	16
82	28	13	**84**	32	19

Grommets

Made of brass and rounded into a rim to serve as a reinforcement for rope holes in canvas or tarpaulin. When ordering, please specify the number related to the hole diameter as listed in the ordering table below. Supplied one gross per box.

Unit Per Gross

CODE	No.	Diam. mm	CODE	No.	Diam. mm
23 22 86	25	10	**23 22 88**	30	16
87	28	13	**89**	32	19

Serving Boards

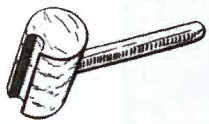
Made of ash with a hardwood handle. Used for serving a rope tightly and neatly.

Unit Per Pc.

CODE	23 23 01	23 23 02
Size	80 × 80 mm	100 × 100 mm

Serving Mallets

Wooden mallet with a semicircular groove along the top of the head. Used for serving rope when considerable tension is desired. Made of ash with a hardwood handle.

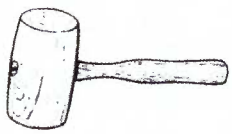


Unit Per Pc.

CODE	Size mm	CODE	Size mm
23 23 06	50 × 180	23 23 08	80 × 200
07	65 × 190		

Round Mallets

Made of a hardwood head and handle. Metal bands on both faces will be attached upon request.



Unit Per Pc.

CODE	Size mm	CODE	Size mm
23 23 11	80 × 120	23 23 13	100 × 150
12	90 × 165		

Wood Hand Fids

A tapered wooden pin used to separate the strands when splicing rope.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
23 23 21	150	23 23 26	400
22	200	27	500
23	250	28	600
24	300	29	700
25	350		

Steel Marline Spikes

Tapered and sharp pointed iron pin used for opening up a rope when splicing. Has a perforation at the larger end to hold a lanyard.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
23 23 31	150	23 23 36	400
32	200	37	450
33	250	38	500
34	300	39	600
35	350		

17. Hatch Wedges/Hatch Cover Tapes

Hatch Wedges, Hard Wood

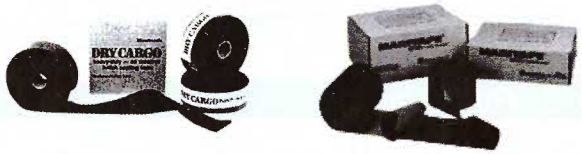
Made of hard wood. Used to bottom down canvas hatch covers.

Unit Per Pc.

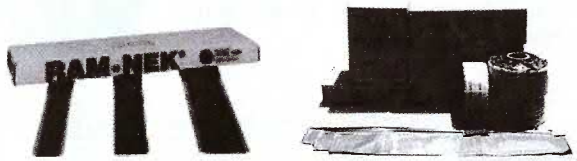
CODE	Nominal Size	Size mm L	Size mm W	Size mm H	Wt kgs
23 23 51	200	200	50	50	0.30
52	250	250	60	60	0.43
53	300	300	70	70	0.58

Hatch Cover Tapes

Sealant tapes for hatch covers on board vessels. Many brands are available either in STRIPS or in ROLLS, their designs and performance vary between brands. Several brands are shown below as a reference. For the correct application, please inquire to either the manufacturer or the distributor.



Roll Type



Strip Type

Roll Type

Unit Per Box

CODE	Brand	Size	Roll/ Box	Weight kgs
23 24 41	Nemo	W 75mm×1.5mm×20mtr	4	10
42		W 100mm×1.5mm×20mtr	3	10
43		W 150mm×1.5mm×20mtr	2	10
23 24 45	Optimo	W 101mm×2mm×20mtr	2	11.4
46		W 152mm×2mm×20mtr	2	16.2
23 24 48	Dry-Cargo Standard Duty	W 100mm×1.6mm×20mtr	3	12
49		W 150mm×1.6mm×20mtr	2	12
23 24 51	Dry-Cargo Heavy Duty	W 75mm×2.7mm×20mtr	4	19
52		W 100mm×2.7mm×20mtr	3	19
53		W 150mm×2.7mm×20mtr	2	19
23 24 56	Maritape	W 100mm×15.25mtr	4	8.7
57		W 150mm×15.25mtr	4	13.0
23 24 59	BC Marine Tape	W 101mm×3mm×24mtr	3	29
60		W 152mm×3mm×24mtr	2	29
23 24 65		W 101mm×4mm×18mtr	3	29
66		W 152mm×4mm×18mtr	2	29
23 24 54	Canseal-R Marine Tape	W 100mm×2mm×20mtr	3	16
55		W 150mm×2mm×20mtr	2	16
23 24 44	Dry Seal	W 100mm×2.0mm×23mtr	3	7
47		W 150mm×2.0mm×23mtr	2	7
50		W 300mm×1.8mm×23mtr	1	7

Name of Mfr. : Nemo – Isoltema s.p.a.
Dry-Cargo - Cullen Metcalfe & Co.
Maritape - Henry Company,
Optimo, BC MarineTape, BC Taechang Ind. Corp
Canseal-R Marine Tape – Insulmastic
DrySeal - Sporema

Strip Type

Unit Per Box

CODE	Brand	Size	Roll/ Box	Weight kgs
23 24 61	Ram-Nek	W 75mm×5mm×122cm	60's	41
62		W 110mm×5mm×122cm	30's	16
63		W 150mm×5mm×122cm	30's	36.5
23 24 72	Gulf-Seal	W 110mm×5mm×122cm	30's	19
73		W 150mm×5mm×122cm	30's	36
23 24 75	BC Marine	W 101mm×4mm×120cm	45's	29
76	Tape	W 152mm×4mm×120cm	30's	29
23 24 70	Canseal	W 110mm×5mm×122cm	30's	18
80	Marine Tape	W 150mm×5mm×122cm	30's	36

Name of Mfr. : Ram-Nek / Gulf-Seal – Henry Company
BC Marine Tape - BC Taechang Ind. Corp.
Canseal Marine Tape - Insulmastic

18. Rat Guards

Rat Guards

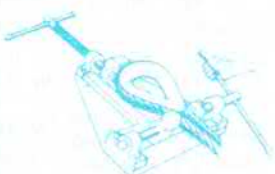
Fitted closely on hawsers and lines to prevent rats from boarding the ship. Conforms with all quarantine regulations.

Unit Per Pc

CODE	Guard Diam. mm	Applicable Rope Diam. mm
23 23 61	600	56
62	600	65
63	600	73
64	600	All smaller ropes than above

19. Riggers' Vises/Wire Rope Grips

Riggers' Vises



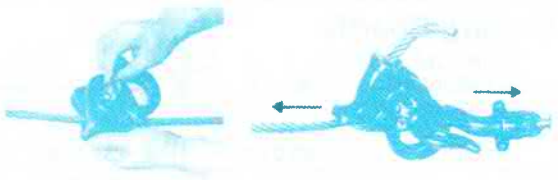
This portable riggers' forming vise is in wide-spread use wherever cable and wire ropes are used or handled. Ideal for forming cable or wire rope around thimbles or fixtures, making slings for either splicing or "U" shaped bolt clamps, or clip installations. Rigid construction, two sizes available.

Unit Per Pc.

CODE	Size	Wire Rope Capacity	Weight
23 23 81	No. 1 (Small)	16 - 28 mm dia.	19.2 kgs
82	No. 2 (Large)	16 - 38 mm dia.	26.6 "

Wire Rope Grippers

Compact and easy to handle. It is tight, yet won't damage the wire. Easily installed and released by a cam operation, will not jam. Made of heat treated forged steel.



Unit Per Pc.

CODE	Model No.	Applicable Rope Φmm	Strength Capacity Ton	Wt. kgs.
23 23 85	6	4 - 6	0.5	0.5
86	10	8 - 10	0.75	0.9
87	14	12 - 14	1.5	2.0
88	20	16 - 20	3.0	4.8
89	26	22 - 26	5.0	7.6
23 23 90	32	28 - 32	7.0	8.0

20. Fenders

Rope Netted Fenders Ball Shape

Made with an interior filling of ground cork packed into strong gunny bags and netted on the outside, usually with polypropylene rope.

23 24 01	Rope Netted Ball Fender, 300 mm diam.	Pc.
02	" 360 mm "	"
03	" 450 mm "	"

Pneumatic Rubber Fenders

The characteristics of floating type pneumatic fenders are as follows.

1. Advantages

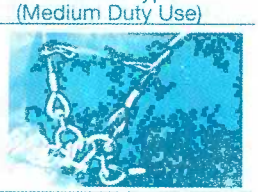
a. Adaptable to change in the tidal level.
b. Low and uniform surface pressure.
c. Simple and low cost installation.
d. Low maintenance cost

2. Types

a. Net Type

The net-type fender is covered by a chain net, wire net or fibre net for small size fenders.

Usually these nets have used tyres together with rubber sleeves for additional protection, except for the fibre net which has only rubber sleeves. Chain nets last longer against corrosion while wire nets are light and more easily repaired.

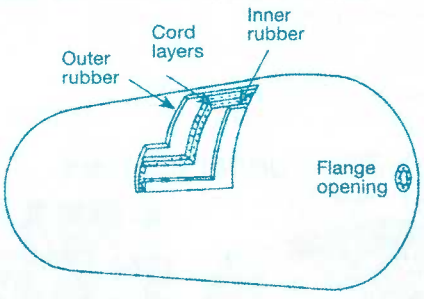
Chain Net Type (Heavy Duty Use)	Wire Net Type (Medium Duty Use)
	
Fire Net Type (Light Duty Use)	

b. Sling Type

This type has eyelets built into the fender body for easy installation. Handling of the sling type is easy due to its light weight. Its maintenance is also easy.

Type		Appropriate Fender Size mm
	Sling Type	500Φ × 1,000L to 2,500Φ ×5,500L

3. Typical Cut Section of Fender Wall



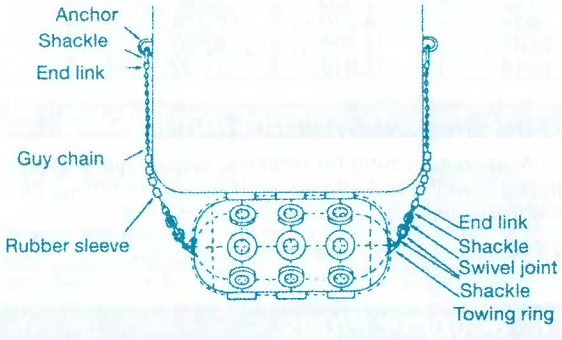
4. Performance Table (Initial Pressure 0.5 kgf/cm²)

Nominal Size Diam × Length mm	Guaranteed Energy Absorption (E) and Reaction Force (R) (at 60% deflection)		Net Type Fender Body Weight kgs	Chain Net kgs	Wire Net kgs	Synthetic Fibre Net kgs	Sling Type Fender Body Weight kgs
	E	R					
500 × 1,000	0.6 tf.m	6.5 tf	24	-	30	20	29
600 × 1,000	0.8	7.5	28	-	30	22	34
700 × 1,500	1.7	13.8	47	150	40	37	53
1,000 × 1,400	3.2	18.3	72	190	80	51	80
1,000 × 2,000	4.6	26.0	92	230	140	57	100
1,200 × 2,000	6.3	30.0	110	300	190	68	130
1,350 × 2,500	10.2	43.1	210	330	200	-	245
1,500 × 3,000	15.4	58.5	275	490	350	-	320
1,700 × 3,000	19.3	64.5	370	580	440	-	430
2,000 × 3,500	31.0	88.4	500	980	640	-	560
2,200 × 4,500	50.0	129.0	750	1,450	1,060	-	880
2,500 × 4,000	66.7	139.0	820	1,260	910	-	930
2,500 × 5,500	95.0	204.0	1,360	1,630	1,160	-	1,460
3,300 × 4,500	118.0	190.0	1,570	1,630	1,270	-	-
3,300 × 6,500	183.0	304.0	2,020	2,680	1,910	-	-
3,300 × 10,600	309.0	531.0	2,570	4,670	3,300	-	-
4,500 × 9,000	478.0	580.0	4,260	4,810	3,520	-	-
4,500 × 12,000	652.0	806.0	5,460	7,240	5,190	-	-

5. Installation Methods

a. Jetty Quay and Dolphin Use

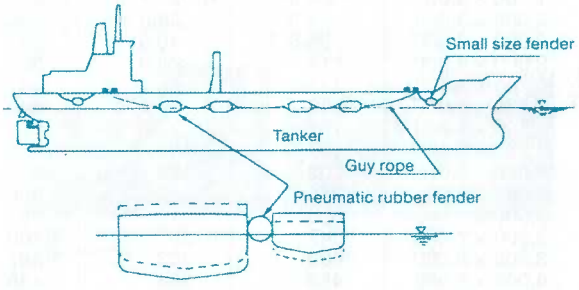
At both ends of the fender's chain or wire net, first fit the shackles, then the swivel joints and then further shackles should be installed. A guy chain or guy rope is secured to the outer shackle. The swivel joint prevents twisting of the guy.



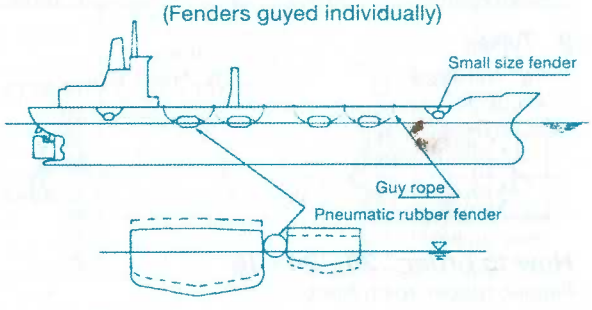
b. Ship to Ship

The following are examples of the installation method. Four pieces of large size fenders are usually floated as primary fenders to absorb impact energy at berthing. Two pieces of small-size fenders are hung high on the hull at both bow and quarter of the smaller ship to prevent contact during rolling due to swell. (Tied in a row)

(Tied in a row)



(Fenders guyed individually)



6. Installation Equipment

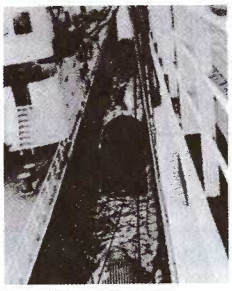
The typical installation equipment and necessary parts for installations are shown below.

There are the various sizes of shackles, swivels, ring rubber sleeves, thimbles, etc. according to the applicable fender capacity.

How to order : 23 - 24 - 11

Fender, rubber, pneumatic,
Nominal size_____,
Type of fitting_____,
Initial internal pressure_____,

Foam Filled Rubber Fenders



1. The characteristics of the fenders are

a. Puncture-proof Construction

There fenders are filled with a special micro-bubble foam that creates a 100 percent independent closed-cell structure which will not absorb water. The fact that they are puncture proof and offer superior elasticity, assures users of the excellent durability of these fenders even under extremely severe conditions.

b. Long Life Performance

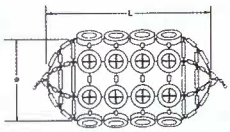
With these fenders, there is no need to adjust the air pressure to allow for changes in atmospheric temperature. This feature makes them ideal for applications in which minimum maintenance is a priority. In addition, fitting to the quay is simple; once the fenders are secured with a wire rope or chain, they comprise a permanent and extremely durable protection system for all ships.

Performance Table

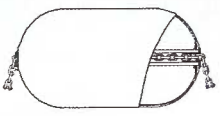
Size Diam × Length mm	Normal Performance 60% Deflection		Maximum Performance 80% Deflection		Weight Approx. kgs		
	Reflection Force Ton	Energy Absorption ton-m	Reflection Force Ton	Energy Absorption ton-m	Chain Net Type	Wire Net Type	Hook Type
1,000 × 1,500	19.5	4.13	61.6	11.2	340	170	160
1,000 × 2,000	28.3	6.00	89.8	16.4	400	220	200
1,200 × 1,800	28.1	7.14	88.7	19.4	450	240	210
1,200 × 2,000	32.3	8.21	102	22.4	480	250	270
1,200 × 2,500	42.9	10.9	136	29.8	560	320	330
1,300 × 2,500	45.6	12.6	144	34.2	700	470	350
1,500 × 2,500	50.5	16.0	160	43.7	780	480	490
1,500 × 3,000	63.7	20.3	202	55.2	940	610	580
1,700 × 3,000	69.9	25.2	221	68.5	960	610	690
2,000 × 3,000	78.0	33.0	246	89.8	1,250	840	780
2,000 × 3,500	95.6	40.5	303	110	1,490	1,030	1,010
2,000 × 4,000	113	48.0	359	131	1,620	1,210	1,200
2,200 × 4,500	141	65.7	447	179	2,190	1,770	-
2,500 × 4,000	133	70.4	420	191	2,290	1,800	-
2,500 × 5,000	177	93.8	561	256	2,840	2,370	-
2,500 × 5,500	199	105	631	288	3,040	2,550	-
3,000 × 5,000	202	128	639	349	3,940	3,250	-
3,000 × 6,000	255	162	808	442	4,770	4,000	-
3,300 × 6,500	303	212	959	577	6,760	5,170	-
3,500 × 7,000	347	257	1,100	702	7,500	6,080	-
3,500 × 8,000	409	303	1,297	828	8,770	7,170	-
4,000 × 8,000	453	384	1,436	1,047	10,130	8,220	-
4,500 × 9,000	574	547	1,818	1,419	13,810	11,330	-

2. Types

a. Net Type



b. Hook Type



How to order : 23 - 24 - 16

Fender, rubber, foam filled,
Nominal size _____ ,
Type of fitting _____ .

Used Tyres

Worn rubber tyre, suitable to use as a fender for tug boats, fishing boats, etc.

23 24 21	Used tyre, ruber, SIZE	Pc.

Used Bicycle Interior Tubes

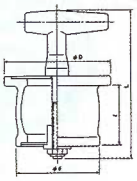
Worn interior tube for bicycles, and normally used for binding over the leaked hole on the pipes or fittings as an emergency measure.

23 24 22	Used bicycle interior tube	Pc.

21. Scupper Plugs

Scupper Plugs

For sealing the scupper holes for spilled oil or polluted liquids. Easy to use, insert plug in the drain hole and tighten the handle until a slight resistance is felt, the rubber plug will be expanded and held firmly



in place. Rubber parts are made of oil resistant rubber (CR). Seven types are available according to the pipe size. Specify the applicable drain pipe diameter when ordering, referring to the plug application list.

Application List

Model No. 50N-	Pipe Type	Pipe Size 50	65	80	100B	100	125	150
50A (2B)	Sch80	●						
	Sch40	●						
	SGP	●						
65A (2-1/2B)	Sch160		●					
	Sch80		●					
	Sch40			●				
	SGP			●				
80A (3B)	Sch160			●				
	Sch80			●				
	Sch40			●				
	SGP			●				
100A (4B)	Sch160				●			
	Sch80					●		
	Sch40					●		
	SGP					●		
125A (5B)	Sch160					●		
	Sch80						●	
	Sch40						●	
	SGP						●	
150A (6B)	Sch160						●	
	Sch80							●
	Sch40							●
	SGP							●

Unit Per Pc.

CODE	Model	Dimensions mm d	D	l	L	Wt. kgs
23 24 81	50N-50	45	65	55	145	0.3
82	50N-65	52	75	55	145	0.4
83	50N-80	65	85	65	160	0.5
84	50N-100B	85	110	65	160	0.6
85	50N-100	90	115	65	160	0.6
86	50N-125	110	135	65	160	0.8
87	50N-150	135	160	65	160	1.0

22. Deck Coverings

Deck Coverings

Used to seal deck openings of tankers, barges, and cargo vessels. Simple and reliable cover which does not require the drilling of holes and the insertion of studs to install.

Made of bronze or stainless steel to eliminate sparking. Fits to any standard 318 mm deck opening and will fit to a deck thickness of up to 76 mm.

Unlike other deck covers, the quick action cover is perfectly flat. There are no protruding parts to trip over. Removed with a special speed wrench which provides security against theft and gives rapid action for opening and closing. Frequently used as tank ventilators in place of ventilator gratings.

CODE	Description	Unit
23 24 91	Deck cover, bronze, for 318 mm deck opening	Pc.

Deck Safety Protection Cover

A safety protection cover designed to prevents crew from falls and other injuries associated with open manholes on-board vessels and platforms. Specifically designed to allow ventilation and utilities to remain accessible while still covering the hole and protecting the crew. Max payload is 205 kgs(450 lbs).

Unit Per Pc.

CODE	Description	Weight
23 24 92	Safety Protection Cover, Safe Edge Size L 740 x H 110 x W 550mm	9.6 kgs

Name of Mfr. : Dalseide Shipping Services

23. Oil Pollution Countermeasures

Overflow-Prevention Tanks

This portable and fordable, fuel oil, overflow-prevention tank is made of transparent urethane film, processed by an all-double stitch method of high frequency welding. It is oil resistant, coldproof (–45°C), heatproof (70°C), long wearing, and airtight. Easily attached over an air release vent, this portable overflow catch performs most effectively in keeping the deck free from oil. A and B type available. When ordering, please specify the type and capacity of the tank.

For Goose Neck Type Air Vent A Type

For Bonnet Type Air Vent B Type

Unit Per Pc.

CODE	Connector Size mm. Length	Diam.	Tank Capacity Ltr.	Type
23 25 01	1,500 & 1,000	200	40	A (For Goose Neck Type Air Vent)
02	"	"	100	
03	"	300	300	
04	"	"	500	
23 25 05	1,500	350	40	B (For Bonnet Type Air Vent)
06	"	"	100	
07	"	"	300	
08	"	"	500	

Oil Absorbents

Made from specially treated polypropylene microfibers or polypropylene mixed with polyester, and ideal for emergency spill and daily clean-up of oils with no-sweeping or shoveling required. Less time is required to use and dispose of these materials. They are available in sheets, rolls booms and assorted sets in drum containers.

Sheet

Roll

Boom

Pillow

CODE	Type	Size	Weight	Unit
23 25 14 11	Sheet	430x480 mm	44 grm/sht 83 grm/sht	50 sht/box
23 25 18 19	Sheet	500x500 mm	150 grm/sht	100 sht/box 200 sht/box
23 25 12	Sheet	430 x 480 mm Static resist	45 grm/sht	100 sht/box
23 25 13 20	Roll	W965xL43.9 mtr W965xL20 mtr	9.1 kgs/roll 7.8 kgs/roll	1 roll/bag
23 25 15	Boom	Φ76xL1200 mm	360 grm/lgh	12 lgh/box
23 25 17	Pillow	177x380 mm	170 grm/pc	16 pcs/box

Emergency Oil Spill Response Containers

To comply with international maritime regulations all vessels are required to carry on board sufficient absorbent materials to mop up oil spills of 7 or 12 barrels (1,100 litres or 1,900 litres) dependent on length of vessel.

23 25 16/30

23 25 31/32

Unit Per Set

CODE	23 25 16	23 25 30	23 25 31	23 25 32
For Oil Spill	40 ltr absorption	80 ltr absorption	7 barrels (1,100 ltr)	12 barrels (1,900 ltr)
Composed of	20×Sheets 6×Booms 4×Pillows 2×Disposal bags 2×Clamping bands 1× Dangerous substance label 1×half mask 1×Organic vapor chemical cartridge 1×Goggle 1×Chemical protective coverall	40×Sheets 12×Booms 8× Pillows 2×Disposable bags 2×Clamping bands 1×Dangerous substance label 1×half mask 1×Organic vapor chemical cartridge 1×Goggle 1×Chemical protective coverall	400×Pads (40x50cm) 20×3mtr Booms 25×Waste bag rolls 2×Gloves 2×Boots 2×Overall 1×Big bag 1×25ltr cleaning & degreasing agent 1×Jet spray unit 10 ltr	400×Pads (40x50cm) 50×Pads (80×100cm) 32×3mtr Booms 25×Waste bag rolls 2×Gloves 2×Boots 2×Overall 2×Big bag 1×25ltr cleaning & degreasing agent 1×Jet spray unit 10ltr
Dimension	40 x 62 cm	48.9 x 79.3 cm	140 x 77 x 120 cm	145 x 100 x 135cm

Warning!

Always exercise extreme care when cleaning up flammable liquid spills. Activities such as walking, rubbing, and pumping can generate static electricity in products with high electrical resistance such as rubber hoses, plastic containers, tanks, etc. The Static Resistant Oil Sorbent will help reduce static charge build-up but will not provide you with a static free environment. Also exercise extreme care when handling, storing, or disposing of any absorbent material containing flammable liquids.

Oil Absorbent Pellets

Igneous Rock

Made from glassy, igneous rock which is crushed into pellet sized fragments and heat treated. The pellets are extremely light weight and contain white sand like grains which have continuous pores which create strong oil absorbency through capillary action.

Types No. 1 and 2 absorb only oil whereas types 3 and 4 absorb oil and water. Pellets are not toxic or harmful to sealife.

Unit Per Bag

CODE	23 25 21	23 25 22	23 25 23	23 25 24
Type	No. 1	No. 2	No. 3	No. 4
Pellet Size (mm)	Less than 1.2	20.0 - 5.0	Less than 1.2	Less than 5.0
Standard Unit Volume Weight	0.055 kg/Ltr	0.10 kg/Ltr	0.055 kg/Ltr	0.17 kg/Ltr
Package	100 Ltr/Bag	10 kg/Bag	100 Ltr/Bag	100 Ltr/Bag
Application	1. Treatment for spilled oil from a tanker accident, etc. 2. Treatment for floating oil from bilge, dirty ballast tank, tank cleaning, etc. 3. Treatment for oil from Petroleum Refinery, Petrochemical Plant, etc.		1. Treatment of oil pollution on the floor of the various plants and road surfaces. 2. Treatment of oil pollution on the road surface from tank lorry, train, cargo truck, etc. 3. Fire Extinguishing against Alkyl Alum Metallic Potassium, Metallic Sodium, etc.	

Natural Fiber Oil Sorbents

An all natural oil sorbent made from natural wood fiber of recycled paper products. Comes in pellet and loose particulate form and can be used effectively on water as well as land as a substance which is light, easy to clean, and allows for a high oil recovery rate.

On water the sorbent instantly neutralizes the harmful effects of oil spills and forms islands for clean recovery with minimal residue and no sheen. Will absorb only the oil, not the water.

Oil can be recovered from the sorbent by squeezing it, or the materials can be burned and used as fuel in approved facilities.

CODE	Type	Weight Size	Unit
23 25 26	Loose Particle Solvent (Univeral Use)	20 lb	Bag
23 25 27	"	60 lb	Drum
23 25 28	Sorbent Boom	10' x 4" Dia.	Pc.
23 25 29	Sorbent Sock	4' x 3"	Pc.

Clay Plugging Compound
for Oil Drain Protection

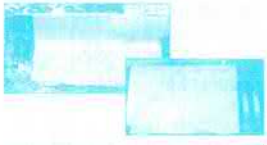
Specifically developed for the emergency sealing of leaks from holes, tears and ruptures. Stops most spills at source. Can be used on any non-flexible surface by the unique anti-freeze and anti-mould properties. Product is ready for immediate application, just push the ready mixed clay onto the source of the leek. Withstand pressure up to 0.25 bar and stays in place for up to 24 hours.

Unit Per Pkt

CODE	Weight	Q'ty/Pkt	CODE	Weight	Q'ty/Pkt
In Pot			Slab		
23 25 41	500 grm	18's	23 25 45	1 kgs	12's
42	800 grm	12's			
43	1.0 kgs	12's			
44	1.8 kgs	6's			

Name of Mfr.: Darcy Products Limited

Emergency Drain Sealing Mats
for Oil Drain Protection



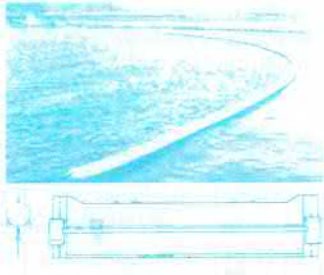
To stop oils and chemicals going down the drain. Resistant to oil, water and most chemicals. Also used by most fire services as first line pollution defence. Simple to use – peel off cover and tread onto drain. This product gives 100% seal even on rough surfaces. Place in areas of high risk in the wall mounted box. Unique anti-freeze and anti-mould properties and remains flexible to –20°C.

Unit Per Pkt

CODE	Size cm	Q'ty/Pkt	CODE	Size cm	Q'ty/Pkt
Drain Mat			Gulley Mat		
23 25 55	22.5 x 20	12's	23 25 58	65 x 15	6's
56	45 x 45	2's	Wall Mounted Mat Box		
57	65 x 45	2's	23 25 59	76x56x7.5	1's

Name of Mfr.: Darcy Products Limited

Inflatable Oil Fences



Made to conform to the Marine Pollution Prevention Law. The fence is made of rubber lined, strong synthetic fibre cloth and it is resistant to wear from oil, seawater and all types of weather. The fencing is provided in 20 mtr lengths which can be connected together and extended with the use of fasteners and shackles.

Unit Per Lgh

CODE	Surface of Water		Weight kgs	Length mtr
	Above mm	Below mm		
23 25 51	200	300	50	20
52	300	400	60	20

Sawdust

Used on deck or in the engine room as an oil absorbent. The sawdust is spread on deck where oil has accumulated or is likely to accumulate through leakage or overspill. Packed in a durable paper bag.

Unit Per Bag

CODE	kgs/bag	CODE	kgs/bag
23 29 47	8	23 29 46	10

24. Pontoons/Tank Check Boats

Inflatable Painting Pontoons

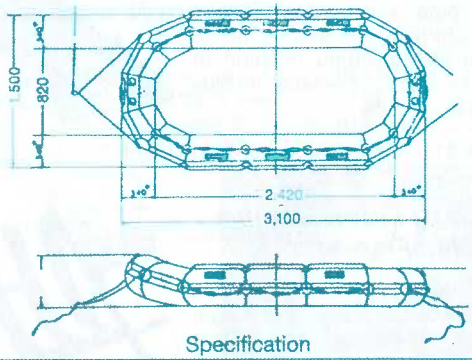
Inflatable pontoons are made of strong rubber lined, synthetic fiber cloth. Used for painting the ships hull at spots near the sea level. It has a well balanced deck board and is furnished with all standard accessories. The pontoons are lightweight and easily inflatable with an airblower. When finished, simply deflate compartments and fold up for storage. Two types available, specify which size is most suitable when ordering.

Unit Per Set

CODE	Size W x H x L mm
23 25 61	1,200 x 540 x 2,400
62	1,500 x 600 x 3,000

Inflatable Deep Tank Check Boats

Designed for inspection of deep tanks of tanker ships. Made from electro conductive, oil proof, acid proof, neoprene coated nylon cloth.



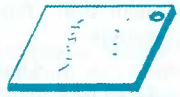
Specification

Capacity	5 Persons
Tube Buoyancy	600 kgs or more
Total Buoyancy	Approx. 1,300 kgs
Boat Weight	30 kgs
Inflated by	Air blow
Accessories	Standard accessories attached

23 25 66	Inflatable deep tank check boat, capacity 5 persons	Set

25. Tank Mirrors

Tank Mirrors



Made from stainless steel and highly polished finishing. A useful tool during loading and discharging operations.

23 25 81	Tank mirror, stainless steel, 100 x 125 mm	Pc.

26. Oil Funnels/Oil Sample Cans

Galvanized Oil Funnels

Made from a heavy galvanized tin plate with a brass strainer.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
23 26 01	100	**23 26 05**	225
02	125	**06**	250
03	150	**07**	280
04	200	**08**	350

Oil Sample Cans

Made of galvanized iron, 2 sizes available.

23 26 26	Oil sample can, 1 Ltr.	Pc.
27	" 4 Ltr.	"

27. Hand Cuffs

Hand Cuffs

Made from stainless steel. Furnished with two sets of keys.

23 26 21	Hand cuffs, stainless steel	Pr.

28. Deck Chairs

Folding Deck Chairs
Pipe Frame

The frame is made of stainless steel pipe with woven plastic tubing forming the seat. Can be folded into a sitting position or reclined back. Available in blue or green colours.

23 26 31	Deck chair, folding pipe frame	Pr.

Folding Deck Chairs
Wooden Frame

A folding deck chair made with a wooden frame and a light canvas. It has an armrest that can be adjusted at three different settings. The inside width is 600 mm and the overall length is 1,250 mm.

23 26 32	Deck chair, folding wood frame	pc.

Pipe Frame Folding Chairs
with Arm Rest

Seat and back are made of alum. pipe and coloured vinyl mesh strip. Folds compactly for storage.

23 26 33	Chair, folding, alum. pipe frame with arm rest	pc.

29. Dunnage Bags/Plywood

Inflatable Dunnage Bags

Reusable dunnage bag made from strong plastic film combined with several layers of hard-wearing, water-resistant paper. It can withstand pressure loads up to 15 - 20 tons and temperatures from 20°C to 65°C.

This dunnage bag gives the best protection imaginable from transport damage, absorbing harmful shocks time after time without loosing its shape. Suitable for protecting drums, boxes, palletized goods, tins, bottles, large machinery or machinery parts, large pipes and special cargoes, etc.

Simply insert the dunnage bag in any space between items loaded in cargo and inflate it. This dunnage bag will prevent the cargo from moving during transport and will protect items from any shock occurring from contact with other packages.

Unit Per Box

CODE	Size cm	Nos. per Box	CODE	Size cm	Nos. per Box
23 26 51	60 × 110	15	**23 26 54**	100 × 140	15
52	85 × 120	12	**55**	100 × 185	10
53	85 × 220	8	**56**	100 × 220	10

Name of Mfr.: Bates Cargo - Pak ApS

Inflators for Dunnage Bag

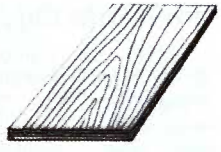
Suitable for use with all kinds of compressed air systems. Can inflate the largest dunnage bag in 30 seconds with this quick inflator.

Standard

Quick

23 26 61	Inflator for dunnage bag, Standard	Pc.
62	" Quick	"

Plywood



Two types of plywood are available, a common type and a waterproof type for marine use.

Unit Per Pc.

910 mm × 1,820 mm (3' × 6')		1,210 mm × 2,420 mm (4' × 8')	
CODE	Thickness mm	CODE	Thickness mm
Common Type			
23 27 01	2.7	**23 27 11**	2.7
02	3	**12**	3
03	4	**13**	4
04	5.5	**14**	5.5
05	9	**15**	9
23 27 06	12	**23 27 16**	12
07	15	**17**	15
08	18	**18**	18
09	21	**19**	21
10	24	**20**	24

Unit Per Pc.

910 mm × 1,820 mm (3' × 6')		1,210 mm × 2,420 mm (4' × 8')	
CODE	Thickness mm	CODE	Thickness mm
Water-proof Type			
23 27 21	2.7	**23 27 31**	2.7
22	3	**32**	3
23	4	**33**	4
24	5.5	**34**	5.5
25	9	**35**	9
23 27 26	12	**23 27 36**	12
27	15	**37**	15
28	18	**38**	18
29	21	**39**	21
30	24	**40**	24

30. Nails

Common Wire Nails

Flat type with a diamond driving point. Supplied by kilogram but usually packed four kilograms per box.

Unit Per kgs

CODE	Length mm	CODE	Length mm
Common Wire Nails			
23 27 51	10	**23 27 60**	50
52	13	**61**	65
53	16	**67**	70
54	19	**62**	75
55	22	**63**	90
23 27 56	25	**23 27 64**	100
57	32	**65**	125
58	38	**66**	150
59	45		
Brass Nails			
23 27 71	19	**23 27 75**	38
72	22	**76**	50
73	25	**77**	65
74	32	**78**	75
Copper Nails			
23 27 81	19	**23 27 83**	25
82	22	**84**	32

Copper Tacks

Made of Copper with flat heads and cut points.

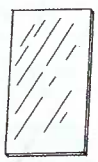
Unit Per kgs

CODE	Length mm	CODE	Length mm
23 27 91	12	**23 27 93**	20
92	16	**94**	25

31. Acryl Sheets

Transparent Acrylic Sheets

Made of break-resistant, plexiglass, clear acrylic plastic. Standard size is 1 mtr x 2 mtr. When ordering, please specify the required thickness.



Unit Per Sht.

CODE	Thickness	CODE	Thickness
23 28 31	2 mm	**23 28 34**	5 mm
32	3 "	**35**	6 "
33	4 "		

32. Waste/Rags

Wiping Waste

Available in a white or coloured type wiping waste. Consists of selected new cotton threads properly blended to obtain maximum absorption. Sold by kilograms but usually packed in bags of 50 kgs.

23 29 01	Waste, cotton white, sterilized	Kgs
02	Waste, cotton color, sterilized	"

Wiping Rags

Available in white, light-colour or coloured type rags. All material has been throughly washed and sterilized. One bundle contains five 4-kgs packets. Sold by kgs.

23 29 06	Rags, white, sterilized	kgs
07	Rags, white 100% cotton, sterilized	"
08	Rags, light colour sterilized	"
09	Rags, colour, sterilized	"

Paper Wiping Rags

A disposable paper rag designed for use in place of cotton rags.

Unit Per C/S

CODE	Size mm	Contents
23 29 11	450 × 290	4,000 shts/case
12	380 × 380	100 shts × 15 box/case

Roll Paper Wiping Rags

A sanitary paper wiping rag supplied in rolls for a variety of uses. There are many types available but the most common types have been selected and described below with respective specifications. The roller stands and dispensers are sold separately.

A-Tork

Designed for a wide variety of heavy duty wiping applications. A-Tork is a simpler, more efficient and more hygienic material than rags or cotton waste.

E-Tork

Specially developed to replace rags and cloths. E-Tork is for more detailed work such as the polishing of enamel paint or the cleaning of precision engineering parts. E-Tork is chemically pure and features an absorption rate as much as 4 times greater than cotton materials.

M-Tork & Mini Tork

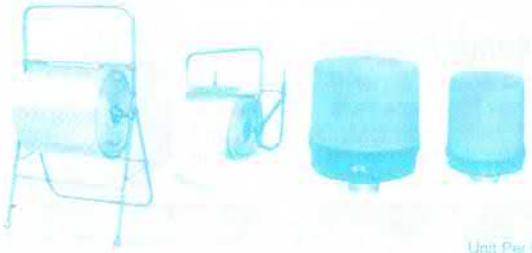
Intended principally as a towel wipe. This single ply material can be utilized for many other lightweight purposes such as cleaning kitchen counters, bathroom fixtures or first aid rooms. Has the same quality paper as the A-Tork type.

CODE	Type	Paper Size	Ply	Unit Per Box Rolls/Box
23 29 21	A-Tork	290 mm × 240 mtr	2	4 rolls
22	E-Tork	320 mm × 230 mtr	2	2 "
23	M-Tork	250 mm × 275 mtr	1	6 "
24	Mini-Tork	220 mm × 120 mtr	1	12 "

Name of Mfr.: SCA Hygiene Paper AB

Roll Paper Dispensers

Designed for use with the rolled paper rags mentioned above. Paper rags and rolls are sold separately.



Unit Per Pc.

CODE	Type	Size mm	Application
23 29 31	Floor stand	500 × 500 × 880	A-tork, E-Tork &
32	Wall stand	290 × 455 × 380	M-Tork
23 29 34	M-box	248 × 273 × 324	M-Tork
23 29 35	Mini-box	178 × 184 × 279	Mini-Tork

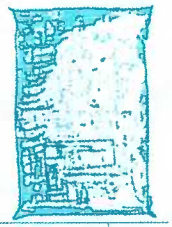
Sludge Bags

A thick Polypropylene bag for sludge disposal. Strengthened with inner Polyethylene bag to protect against leakage, and attached with string for binding the opening.

Size : width 600 mm x length 1,000 mm.

23 29 40	Sludge bag, polypropylene with inner, size 600 × 1,000 mm	Pc.

Used Gunny Bags



A coarse jute bag for use as a wiping rag, as dunnage, or as a trash disposal or container for sawdust, sand, or pellets. Size approx. 580 - 710 x 1,000 - 1,010 mm weighing approx. 0.8 - 1 kgs. Sold by individual pieces.

23 29 41	Gunny bag, used	Pc.

33. Used Drums/Used Cement Bags

Used Drums

A 200 ltr used drum which is cleaned for general purpose use.

23 29 42	Drum, used, 200 Ltr, cap type	Pc.
23 29 43	Drum, used, 200 Ltr, open lid type	Pc.

Used Cement Bags

Worn empty paper bag.

23 29 44	Used cement bag	Pc.

34. Sand/Cement/Blasting Sand

Sand

Used for scrubbing wood decks, extinguishing fires, and in mixing cement. Packed in a strong plastic bag containing approx. 25 kgs.

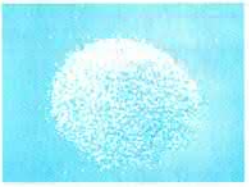
23 29 50	Sand, fine 25 kgs	Bag

Portland Cement

Used chiefly as a coating for tanks, bilges, etc. Supplied 25 kgs or 40 kgs per package in a durable paper bag.

CODE	Description	Contents kgs.	Unit
23 29 56	Portland cement	25	Bag
51		40	
23 29 57	Quick-dry cement	25	Bag
52		40	
23 29 53	White cement	20	Bag
54		40	
23 29 55	Drying agent	2	Can

Garnet Blasting Grit



Garnet Abrasive is derived from mined Almandine and Andradite mineral deposits, and most commonly used as a high-performance blast media, for the cleaning of metal and fibreglass structures. As an inert, non-toxic, natural mineral, it is also used on sites where water contamination is a concern. Various grain sizes are available. Packed in quantity of 25 kgs in strong paper bags or metric ton.

CODE	Mesh	Particle dia	Finish Surface Roughness	Unit
23 29 82	12-20	1,400-800 µm	80-100 µm	25 kg/bag
23 29 83				Ton
23 29 84	20-40	800-300 µm	50- 80 µm	25 kg/bag
23 29 85				Ton
23 29 88	30-60	600-250 µm	30- 50 µm	25 kg/bag
23 29 89				Ton

Blasting Copper Grit

Made from slag, a byproduct from a copper smelting refinery. Copper grit is less expensive than steel grit and works as effectively because the grits have pointed edges and contain over 30 % iron. Can be collected and reused. The size of the grit is 0.5 - 4.5 mm in mesh and it is packaged in quantities of 30 kgs in durable paper bags. Sold by metric ton.

Grid Size	Medium Grade		8 mesh		10 mesh		Fine Grade	
CODE	23 29 60	23 29 61	23 29 62	23 29 63	23 29 64	23 29 65	23 29 71	23 29 72
Unit	30 kgs	Ton	30 kgs	Ton	30 kgs	Ton	30 kgs	Ton
4 Mesh mm	5.00	-	-	-	-	-	-	-
8	2.50	5.9 %	0.1 %	-	-	-	-	-
16	1.18	25.9 %	40.1 %	27.2 %	-	-	-	-
20	0.85	51.8 %	54.2 %	55.4 %	-	-	-	-
30	0.60	12.2 %	4.6 %	13.8 %	21.9 %			

(to be continued)

Grid Size		Medium Grade		8 mesh		10 mesh		Fine Grade	
CODE		23 29 60	23 29 61	23 29 62	23 29 63	23 29 64	23 29 65	23 29 71	23 29 72
Unit		30 kgs	Ton	30 kgs	Ton	30 kgs	Ton	30 kgs	Ton
50	0.30	4.1 %		1.0 %		3.6 %		70.7 %	
60	0.25	0.1 %		0.1 %		0.1 %		3.0 %	
100	0.15	0.1 %		0.1 %		0.1 %		3.7 %	
140	0.10	-		-		-		0.5 %	
PAN		-		-		-		0.2 %	

Blasting Sand

Abrasive grains of sand for sandblasting which are economical for cleaning metal surfaces. Various grain sizes of silica are available. Packed in quantities of 30 kgs in strong paper bags. Sold by metric ton.

Unit Per Ton

CODE		23 29 66	23 29 67	23 29 68	23 29 69	23 29 70
Nominal Grain Size		No. 2	No. 3A	N. 3B	No. 4	No. 5
6 Mesh	3.25 mm	0.4 %	-	-	-	-
8	2.36	65.5	0.6%	-	-	-
10	1.70	33.0	58.8	-	-	-
14	1.18	0.1	40.1	52.4%	0.2%	-
20	0.85	-	0.4	45.2	21.9	0.2%
28	0.60	-	0.1	2.4	59.8	2.6
35	0.425	-	-	-	15.5	44.3
48	0.30	-	-	-	2.1	28.6
65	0.212	-	-	-	0.3	14.2
100	0.15	-	-	-	0.2	7.8
150	0.106	-	-	-	-	2.0
200	0.075	-	-	-	-	0.2
270	0.053	-	-	-	-	0.1

Dry Walnut Shell
for Turbo Charger Cleaner

Made of walnut shell and crushed into grit. Suitable to use for cleaning up the dirt sticks from nozzles and blades of turbocharger. There are several types of grain size and packed in 20 kgs paper bag. Please specify grit size when ordering.

CODE	Grit No.	Size μ
23 29 73	#20	840 - 1,190
74	#16	1,000 - 1,410
75	#14	1,190 - 1,680
76	#12	1,410 - 2,000
77	#10	1,680 - 2,380
23 29 78	# 8	2,000 - 2,830

35. Separation Nets/Covering Sheets

Cargo Separation Nets

Made of synthetic fibre mesh for cargo separation. Several kinds of net sizes and colours are available. The most common size is 5 x 6 mtrs. Please specify the quantity and colour required when ordering.

23 29 81	Cargo separation net 5 x 6 mtrs coloured	pc.

Burlap

A course jute cloth used on board a ship chiefly as a protective cover for items on deck or exposed cargo. The size of a bundle is approx. W 115 cm x L 100 mtrs. Weighs 300 grams per square meter.

Unit Per Mtr.

CODE	Width cm	Gauge	Weight Per Sq/Mtrs. grm
23 29 87	115	No. 6	300

Squared Polyethylene Sheets

Ready made square polyethylene sheet suitable for use protecting equipment on deck, covering rope coils which are exposed to sunlight or seawater, and covering interior floors, etc. during painting or while in dock. All sheetings have holes enforced with grommets for tying the sheets down or connecting sheets together. Blue coloured sheet will be supplied unless specified otherwise.

Unit Per Sht.

CODE	Size mtr	Wgt. sht kgs	CODE	Size mtr	Wgt. sht kgs
23 30 31	1.8 x 1.8	0.4	23 30 43	4.5 x 4.5	2.5
32	1.8 x 2.7	0.6	44	4.5 x 5.4	3.0
33	1.8 x 3.6	0.8	23 30 45	5.4 x 5.4	3.6
34	1.8 x 4.5	1.0	46	5.4 x 7.2	4.8
35	1.8 x 5.4	1.2	47	5.4 x 9.0	6.0
23 30 36	2.7 x 2.7	0.9			
37	2.7 x 3.6	1.2	23 30 48	7.2 x 7.2	6.4
38	2.7 x 4.5	1.5	49	7.2 x 9.0	8.0
39	2.7 x 5.4	1.8			
23 30 40	3.6 x 3.6	1.6	23 30 50	9.0 x 9.0	10.0
41	3.6 x 4.5	2.0			
42	3.6 x 5.4	2.4	23 30 51	10.0 x 10.0	12.4

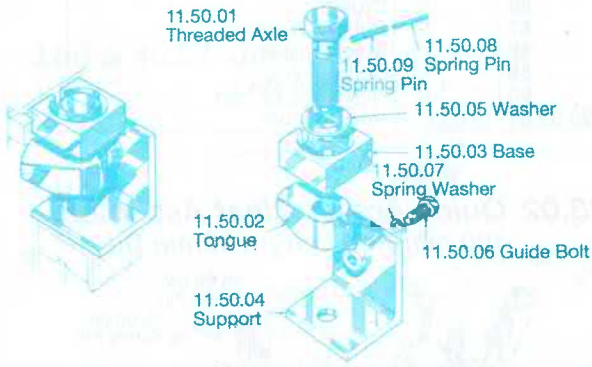
36. Hatch Cover Parts

MacGregor Hatch Cover Parts

As a wide variety of spare parts are available, code numbers have only been provided for the most commonly used parts for convenience. Before ordering, please clearly specify the following points to avoid unnecessary confusion and misdelivery.

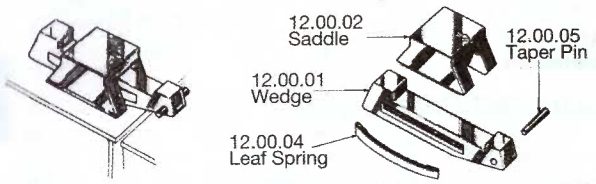
1. Part Name
2. Part Number
3. Name of Original Manufacturer
4. Shipyard Hull Number
5. Besides above, Necessary information if any

11.50 Flush Deck Cleat Assembly



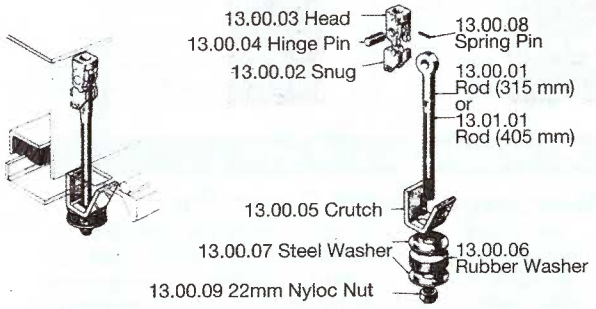
CODE	Item No.	Item	Unit
23 32 26	11.50	Flush Deck Cleat Assembly	Set
27	11.50.01	Threaded Axle	Pc.
28	02	Tongue	"
29	03	Base	"
30	04	Support	"
31	05	Washer	"
32	06	Guide Bolt	"
33	07	Spring Washer	"
34	08	Spring Pin	"
35	09	Spring Pin	"

12.00 Cross Joint Wedge Assembly



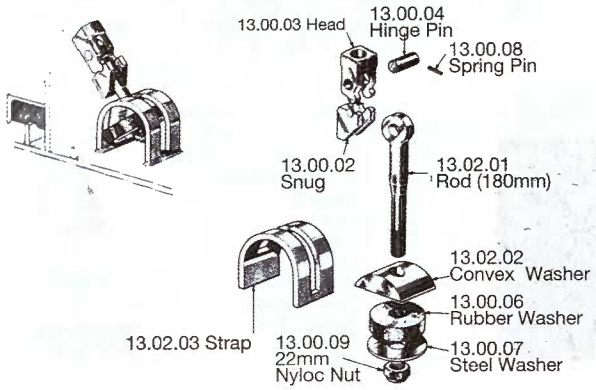
CODE	Item No.	Item	Unit
23 32 41	12.00	Cross Joint Wedge Assembly	Set
42	12.00.01	Wedge	Pc.
43	02	Saddle	"
44	04	Leaf Spring	"
45	05	Taper Pin	"

Quick Acting Cleat Assembly
13.00 315 mm Rod Length
13.01 405 mm Rod Length
Both 22 mm Dia.



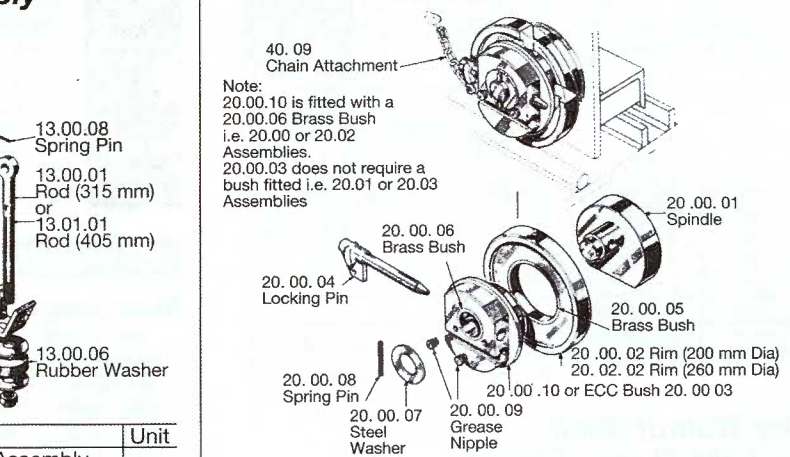
CODE	Item No.	Item	Unit
23 32 50	13.00	Quick Acting Cleat Assembly 315 mm	Set
23 32 51	13.01	Quick Acting Cleat assembly 405 mm	Set
23 32 52	13.00.01	Rod 315 mm	Pc.
53	02	Snug	"
54	03	Head	"
55	04	Hinge Pin	"
56	05	Crutch	"
57	06	Rubber Washer	"
58	07	Steel Washer	"
59	08	Spring Pin	"
60	09	Nyloc Nut 22 mm	"
23 32 61	13.01.01	Rod 405 mm	Set

13.02 Quick Acting Cleat Assembly
180 mm Rod Length 22mm Dia.



CODE	Item No.	Item	Unit
23 32 66	13.02	Quick Acting Cleat Assembly 180 mmL x 22 mmΦ	Set
23 32 53	13.00.02	Snug	Pc.
54	03	Head	"
55	04	Hinge Pin	"
57	06	Rubber Washer	"
58	07	Steel Washer	"
59	08	Spring Pin	"
60	09	Nyloc Nut 22 mm	"
67	02.01	Rod 180 mm	"
68	02	Convex Washer	"
69	03	Strap	"

Eccentric Wheel Assembly
20.00/20.01 200 mm Φ
20.02/20.03 260 mm Φ

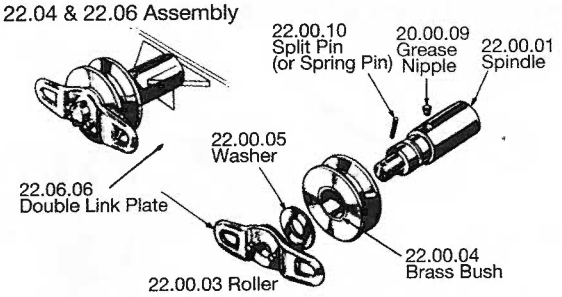


CODE	Item No.	Item	Unit
23 32 71	20.00	Eccentric Wheel Small Model Assembly 200 mm	Set
23 32 72	20.01	Eccentric Wheel for Wheel Load 2 tons max. Assembly 200 mm	Set
23 32 73	20.02	Eccentric Wheel for Wheel Load 5 tons max. Assembly 260 mm with Brass Bush	Set
23 32 74	20.03	Eccentric Wheel for Wheel Load 5 tons max. Assembly 260 mm without Brass Bush	Set
23 32 75	20.00.01	Spindle	Pc.
76	02	Rim 200 mm dia.	"
77	03	Eccentric Bush	"
78	04	Locking Pin	"
79	05	Brass Bush	"
80	06	Brass Bush	"
81	07	Steel Washer	"
82	08	Spring Pin	"
83	09	Grease Nipple	"
84	10	Eccentric Bush	"
85	02.02	Rim 260 mm dia.	"
23 32 86	40.09	Chain Attachment	Pc.

22.04 Balancing Roller Assembly
2-1/2-4 Tons

For normal Single Pull and Magronest Covers 2-1/2-4 tons weight with Double Link Plate.

22.04 & 22.06 Assembly

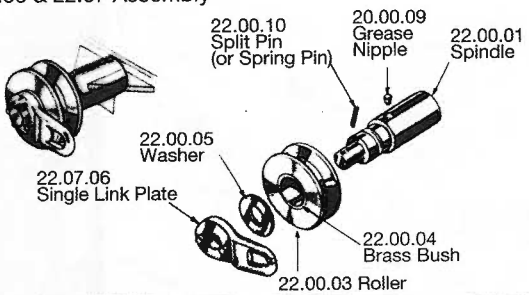


CODE	Item No.	Item	Unit
23 32 91	22.04	Balancing Roller Assembly 2-1/2-4 tons with double link plate	Set
23 32 83	20.00.09	Grease Nipple	Pc.
92	22.00.01	Spindle	"
93	03	Roller	"
94	04	Brass Bush	"
95	05	Washer	"
96	10	Spring Pin	"
97	06.06	Double Link Plate	"

22.05 Balancing Roller Assembly
2-1/2-4 Tons

For normal Single Pull and Magronest Covers 2-1/2-4 tons weight with Single Link Plate.

22.05 & 22.07 Assembly

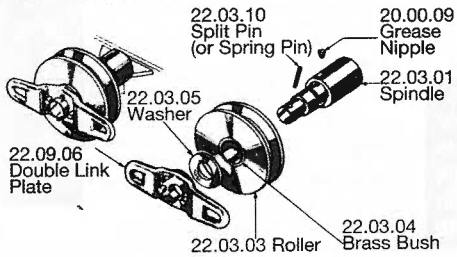


CODE	Item No.	Item	Unit
23 33 01	22.05	Balancing Roller Assembly 2-1/2-4 tons with single link plate	Set
23 32 83	20.00.09	Grease Nipple	Pc.
92	22.00.01	Spindle	"
93	03	Roller	"
94	04	Brass Bush	"
95	05	Washer	"
96	10	Spring Pin	"
23 33 02	07.06	Double Link Plate	"

22.09 Balancing Roller Assembly
Above 4 Tons

For normal Single Pull and Magronest Covers above 4 tons weight with Double Link Plate.

22.09 & 22.12 Assemblies

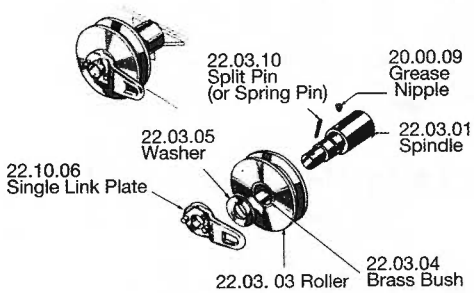


CODE	Item No.	Item	Unit
23 33 06	22.09	Balancing Roller Assembly 4 tons with double link plate	Set
23 32 83	20.00.09	Grease Nipple	Pc.
23 33 07	22.03.01	Spindle	"
08	03	Roller	"
09	04	Brass Bush	"
10	05	Washer	"
11	10	Spring Pin	"
12	09.06	Double Link Plate	"

22.10 Balancing Roller Assembly
Above 4 Tons

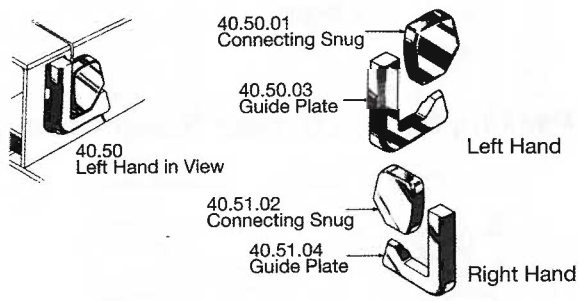
For normal Single Pull and Magronest Covers above 4 tons weight with Single Link Plate.

22.10 & 22.11 Assemblies



CODE	Item No.	Item	Unit
23 33 16	22.10	Balancing Roller Assembly 4 tons with single link plate	Set
23 32 83	20.00.09	Grease Nipple	Pc.
23 33 07	22.03.01	Spindle	"
08	03	Roller	"
09	04	Brass Bush	"
10	05	Washer	"
11	10	Spring Pin	"
17	22.10.06	Single Link Plate	"

40.50 & 40.51 Junction Pieces
Left & Right Hand



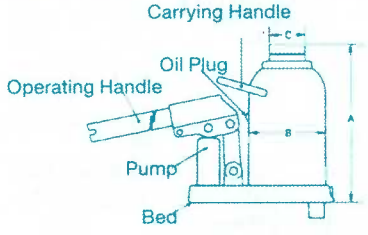
CODE	Item No.	Item	Unit
23 33 21	40.50	Junction Piece, Left Hand	Set
22	40.50.01	Connecting Snug, Left Hand	Pc.
23	03	Guide Plate	Pc.
24	40.51	Junction Piece, Right Hand	Set
25	51.02	Connecting Snug, Right Hand	Pc.
26	51.04	Guide Plate	Pc.

Shackles for MacGregor Hatch Cover

Unit Per Pc.

CODE	Part No.	Slize mm A	B	C	D	Use for Towing Chain
23 33 31	4005	80	16	18	20	14 Φmm
32	06	53	16	18	20	14 "
33	07	116	22	26	25	18 "
34	08	74	22	26	25	18 "
35	KL-2	65	19	16	25	13 "
36	3	60	19	16	25	13 "
37	4	55	19	16	25	13 "
38	60	60	16	18	20	13 "
39	70	70	16	18	20	13 "
23 33 40	K-95	95	22	26	25	16-19 "
41	105	105	22	26	25	16-19 "

Oil Jacks for MacGregor Hatch Cover



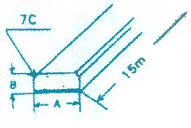
Unit Per Pc.

CODE	Part No.	Slize mm A	B Φ	C Φ	Stroke	Capacity ton
23 33 51	MCH-5B	138	63.5	32	60	5
52	7B	150	88.3	42	60	7
53	7C	240	88.3	42	150	7
54	7F	180	-	-	100	7
55	10B	159	100.8	48	60	10

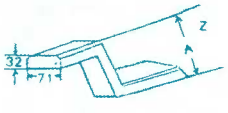
Remark: Mounting Beds for above Jacks are available as optional attachments. Before ordering, please ask for more details.

Packing for MacGregor Hatch Cover

Sponge Packing



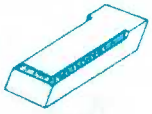
Corner Packing



CODE	Part No.	Description	Unit
23 33 62	-	Sponge packing, A-71 × B-32	Mtr
63		" A-92 × B-50	"
23 33 67	Z112	Corner packing, 32×71×A-112	Pc.
68	Z132	" 32×71×A-132	"

Various Types of Rubber Pads

Mk 8 5-1/2"x 2-3/4"x1-1/2"



(71x32mm)

(71x32mm)

Mk 9 (71x32mm) Terminal Piece

MM05 (Mk 1) Two-way Joint

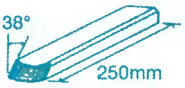
(71x32mm) L/Hand

(71x32mm)

10.00.09 (MM04A) Three-way Pad

MM07A (Mk 2) Left or Right Hand

10.00.10 End Piece



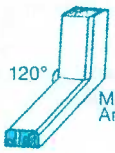
(71x32mm)

(71x32mm)

Mk 7 90° "L" Shaped

MM02A (Mk 4) 90° Flat Angle Joint

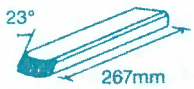
(71x32mm)



(94x50mm)

MM09 Angle Joint

MM06 (Mk 3) Terminal Piece



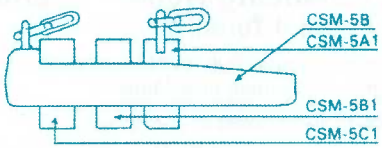
(71x32mm)

(94x50mm)

MM10 Flat End Joint

Aboves are illustrated only for reference and not coded.

Hatch Wedges



CODE	Item No.	Item	Unit
23 33 81	CS -5D	Wedge Assembly	Set
82	CSM-5B	Wedge	Pc.
83	CSM-5A1	Saddle	"
84	CSM-5B1	"	"
85	CSM-5C1	"	"
86	CSH-5	Wedge Holder	"

Comparison Table for Hatch Cover Parts

CODE	Description	Parts No.		Unit
		MacGregor	Ascargo	
23 32 26	Hatch Flush Deck Cleat Assembly	#11.50	#25	Set
27	Hatch Threaded Axle	#11.50.01	#25.1	Pc.
28	Hatch Tongue	#11.50.02	#25.2	Pc
29	Hatch Base	#11.50.03	#25.3	Pc.
30	Hatch Support	#11.50.04	#25.4	Pc
31	Hatch Washer	#11.50.05	#25.5	Pc.
32	Hatch Guide Bolt	#11.50.06	#25.6	Pc.
33	Hatch Spring Washer	#11.50.07	#25.7	Pc.
34	Hatch Spring Pin	#11.50.08	#25.8	Pc.
35	Hatch Spring Pin	#11.50.09	#25.9	Pc.
23 32 41	Hatch Cross Joint Wedge Assembly	#12.00	#7	Set
42	Hatch Wedge	#12.00.01	#7.3	Pc.
43	Hatch Saddle	#12.00.02	#7.1	Pc.
44	Hatch Leaf Spring	#12.00.04	#7.2	Pc.
45	Hatch Taper Pin	#12.00.05	#7.4	Pc.
23 32 50	Hatch Quick Acting Cleat Assembly 315mm	#13.00	#17	Set
51	Hatch Quick Acting Cleat Assembly 405mm	#13.01	#18	Set
52	Hatch Rod 315mm	#13.00.01	#17.1	Pc.
53	Hatch Snug	#13.00.02	#17.2 / #18.2	Pc.
54	Hatch Head	#13.00.03	#17.3 / #18.3	Pc.
55	Hatch Hinge Pin	#13.00.04	#17.4 / #18.4	Pc.
56	Hatch Crutch	#13.00.05	#17.5 / #18.5	Pc.
57	Hatch Rubber Washer	#13.00.06	#17.6 / #18.6	Pc.
58	Hatch Steel Washer	#13.00.07	#17.7 / #18.7	Pc.
59	Hatch Spring Pin	#13.00.08	#17.8 / #18.8	Pc.
60	Hatch Nylock Nut 22mm	#13.00.09	#17.9 / #18.9	Pc.
61	Hatch Rod 405mm	#13.01.01	#18.1	Set
23 32 66	Hatch Quick Acting Cleat Assembly 180mm	#13.02	#20	Set
53	Hatch Snug	#13.00.02	#20.2	Pc.
54	Hatch Head	#13.00.03	#20.3	Pc.
55	Hatch Hinge Pin	#13.00.04	#20.4	Pc.
57	Hatch Rubber Washer	#13.00.06	#20.6	Pc.
58	Hatch Steel Washer	#13.00.07	#20.7	Pc.
59	Hatch Spring Pin	#13.00.08	#20.8	Pc.
60	Hatch Nylock Nut 22mm	#13.00.09	#20.9	Pc.
67	Hatch Rod 180mm	#13.02.01	#20.1	Pc.
68	Hatch Convex Washer	#13.02.02	#20.10	Pc.
69	Hatch Strap	#13.02.03	#20.5	Pc.
23 32 71	Hatch Eccentric Wheel Model Ass'y 200mm	#20.00	#26	Set
72	Hatch Eccentric Wheel	#20.01	-	Set
73	Hatch Eccentric Wheel w/Bush	#20.02	#27	Set
74	Hatch Eccentric Wheel w/o Bush	#20.03	-	Set
75	Hatch Spindle	#20.00.01	#26.1	Pc.
76	Hatch Rim 200mm dia	#20.00.02	#26.2	Pc.
77	Hatch Eccentric Bush	#20.00.03	#26.3	Pc.
78	Hatch Locking Pin	#20.00.04	#26.4	Pc.
79	Hatch Brass Bush	#20.00.05	#26.5	Pc.
80	Hatch Brass Bush	#20.00.06	#26.6	Pc.
81	Hatch Steel Washer	#20.00.07	#26.7	Pc.
82	Hatch Spring Pin	#20.00.08	#26.8	Pc.
83	Hatch Grease Nipple	#20.00.09	#26.9	Pc.
84	Hatch Eccentric Bush	#20.00.10	#26.3	Pc.
85	Hatch Rim 260mm dia	#20.02.02	#27.2	Pc.
86	Hatch Chain Attachment	#40.09	#26.10	Pc.
23 32 91	Hatch Roller Ass'y 2-1/2-4ton w/Double Link Plate	#22.04	#31	Set
83	Hatch Grease Nipple	#20.00.09	#31.8	Pc.
92	Hatch Spindle	#22.00.01	#31.1	Pc.
93	Hatch Roller	#22.00.03	#31.2	Pc.
94	Hatch Brass Bush	#22.00.04	#31.6	Pc.
95	Hatch Washer	#22.00.05	#31.5	Pc.
96	Hatch Spring Pin	#22.00.10	#31.7	Pc.
97	Hatch Double Link Plate	#22.06.06	#31.3	Pc.

CODE	Description	Parts No.		Unit
		MacGregor	Ascargo	
23 33 01	Hatch Roller Ass'y w/Single Plate	#22.05	-	Set
23 32 83	Hatch Grease Nipple	#20.00.09	#31.8	Pc.
92	Hatch Spindle	#22.00.01	#31.1	Pc.
93	Hatch Roller	#22.00.03	#31.2	Pc.
94	Hatch Brass Bush	#22.00.04	#31.6	Pc.
95	Hatch Washer	#22.00.05	#31.5	Pc.
96	Hatch Spring Pin	#22.00.10	#31.7	Pc.
23 33 02	Hatch Single Link Plate	#22.07.06	#31.4	Pc.
23 33 06	Hatch Balance Roller Ass'y 4ton w/Double Link Plate	#22.09	#32	Set
23 32 83	Hatch Grease Nipple	#20.00.09	#32.8	Pc.
23 33 07	Hatch Spindle	#22.03.01	#32.1	Pc.
08	Hatch Roller	#22.03.03	#32.6	Pc.
09	Hatch Brass Bush	#22.03.04	#32.2	Pc.
10	Hatch Washer	#22.03.05	#32.5	Pc.
11	Hatch Spring Pin	#22.03.10	#32.7	Pc.
12	Hatch Double Link Plate	#22.09.06	#32.3	Pc.
23 33 16	Hatch Balance Roller Ass'y w/Single Plate	#22.10	-	Set
23 32 83	Hatch Grease Nipple	#20.00.09	#32.8	Pc.
23 33 07	Hatch Spindle	#22.03.01	#32.1	Pc.
08	Hatch Roller	#22.03.03	#32.6	Pc.
09	Hatch Brass Bush	#22.03.04	#32.2	Pc.
10	Hatch Washer	#22.03.05	#32.5	Pc.
11	Hatch Spring Pin	#22.03.10	#32.7	Pc.
17	Hatch Single Link Plate	#22.10.06	#32.4	Pc.
23 33 21	Hatch Junction Piece Left Hand	#40.50	#35	Set
22	Hatch Connecting Snug Left Hand	#40.50.01	#35.1.I	Pc.
23	Hatch Guide Plate Left Hand	#40.50.03	#35.2.I	Pc.
24	Hatch Junction Piece Right Hand	#40.51	-	Set
25	Hatch Connecting Snug Right Hand	#40.51.02	#35.1.D	Pc.
26	Hatch Guide Plate Right Hand	#40.51.04	#35.2.D	Pc.
23 33 31	Shackle for Hatch	#4005	#4005	Pc.
32	Shackle for Hatch	#4006	#4006	Pc.
33	Shackle for Hatch	#4007	#4007	Pc.
34	Shackle for Hatch	#4008	#4008	Pc.
35	Shackle for Hatch	KL-2	KL-2	Pc.
36	Shackle for Hatch	KL-3	KL-3	Pc.
37	Shackle for Hatch	KL-4	KL-4	Pc.
38	Shackle for Hatch	KL-60	KL-60	Pc.
39	Shackle for Hatch	KL-70	KL-70	Pc.
40	Shackle for Hatch	KL-95	KL-95	Pc.
41	Shackle for Hatch	KL-105	KL-105	Pc.
23 33 51	Oil Jack for Hatch	#MCH-5B	#MCH-5B	Pc.
52	Oil Jack for Hatch	#MCH-7B	#MCH-7B	Pc.
53	Oil Jack for Hatch	#MCH-7C	#MCH-7C	Pc.
54	Oil Jack for Hatch	#MCH-7F	#MCH-7F	Pc.
55	Oil Jack for Hatch	#MCH-10B	#MCH-10B	Pc.
23 33 62	Sponge Packing A-71XB-32	-	-	Mtr
63	Sponge Packing A-92XB-50	-	-	Mtr
67	Corner Packing 32X71XA112	Z-112	Z-112	Pc.
68	Corner Packing 32X71XA132	Z-132	Z-132	Pc.
23 33 XX	Terminal Piece 5-1/2"X2-3/4"X1-1/2"	Mk8	#43.1	Pc.
23 33 XX	Terminal Piece 71X32mm	Mk9	#43.2	Pc.
23 33 XX	Two-way Joint 71X32mm	MM05 (Mk 1)	#43.3	Pc.
23 33 XX	Three-way Pad 71X32mm	#10.00.09 MM04A	#43.4	Pc.
23 33 XX	Left or Right Hand	MM07A (Mk 2)	#43.5	Pc.
23 33 XX	End Piece 71X32X250mm	10.00.10	#43.7	Pc.
23 33 XX	90deg 'L' Shaped 71X32mm	Mk7	#43.6	Pc.
23 33 XX	90deg Flat Angle Joint 71X32mm	MM02A (Mk 4)	#43.9	Pc.
23 33 XX	Angle Joint 94X50mm	MM09	#43.8	Pc.
23 33 XX	Terminal Piece 71X32X267mm	MM06 (Mk 3)	#43.10	Pc.
23 33 XX	Flat End Joint 94X50mm	MM10	#43.11	Pc.

37. Emergency Towing Arrangement

Emergency Towing Arrangement

According to the revised regulation of the 1974 SOLAS in 1994, new and existing oil tankers, chemical tankers and gas carriers of 20,000 dead weight ton and above shall be fitted with an emergency towing arrangement.

For new tankers constructed on or after 1st Jan. 1996 shall be fitted and for existing tankers constructed before 1st Jan. 1996 shall be fitted at the first scheduled dry-docking after 1st Jan. 1996, but not later than 1st Jan. 1999.

There are four types of equipment according to the ship's tonnage and installing location as following table.

Type	Dead Weight Tonnage	Location	Model for Reference
1	20,000 - 49,999	Forward	TK20F
2		Aft.	TK20A
3	50,000 <	Forward comply with OCIMF	TK40F-KS (Bar Type)
			TK40F-CS (Tongue Type)
4		Aft.	TK40A

The design and construction of the towing arrangements shall be approved by the adminstration, based on the guidelines developed by the organization and these components should not be rigged on a ship separately.

Major Components of the Towing Arrangements

Items	Forward	Aft.
Pick-up Gear	Option	Required
Towing Pennant	Option	Required
Chafing Gear	Required	Depending on design
Fairlead	Required	Required
Strongpoint	Required	Required
Roller Pedestal	Required	Depending on design

Substance of the IMO Guideline

1. Ready availability of Towing Arrangements

   The aft emergency towing arrangement should be prerigged and be capable of being deployed in a controlled manner in harbour conditions in not more than 15 minutes. The forward emergency towing arrangement should be capable of being deployed in harbour conditions in not more than one hour.

2. Strength of the Towing Components

   Towing components should have a working strength of at least 1,000 kN for tankers of 20,000 dwt and over but less than 50,000 dwt and at least 2,000 kN for tankers of 50,000 dwt and over (working strength half of ultimate strength).

3. Length of Towing Pennant

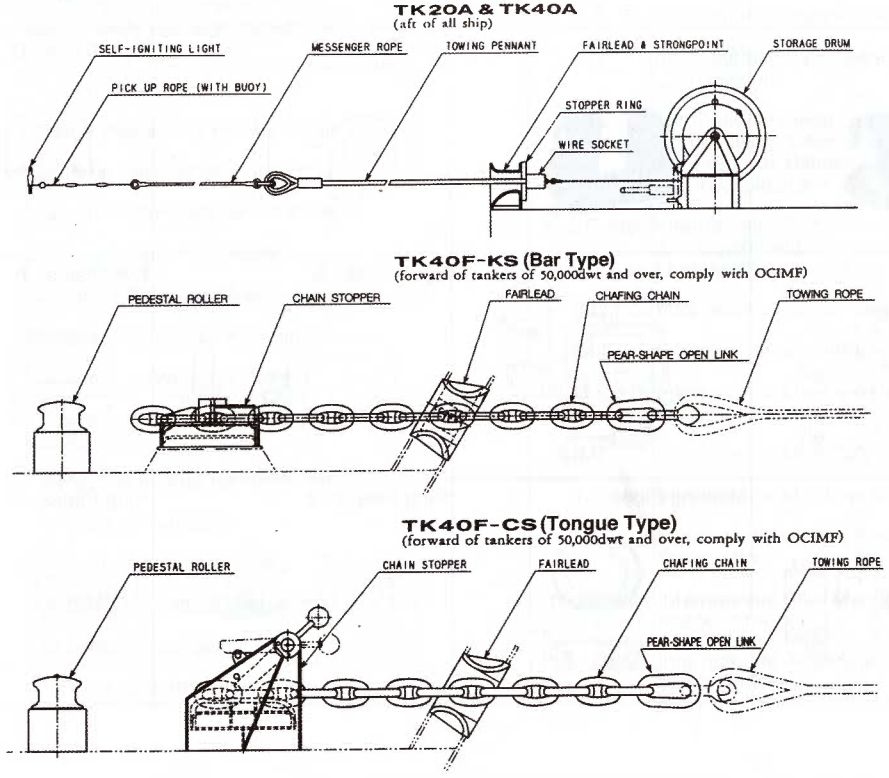
   The towing pennant should have a length of at least twice the lightest seagoing ballast freeboard at the fairlead plus 50 meters.

4. Length of Chafing Chain

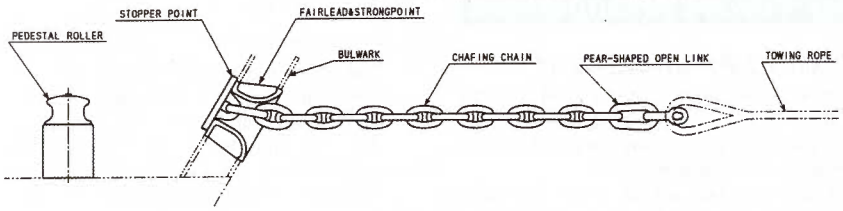
   The chafing chain shall extend from the strongpoint to a point at least three meters beyond the fairlead.

5. Fairleads

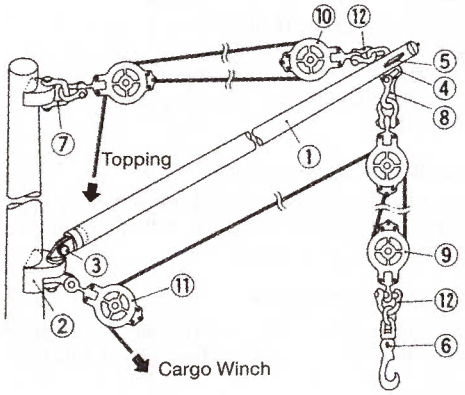
   The fairlead should give adequate support for the towing pennant and chafing gear during towing operation which means bending 90 degrees to port and to starboard side and 30 degrees vertical downwards.
   The bending ratio (towing pennant bearing surface diameter to towing pennant diameter) should be not less than 7 : 1.



TK20F
(forward of tankers of 20,000dwt and over but less then 50,000dwt)

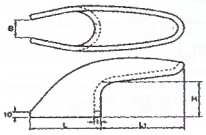
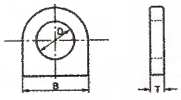
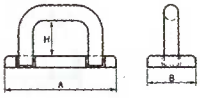
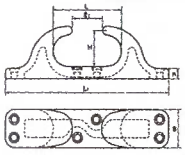
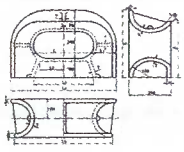
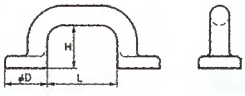
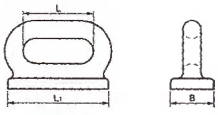
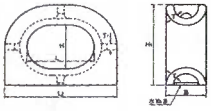
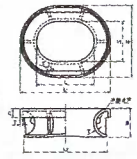
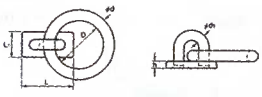
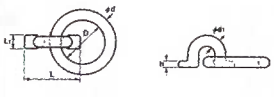


Mast Hardware



No.	Decriptions
1	Boom
2	Gooseneck Bracket
3	Derrick Boom Heel Fitting
4	Derrick boom Head Fitting
5	Stay Wire Fitting
6	Cargo Hook
7	Topping Bracket
8	Shackle
9	Cargo Block for Cargo Hold
10	Cargo Block for Topping Lift
11	Cargo Block for Cargo Hold Guide
12	Shackle

Marine Fittings

Fairleaders	Open Rollers	Guy Cleats 	Bollards
Closed Rollers	Deck End Rollers	Eye Plates - C 	Eye Plates - D 
Open Chocks 	Panama Chocks 	Eye Plates - E 	Eye Plates - F 
Closed Chocks 	Mooring Pipes 	Ring Plates - B 	Ring Plates - D 

Full Name of Organizations and Regulations

A	ABS	American Bureau of Shipping
	AFNOR	Association Francaise de Normalisation
	AISI	American Iron and Steel Institute
	ANSI	American National Standard Institute
	APEC	Asia-Pacific Economic Cooperation
	API	American Petroleum Institute
	ASEAN	Association of South-East Asian Nations
	ASME	American Society of Mechanical Engineering
	ASTM	American Society for Testing and Materials
	ATEX	Atmospheres Explosibles
	AWS	American Welding Sciety
B	BAM	Federal Institute for Materials Research and Testing
	BC Code	Code of Safe Practices for Solid Bulk Cargoes
	BSI	British Standard Institute
	BV	Bureau Veritas
C	CAN	National Standards of Canada
	CCC	China Compulsory Certification
	CCS	China Classification Society
	CEN	European Committee for Standardization
	CENELEC	European Committee for Electrotechnical Standardization
	COLREG	International Regulations for Preventing Collisions at Sea
	CPR	Cardio-Pulmonary Resuscitation
	CRS	Croation Resister of Shipping
	CSA	Canadian Standard Association
	CSO	Company Security Officer
	CSR	Common Structure Rules
	CSR	Corporate Social Responsibility
	CSR	Continuous Synopsis Record
D	DEC	Department of Environmental Conservation
	DIN	Deutsches Institut fur Normung
	DNV	Det Norske Veritas
	DOC	Document of Compliances
	DOT	(US) Department of Transportation
	DTD	Document Type Definition
E	EC	European Communities
	ECE	Economic Commission for Europe
	EEC	European Economic Community
	EFTA	European Free Trade Association
	EMC	Electro-Magnetic Compatibility Directive
	EN	Europe Norm (European Standards)
	EPA	Environmental Protection Agency
	ETSI	European Telecommunications Standard Institute
	EU	European Union
F	FCC	Federal Communications Commission
	FIMKO	Finland Material Kontrol
G	GL	Germanischer Lloyd
	GMDSS	Global Maritime Distress and Safety System
H	HD	Harmonization Document
	HK	The Ship Equipment Inspection Society of Japan
I	IACS	International Association of Classification Societies
	IATA	International Air Transport Association
	IBIA	The International Bunker Industry Association
	ICHCA	International Cargo Handling Coordinating Association
	ICS	International Chamber of Shipping
	ID	Identification
	IEA	International Energy Agency
	IEC	International Electrotechnical Commission
	IECEx Schme	International Electrotechnical Commission Scheme for Certification to Standards Relating to Equipment for use in Explosive Atmospheres
	IGC Code	International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
	ILO	International Labour Organization
	IMB	International Maritime Bureau
	IMDG Code	International Maritime Dangerous Goods Code
	IMF	International Monetary Fund
	IMO	International Maritime Organization
	IMPA	International Marine Purchasing Association
	Intermanager	International Ship Managers' Association
	INTERTANKO	International Association of Independent Tanker Owners

	ISM CODE	International Management Code for the Safe Operation of Ship and for Pollution Prevention Code (International Safety Management Code)
	ISO	International Organization for Standard
	ISPM	International Plant Protection Convention
	ISPS Code	the International Code for the Security of Ships and of Port Facilities (the International Ship and Port Facility Security Code)
	ISSA	International Ship Suppliers Association
	ITU	International Telecommunication Union
J	JETRO	Japan External Trade Organization
	JICA	Japan International Cooperation Agency
	JMSA	All Japan Marine Suppliers Aassociation
	JIS	Japanese Industrial Standard
	JSA	The Japanese Shipowners' Association
	JSMEA	Ship Machinery and Equipment Association
K	KRS	Korean Register of Shipping
L	LRS LSA Code	Lloyd's Register of Shipping International Life-Saving Appliance Code
M	MARPOL	International Convention for the Prevention of Pollution from Ships
	MCA	The UK Maritime and Coastguard Agency
	MED	Maritime Equipment Directive
	MIL	Military Specifications and Standards
	MSC	Maritime Safety Committee
N	NAFTA	North American Free Trade Agreement
	NEMA	National Electrical Manufacturers Association
	NFPA	National Fire Protection Association
	NHTSA	National Highway Traffic Safety Administration
	NK	Nippon Kaiji Kyokai
	NKKK	Nippon Kaiji Kentei Kyokai
	NSF	National Sanitation Foundation
O	OCIMF	Oil Companies International Marine Forum
	OECD	Organization for Economic Co-operation and Development
	OPA 90	Oil Pollution Act of 1990
	OPEC	Organization of Petroleum Exporting Countries
	OSHA	Occupational Safety and Health Administration
P	PFSO	Port Facility Security Officer
	PFSP	Port Facility Security Plan
	PSC	Port State Control
R	RINa	Registro Italiano Navale
S	SEMCO	Svenska Elektriska Materialkontroll Anstalten
	SEV	Sweizerischer Elektrotechnischer Verein
	SMC	Safety Management Certificate
	SMS	Safety Management System
	SOLAS	International Convention for the Safety of Life at Sea
	SSA	Ship Security Assessment
	SSAS	Ship Security Alert System
	SSI	Ship Security Information
	SSO	Ship Security Officer
	SSP	Ship Security Plan
	STCW	The International Convention on Standards of Training, Certification and Watchkeeping and Certification for Seafares
T	TC	Technical Committee
U	UEL	Upper Explosive Limit
	UL	Underwriters Laboratories, Inc.
	UNCITRAL	United Nations Commission on International Trade Law
	USCG	United States Coast Guard
V	VDE	Verband Deutscher Elektrotechniker
W	WCO	World Customs Organization
	WHO	World Health Organization
	WTO	World Trade Organization

Requirement of Certificate

Please mention on your request for cargo handling gear such as shackles, turnbuckles, cargo blocks, chains, etc. if you require a certificate, and specify which type of certificate: Class / Factory / Manufacturer, etc.

25
MARINE PAINT

Guidance of Marine Paint P. 25-1	Marine Paint Comparison Table P. 25-2 ~ 7
Miscellaneous Paint P. 25-7 ~ 8	Varnish, Oil, Etc. P. 25-8
Latest Fouling Control Coatings P. 25-8 ~ 9	Coatings P. 25-9 ~ 12

Marine Paint

A wide range of products from different manufacturers are available. Some points to pay attention to in the painting process are described as follows.

1) Method of surface preparation

If the pretreatment of steel is insufficient, it is not possible to expect satisfactory results in the paint application. The main surface preparation methods are listed below as a reference.

Blast Cleaning

Sand blast	Shot blast	Vacuum blast
Mill scales, rust and harmful substances can be completely removed.		
Surface with complicated configurations can also be treated.	Efficient treatment can be performed.	Scattering of dust is limited.

Power Tool Cleaning

Disc sander	Power brush	Tube cleaner
Rust removing and cleaning can be efficient performed with relatively little effort.		

Hand Tool Cleaning

Scraper	Hammer
Handling is very simple and easy.	

Chemical Cleaning

Picking
Mill scales and rust can be completely removed. Picking is suitable for treatment of complicated configurations.

2) Primary surface preparation

1. Mill scales, rust and other foreign matters are to be removed to the grade of near white by blast cleaning.
2. After the blast cleaning, all blast abrasives and dust on the steel surfaces must be completely removed.
3. The surfaces will return to rust within a short time. Therefore it is necessary to apply a shop primer immediately.

3) Shop primer

Rust will return to the surfaces within a short time so it is necessary to apply a shop primer immediately.

4) Secondary surface preparation

Secondary surface preparation should be performed before painting because the surface of steel plates that have been coated with shop primer will be damaged by fusion cutting, welding, distortion and exposure to corrosive atmospheres.

5) Storage stability

When paints are stored outdoors, they will deteriorate in a shorter period. It is therefore recommended to store paints indoors in a cool place.

6) Painting with an airless sprayer

When paint is being applied by an airless sprayer, it is necessary to select suitable painting equipment. The following table provides a guide in the selection of airless sprayers.

Guide Table for the selection of Airless Paint Sprayers

Pressure Ratio	23:1	30:1	45:1
Max. Pressure of Nozzle	160 kg/cm^2	210 kg/cm^2	300 kg/cm^2
Max. Pressure of Air Supply	7 kg/cm^2	7 kg/cm^2	6.6 kg/cm^2
Max. Discharge Quality	1.9 ltr/min	11.4 ltr/min	12.6 ltr/min
Application	General finish coating, anti-corrosive paint, etc.	Chlorinated rubber paint, epoxy resin paint, etc.	Epoxy resin paint, tar epoxy resin paint, high viscosity type paint, etc.

7) Atmospheres in which it is not suitable to paint

1. When the atmospheric pressure is less than 5°C.
2. When there is high humidity.
3. When there is a possibility of bubbling because the surface is scorched by the sun.
4. When there is a possibility that moisture, sand, dust, or other foreign matter will adhere to the paint while it is still wet.

8) Ventilation

It is required that the space being painted is properly ventilated to avoid the possible risk of ignition of paint or gasoline fumes and explosion.

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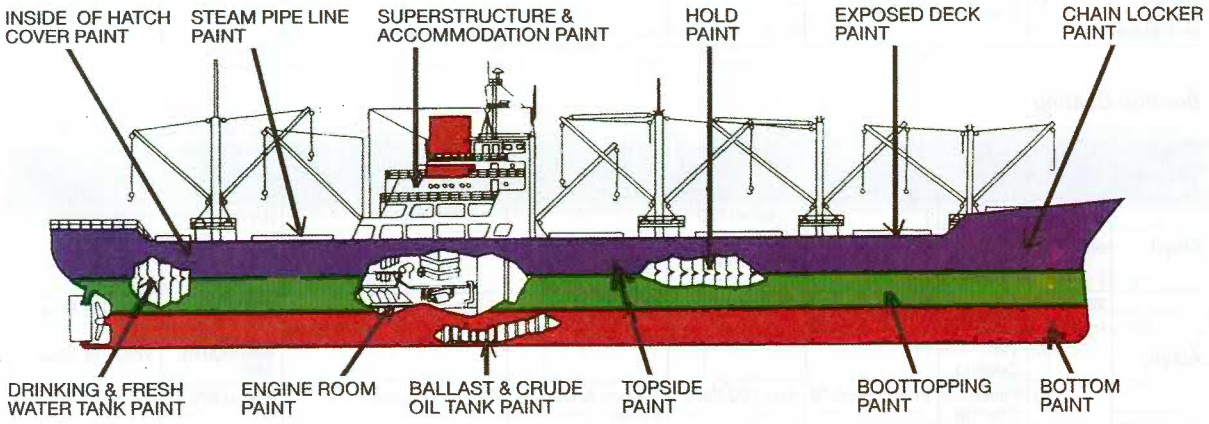
Marine Paint Coating Chart



INTERNATIONAL MARINE PURCHASING ASSOCIATION

Marine Paint Comparison Table

The following tables show a comparison of paints from major paint manufacturers of the world. Listed here are typical standard examples. Some may differ depending on the trading condition, expected life, etc. Please consult with the paint manufacturer before making your final decision. Please specify the following points when ordering.

For example

1. Representative code : 25 02 81
2. Where to be applied : Boottop coating
3. Type of system : Alkyd
4. Kind of paint : Anti-corrosive
5. Manufacturer's name : _____
6. Brand name : _____
7. Colour : _____
8. Quantity : _____ltr

Bottom/Vertical Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
TBT Free CDP Anti-fouling	**25 16 41**	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87 Aluminium	IDCP 362	Weg Tar Free 712
	42	Tie-Coat	Intergard 263	Bannoh 1500SZ	-	QD AC HB	IDepoguard 363	Weg Tie Coat
	43	Anti-fouling	Interspeed 6400/6200	Marine Star Flat S	Bioflex 800	C-Ruban AF HP	IDleap 340	Weg Tin Free 805
TBT Free SPC Anti-fouling	**25 16 45**	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87 Aluminium	IDCP 362	Weg Tar Free 712
	46	Tie-Coat	Intergard 263	Bannoh 1500SZ	-	QD AC HB	IDepoguard 363	Weg Tie Coat
	47	Anti-fouling	Interswift 6800 HS/6600 Intercept 7000	Sea Grandprix 660HS	Ecoloflex SPC 200Z	Seaqueen/Seaforce	IDquick 755	Weg Ecomarine
TBT Free Self Polishing Copoly-mer A/F (for Coastal Vessels)	**25 16 71**	Anti-corrosive	IIntershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87 Aluminium	IDCP 362	Weg Tar Free 712
	72	Tie-Coat	Intergard 263	Bannoh 1500SZ	-	QD AC HB	IDepoguard 363	Weg Tie Coat
	73	Anti-fouling	Intersmooth 360 SPC 7670 SPC	Sea Grandprix 2000	Ecoloflex SPC 600	Takata Quantum for Coastal Vessel/Takata LLL No. 100	IDpoly 460 SPC	Weg Ecoloflex SPC 200
TBT Free Self Polish-ing Copoly-mer A/F (for Deep Sea Vessels)	**25 16 75**	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87 Aluminium	IDCP 362	Weg Tar Free 712
	76	Tie-Coat	Intergard 263	Bannoh 1500SZ	-	QD AC HB	IDepoguard 363	Weg Tie Coat
	77	Anti-fouling	Intersmooth 7460HS SPC 7475Si SPC Intercept 8500LPP	Sea Grandprix 500M HS	Ecoloflex SPC 150 HyB	Takata Quantum/Takata Quan-tum LLL	IDpoly 560 SPC	Weg Ecoloflex SPC 100
Silicon Foul Release Coating Intersleek 1000 Sys-tem (for > 8 knot)	**25 18 01**	Anti-corrosive	Intershield 300	Bannoh 1500	Uniprotector	NU Forte (M)	IDshield 400	Weg Tar Free Plus
	02	Tie-Coat	Intersleek 737	CMP Bioclean SG	Ecolosilk Tiecoat	Everclean No. 5000 Undercoat	IDfast 837	-
	03	Foul Release	Intersleek 1000	CMP Bioaclean HB	Ecolosilk	Everclean No. 5000 Top-coat	IDfast 857	-
Fluoropoly-mer Foul Release Coating Intersleek 1100SR System (for > 6 knot)	**25 18 05**	Anti-corrosive	Intershield 300	-	-	-	IDshield 400	Weg Tar Free Plus
	06	Tie-Coat	Intersleek 737	-	-	-	IDfast 837	-
	07	Foul Release	Intersleek 1100SR	-	-	-	-	-

Boottop Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	**25 02 81**	Anti-corrosive	-	Roswan QD HB	-	-	IDprime 298	Weg Oceano Primer
	82	Finish Coating	-	Evamarine	-	-	IDalkyd 765	Weg Oceano
Acrylic	**25 05 01**	Anti-corrosive	Interprime 198	Bannoh 1500	NOA 10 M	Jotamastic 87	IDCP 362	Weg Tar Free
	02	Tie-Coating	-	-	-	-	IDepoguard 363	Weg Tie Coat
	03	Finish Coating	Intersheen579	Acri 700 Finish	Nippon A-Marine Finish	Pioner Topcoat	IDsurf 679	Weg N 1197

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Epoxy	25 10 12	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87	IDCP 362	Weg Tar Free
	14	Finish Coating	Intergard 740	Epicon Finish HB	Nippon E-Marine Finish M	Epomarine BTD	IDepoguard 840	Weg N 1198
Urethane	25 07 01	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87	IDCP 362	Weg Tar Free
	02	Finish Coating	Interthane 990	Uny Marine	Nippon U-Marine Finish	Retan 6000	IDthane 1090	Wegthane 833

Topside Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	25 02 85	Anti-corrosive	-	Roswan QD HB	-	-	IDprime 298	Weg Oceano Primer
	86	Finish Coating	-	Evamarine	-	-	IDalkyd 765	Weg Oceano
Acrylic	25 05 05	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87	IDCP 362	Weg Tar Free
	06	Tie-Coating	Intergard 263	-	-	-	IDepoguard 363	Weg Tie Coat
	07	Finish Coating	Intersheen579	Acri 700 Finish	Nippon A-Marine Finish	Pioner Topcoat	IDsurf 679	Weg N 1197
Epoxy	25 08 22	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87	IDCP 362	Weg Tar Free
	24	Finish Coating	Intergard 740	Epicon Finish HB	Nippon E-Marine Finish M	Epomarine BTD	IDepoguard 840	Weg N 1198
Urethane	25 07 05	Anti-corrosive	Intershield 300	Bannoh 1500	NOA 10 M	Jotamastic 87	IDCP 362	Weg Tar Free
	06	Finish Coating	Interthane 990	Uny Marine	Nippon U-Marine Finish	Retan 6000	IDthane 1090	Wegthane 833

Weather Deck Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	25 02 91	Anti-corrosive	Interprime198	Roswan QD HB	Nippon O-Marine Primer	-	IDprime298	Weg Oceano Primer
	92	Finish Coating	Interlac 665	Evamarine	Nippon O-Marine Finish	-	IDalkyd765	Weg Oceano
Acrylic	25 05 11	Anti-corrosive	Interprime 198	Bannoh 1500	Uniprime 20	Pioner Primer	IDCP362	Weg Tar Free
	12	Tie-Coat	-	-	-	-	IDepoguard 363	Weg Tie Coat
	13	Finish Coating	Intersheen579	Acri 700 Finish	Nippon A-Marine Finish	Pioner Topcoat	IDsurf679	Weg N 1197
Epoxy	25 10 35	Anti-corrosive	Interbond 201	Umeguard SX	Neoguard 100	Epomarine EX500	IDepoprime 301	Wegdur HS
	34	Finish Coating	Intergard 740	Epicon Finish HB	Nippon E-Marine Finish M	Epomarine BTD	IDepoguard 840	Weg N 1198
Urethane	25 07 11	Anti-corrosive	Interbond 300	Umeguard SX	Neoguard 100	Epomarine EX500	IDepoprime 301	Wegdur HS
	12	Finish Coating	Interthane 990	Uny Marine	Nippon U-Marine Finish	Retan 6000	IDthane1090	Wegthane 833

Cargo Hold Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	25 02 95	Anti-corrosive	-	-	-	-	IDprime298	Weg Oceano Primer
	96	Finish Coating	-	-	-	-	IDalkyd765	Weg Oceano
Epoxy	25 10 44	Anti-corrosive	Interbond 201	Umeguard SX	Neoguard 100	Epomarine EX500	IDepoprime 301	Wegdur HS
	43	Finish Coating	Interbond 201	Umeguard SX	Neoguard 100	Epomarine EX500	IDepoprime 301	Wegdur HS

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Epoxy	**25 10 44**	Anti-corrosive	Interbond 201	Umeguard SX	Nippon E-Marine 400	-	IDepoprime 601	Wegdur HS
	43	Finish Coating	Interbond 201	Umeguard SX	Nippon E-Marine 400	-	IDepoprime 601	Wegdur HS
	25 10 44	Anti-corrosive	Intershield 300	Bannoh 1500	Uniprotector	Epomarine EX600	IDshield 400	Weg Tar Free Plus
	43	Finish Coating	Intershield 300	Bannoh 1500	Uniprotector	Epomarine EX600	IDshield 400	Weg Tar Free Plus
	25 10 44	Anti-corrosive	Intershield 803/803Plus	Umeguard Super-H	Neoguard 100 GF/NOA GF	Jotamastic 87	IDshield 903	-
	43	Finish Coating	Intershield 803/803Plus	Umeguard Super-H		Jotamastic 87	IDshield 903	-

Outside of Structure Coating

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Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	**25 03 01**	Anti-corrosive	Interprime198	Roswan QD HB	Nippon O-Marine Primer/Uniprime 10	-	IDprime298	Weg Oceano Primer
	02	Finish Coating	Interlac 665	Evamarine	Nippon O-Marine Finish	-	IDalkyd765	Weg Oceano
Acrylic	**25 05 15**	Anti-corrosive	Interprime 198	Bannoh 1500	Uniprime 20	Pioner Primer	IDCP362	Weg Tar Free
	16	Tie-Coat	-	-	-	-	IDepoguard 363	Weg Tie Coat
	17	Finish Coating	Intersheen579	Acri 700 Finish	NipponA-Marine Finish	Pioner topcoat	IDsurf679	Weg N 1197
Epoxy	**25 10 55**	Anti-corrosive	Interbond 201	Umeguard SX	Neoguard 100	Epomarine EX500	IDepoprime 301	Wegdur HS
	54	Finish Coating	Intergard 740	Epicon Finish HB	Nippon E-Marine Finish M	Epomarine BTD	IDepoguard 840	Weg N 1198
Urethane	**25 07 15**	Anti-corrosive	Intershield 300	Umeguard SX	NOA 10 M	Epomarine EX500	IDepoprime 301	Wegdur HS
	16	Finish Coating	Interthane 990	Uny Marine	Nippon U-Marine Finish	Retan 6000	IDthane 1090	Wegthane 833
Poly-siloxane	**25 09 01**	Anti-corrosive	Intershield 300	Bannoh 1500	-	-	IDshield 400	Weg Tar Free Plus
	02	Finish Coating	Interfine 878	Keisol	-	-	IDvinguard 1079	-

Accommodation Space Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	**25 03 05**	Anti-corrosive	Interprime198	Roswan QDHB	Nippon O-Marine Primer	SD Marine Build Primer	IDprime298	Weg Oceano Primer
	06	Finish Coating	Interlac 665	Evamarine	Nippon O-Marine Finish	SD Marine BTD	IDalkyd765	Weg Oceano
Acrylic	**25 05 21**	Anti-corrosive	Interprime 198	Acri 700 Primer	Uniprime 20	Pioner Primer	IDprime298	Weg Oceano Primer
	22	Finish Coating	Intersheen579	Acri 700 Finish	Nippon A-Marine Finish	Pioner Topcoat	IDsurf679	Weg N 1197
Epoxy	**25 10 61**	Anti-corrosive	Interbond 201	Umeguard SX	Neoguard 100	Epomarine EX500	IDepoprime 301	Wegdur HS
	62	Finish Coating	Intergard 740	Epicon Finish HB	Nippon E-Marine Finish M	Epomarine BTD	IDepoguard 840	Weg N 1198

Engine Room Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	**25 03 11**	Anti-corrosive	Interprime198	Roswan QD HB	Uniprime 20	SD Marine Build Primer	IDprime298	Weg Oceano Primer
	12	Finish Coating	Interlac 665	Evamarine	Nippon O-Marine Finish	SD Marine BTD	IDalkyd765	Weg Oceano

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Acrylic	**25 05 25**	Anti-corrosive	Interprime 198	Acri 700 Primer	Uniprime 20	Pioner Primer	IDprime298	Weg Oceano Primer
	26	Finish Coating	Intersheen579	Acri 700 Finish	Nippon A-Marine Finish	Pioner Topcoat	IDsurf679	Weg N 1197
Epoxy	**25 10 75**	Anti-corrosive	Interbond 201	Umeguard SX	Neoguard 100	Epomarine EX500	IDepoprime 301	Wegdur HS
	74	Finish Coating	Intergard 740	Epicon Finish HB	Nippon E-Marine Finish M	Epomarine BTD	IDepoguard 840	Weg N 1198

Water Ballast Tank Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Epoxy	**25 10 97**	Anti-corrosive	Intergard 403	CMP NOVA 2000	-	-	IDepoguard 503	Wet Surface 89 PW
	96	Finish Coating	Intergard 403	CMP NOVA 2000	-	-	IDepoguard 503	Wet Surface 89 PW
	25 10 97	Anti-corrosive	Interbond 808	CMP NOVA 2000	NOA 60 HS*	-	IDepoprime 908	Wet Surface 88 HT
	96	Finish Coating	Interbond 808	CMP NOVA 2000	-	-	IDepoprime 908	Wet Surface 88 HT
	25 10 97	Anti-corrosive	Intershield 300	Bannoh 1500	Uniprotector	NU Forte DX	IDshield 400	Weg Tar Free Plus
	96	Finish Coating	Intershield 300	Bannoh 1500	Uniprotector	NU Forte DX	IDshield 400	Weg Tar Free Plus

Remark* NOA 60 HS* - with SI (self-indicating) function

Fresh Water Tank Coating

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Epoxy	**25 10 85**	Anti-corrosive	Interline 850	-	NOA FWT	-	IDtank950	Weg Fenoxi
	84	Finish Coating	Interline 850	Epicon T-500	-	-	IDtank950	Weg Fenoxi
	25 10 85	Anti-corrosive	Interline 925	-	NOA FWT	Epomarine FW100 Primer	IDtank1025	Lackpoxi AE
	84	Finish Coating	Interline 925	Cleankeep 5000	NOA FWT	Epomarine FW100 Top-coat	IDtank1025	LackpoxiAE

Heat Resistant Paint

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd Aluminium	**25 12 03** (16 ltr) **04** (4 ltr)	Up to 315°C	Intertherm 891	Silva Spar (Up to 150°C)	TETZSOL P-200 ECO/ TETZSOL 200 ECO (up to 200°C)	Thermo 400 Undercoat/ Thermo 400 Silver Thermo 400 Undercoat/ Thermo 400 Silver	IDalum991	WEG N 1259
Silicon Aluminium	**25 12 05** (15 ltr) **06** (4 ltr)	Up to 540°C	Intertherm 50	Silicon HR Primer (Up to 700°C) Siicon HR Silver (Up to 700°C)	TETZSOL P-500 ECO TETZSOL 500 ECO	Thermo 600 Undercoat/ Thermo 600 Silver Thermo 600 Undercoat/ Thermo 600 Silver	IDalum150	Termolack 57

Galvanized Iron Primer

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Epoxy	**25 12 11** (16.4 ltr) **12** (3.3 ltr)	Primer	Interprime 539	Galvanite No.200 Primer	Nippon E-Marine Primer Galva	Epomarine GX (18 kgs)	IDprime639	Galweg

Water Paint

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Vinyl Emulsion	**25 12 15** (White 12.6 ltr) **16** (White 2.8 ltr) **17** (Tint 12.6 ltr) **18** (Tint 2.8 ltr)	Finish	International WLB000 or WGB000	Swan	Odemarine EPF	ASUKA II	-	-

Engine Enamel Paint

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	**25 12 21** (White 20 ltr) **22** (White 17.2 ltr) **23** (White 3.4 ltr) **24** (Colour 20 ltr) **25** (Colour 17.2 ltr) **26** (Colour 3.4 ltr)	Finish	Interlac 665	Evamarine	Nippon O-Marine Finish	SD Marine BTD	IDalkyd 765	Weg Oceano
Acrylic	**25 12 27**	Finish	Intersheen 579	Acri 700 Finish	Nippon A-Marine Finish	Pioner Topcoat	IDsurf 679	Weg N 1197

Non-Slip

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Sand	**25 12 47**	Finish	International GMA131	Non Skid Sand	Non-Slip Sand	Non Skid Sand	Rust Inhibitive Oil	Wegpoxi antiderrapante 718

Bituminous

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Bituminous	**25 12 53** (Black 17.6 ltr) **54** (Black 4.4 ltr)	Finish	Intertuf 16	Bitumen Solution B	Bismatic Solution	-	IDprime 200	Weg Betuminoso

Fluorescent Paint

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Luminous Paint (Orange)	**25 12 71** (4 kgs) **72** (1 kgs)	Finish	Interlac 648 HXA027	Evasign Orange	-	-	IDalkyd748	-

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Luminous Paint (Yellow)	**25 12 73** (4 kgs) **74** (1 kg)	Finish	Interlac 648 HXA026	Evasign Yellow	-	-	IDalkyd748 IDalkyd749	-
Luminous Paint (Red)	**25 12 75** (4 kgs) **76** (1 kg)	Finish	Interlac 648 HXA019	Evasign Red	-	-	IDalkyd748	-

Varnish

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	**25 14 07**	Varnish	Interlac 678 HVA022	-	-	Super Varnish	IDalkyd778	Weglack Oceano

Thinner

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Alkyd	**25 14 45**	Thinner	GTA004	Marine Thinner	Nippon Marine Thinner 100	Thinner No. 2	Thinner104	-
Acrylic (Vinyl)	**25 14 46**	Thinner	GTA007	CR/Acri Thinner A Vinyl Thinner	Nippon Marine Thinner 200	Thinner No. 7	Thinner101	-
Epoxy	**25 14 47**	Thinner	GTA220	Epoxy Thinner A	Nippon Marine Thinner 600	Thinner No. 17	Thinner103	Diluente Epoxi
Urethane	**25 14 48**	Thinner	GTA713 GTA056	Urethane Thinner A	Nippon Marine Thinner 700	Thinner No.10	Thinner105	Diluente PU

Putty

Type of System	CODE	Kind of Paint	International Paint (Japan)	Chugoku Marine Paints (Japan)	Nippon Paint Marine Coatings (Japan)	NKM Coatings (Japan)	Shanghai Leader Marine (China)	Nau LM Neffa-WEG (Brazil)
Epoxy	**25 14 82**	Putty	Intergard 821	Bondet Putty	Neoguard Bulcon	Nu Forte Barrier	IDepoguard 921	-

Miscellaneous Paint

CODE	Description	Colour	Unit Per Can Contents Ltr	Kgs
	Heat Resistant Paint			
25 12 01	Oleoresinous Aluminium	Metallic Silver	16.8	16.0
02			4.2	4.0
25 12 03	Alkyd Aluminium	"	16.0	16.0
04			4.0	4.0
25 12 05	Silicon Resin Aluminium	Silver	15.0	16.0
06			3.7	4.0
	Galvanized Iron Primer			
25 12 11	Epoxy Ester Primer	Light Cream	16.4	20.0
12			3.3	4.0
	Water Paint			
25 12 15	Polyvinyl Acetate Emulsion	White	12.6	16.0
16			2.8	4.0
17		Tint	12.6	16.0
18			2.8	4.0
	Engine Enamel			
25 12 21	Alkyd Resin Paint	White	20.0	23.2
22			17.2	20.0
23			3.4	4.0
24		Colour as Specified	20.0	23.2
25			17.2	20.0
26			3.4	4.0

CODE	Description	Colour	Unit Per Can Contents Ltr	Kgs
	Non-Slip, Non-Skid Paint			
25 12 31	Alkyd Resin Non-Slip Deck Paint	Reddish Brown	20.0	24.6
32			16.3	20.0
33		Green	20.0	24.6
34			16.3	20.0
35		Gray	20.0	24.6
36			16.3	20.0
25 12 41	Alkyd Resin Non-Skid Deck Paint	Reddish Brown	20.0	28.0
42			17.9	25.0
43		Green	20.0	28.0
44			17.9	25.0
45		Gray	20.0	28.0
46			17.9	25.0
	Bituminous Paint			
25 12 51	Bituminous Solution	Black	17.4	16.0
52			4.3	4.0
25 12 53	Bituminous Paint	Black	17.6	16.0
54			4.4	4.0
	Canvas Preserver			
25 12 61	Water-Resistance and Anti-Corrosive Water Soluble Paint	White	-	25.0
62			-	5.0
63		Reddish Brown	-	25.0
64			-	5.0

CODE	Description	Colour	Unit Per Can Contents Ltr	Kgs
Paste Paint				
25 12 66	White Lead Paste	-	-	12.5
67			-	5.0
Reflecting Paint				
25 12 71	Luminous Paint (Fluorescent Paint)	Orange	-	4.0
72			-	1.0
73		Yellow	-	4.0
74			-	1.0
75		Red	-	4.0
76			-	1.0
77		Colour as Specified	-	4.0
78			-	1.0
Spray Marking Paint				
25 12 81	Nitrocellulose Synthetic Resin Lacquer Enamel	White	400cc	-
82			300cc	-
83		Colour as specified	400cc	-
84			300cc	-
Stain				
25 12 91	Oil Stain	Wood Colour	-	4.0
92			-	1.0
93		Colour as specified	-	4.0
94			-	1.0

7TH 25

Varnish, Oil, Etc.

CODE	Description	Colour	Unit Per Can Contents Ltr	Kgs
Varnish				
25 14 01	Copal Vanish for Interior Use	-	16.0	14.4
02			4.0	3.6
25 14 03	Spar Varnish for Exterior Use	-	16.0	14.4
04			4.0	3.6
25 14 05	Shellac Varnish	-		3.6
06				1.5
Lacquer				
25 14 11	Clear Lacquer	-	16.0	
12			4.0	
25 14 13	Enamel Lacquer	-	16.0	
14			4.0	
Drier				
25 14 21	Paint Liquid Drier	-	16.0	
22			4.0	
Remover				
25 14 31	Paint Remover	-	16.0	
32			4.0	
25 14 33	Varnish Remover	-	16.0	
34			4.0	
Thinner				
25 14 41	Paint Thinner	-	16.0	
42			4.0	
25 14 43	Lacquer Thinner	-	16.0	
44			4.0	
Linseed Oil				
25 14 51	Boiled Linseed Oil	-	16.0	
52			4.0	
25 14 53	Raw Linseed Oil	-	16.0	
54			4.0	
Turpentine				
25 14 61	Turpentine in Tin	-	4.0	
62	"		18.0	
63	Turpentine in Drum	-	200	
Fish Oil				
25 14 66	Fine Fish Oil in Tin	-	18.0	
67	Fine Fish Oil in Drum		200	
Putty				
25 14 71	Marine Putty for use on Marine Paint	-		30.0
72				5.0
73				1.0
25 14 76	Common Putty for Use on Wood or Metal Sash, etc.	-		5.0
77				1.0
25 14 81	Caulking Putty for Sealing Cable Duct, Wood, etc. in Tube	-		1.0

Latest Fouling Control Coatings

Intersleek 1100SR

Specifically designed to tackle the problem of slime on vessel performance, this innovation in the Intersleek range delivers outstanding micro and macro fouling control with better static resistance.

The new patented fluoropolymer in Intersleek®1100SR has been developed by enhancing the slime resistant polymer groups used in earlier generations of Intersleek®.

The tailored surface chemistry of this new technology specifically influences and resists the adhesion and settlement of organisms that make up slime colonisation.

Intersleek® is biocide-free, which results in no leaching of biocides into the sea. This offers cost advantages at the next drydocking on waste treatment and disposal, plus enhanced environmental profile. Intersleek also has higher volume solids and lower required film thickness than SPC systems. Only a single full coat is required every five years through a vessels lifetime, therefore paint consumption is significantly reduced – further enhancing your environmental profile.

Intercept 8500LPP

A high performance, low friction, linear polishing polymer (LPP) antifouling incorporating unique patented Lubyon® and silyl methacrylate technology.

This combination of polymer technologies, based upon years of experience and development, provides the basis for this performance improvement over existing products and, as a result, Intercept 8500 LPP gives the highest performance of all our biocidal antifoulings. The Lubyon polymer brings its unique Linear Polishing Polymer properties which ensure that the faster polishing rate is controlled in a consistent manner throughout the in-service period of up to 90 months.

Unlike typical silyl and metal acrylate biocidal antifoulings, Intercept® products replicate the linear polishing behaviour of previous tributyltin based antifoulings. Typical silyl acrylate based products polish slowly initially, thereafter the rate of polishing steadily increases. Whereas typical metal acrylate systems polish fast initially before reaching a steady state.

Interfine 878

A patented high performance, high volume solids content acrylic polysiloxane cosmetic finish providing excellent long term durability. Interfine 878 significantly improves upon the gloss

and colour retention exhibited by typical polyurethane finishes.

Intershield 163 Inerta 160

Intershield 163 Inerta 160 is a proven, high performance abrasion resistant coating especially designed for ice going vessels.

Key system features include:

- Smooth surface assists ice slip
- Resists ice adhesion to the coatings surface
- Low frictional resistance controls fuel costs and improves operating efficiency
- Abrasion resistant - controls mechanical damage and hull roughness, saving on future maintenance and repair costs
- Up to 2.5 times the impact and erosion resistance of standard epoxies
- Designed for operation in temperatures down to -50°C (-58°F)

Interbond 808

Designed primarily for WBTs for use on-board by riding squads or ship's crews, Interbond 808 is a light coloured, two pack epoxy particularly suited to repair at sea as it is both surface and damp tolerant.

Intershield 300

A light coloured, abrasion resistant, aluminium pure epoxy coating giving excellent long term anticorrosive protection for cargo holds, WBT and all outside shell and low temperature application capability.

Intershield 803Plus

An ultra high performance two pack abrasion resistant epoxy coating. Provides excellent protection against cargo abrasion and impact shooting damage caused by high speed belt conveyors, minimising mechanical damage and subsequent corrosion.

Non-Slip Coatings
for Floors, Ramps & Stairs

Designed for application in slippery areas to make them safer for operation of personnel and rolling equipment. A heavy duty safety coating that has excellent adhesion to metal, concrete and wood surfaces.

25 16 11	Non-lip coating, 1 gal	Can
12	" , 5 gal	"

Monolar Mastics

A tough, flexible, fire resistant finish for protection of thermal insulation. It is also used as a vapor barrier coating for fittings. Its vapor barrier properties and unusual film strength permit its use as one coat protective coating. It is excellent for indoor or outdoor use where chemical resistance and durability are required.

Unit Per Can

CODE	**25 16 17**
Type No.	Monolar mastic 60-90
Application	For cold insulation for trowel
Colour	White
Weight/can	20 kgs

Anti-slip Coating
Loctite® PC6261HDP (Big Foot Heavy Duty Pedestrian Grade)

Product No.96211/96261/36211/39020

For areas with heavy pedestrian or light rolling traffic. Ideal for ramps, walkways, locker rooms, stairs, and assembly areas. Black, Grey, Green and Yellow color is available.

Unit Per Can

CODE	Colour	Product No.	Contents
25 17 01	Black	96211	0.95 gallon
02	Grey	96261	
03	Green	36211	
04	Yellow	39020	

Wearing Compounds
Loctite® PC7226PW (Nordbak 7226 Pneu-Wear)

Filled with small ceramic beads and silicone carbide for maximum protection against fine particle abrasion to 250°F. Trowelable.

Unit Per Can

CODE	Contents	Colour	Unit
25 17 05	1.36 kgs	Grey	Kit
06	1 kgs	Grey	Kit
09	10 kgs	Grey	Can

Loctite® PC7227/7228 (Brushable Ceramic)

Brushed on to form a smooth, corrosion-resistant coating. Protects against turbulence, abrasion, and cavitation. Can also be used as a topcoat over Loctite® Nordbak wearing compounds for surface rebuilding and lasting protection. Resists temperature up to +93°C (+200°F).

Unit Per Can

CODE	Product Name	Colour	Contents
25 17 11	7227	Grey	2 lb.
12			6 lb.
25 17 13	7228	White	2 lb. / 1 kgs
14			6 kgs

7TH 25

Loctite® PC7117 (Nordbak Brushable Ceramic)

Brushable two-part epoxy that provides a high gloss, low friction coating to protect equipment from wear abrasion and corrosion. Improved abrasion resistance and chemical resistance compared to Loctite® 7227.

Unit Per Can

CODE	Contents	Colour
25 17 19	1 kgs	Dark grey
20	6 kgs	

Flooring & Grouts

7TH 25

Loctite® PC7202 (Fixmaster)

Self-leveling, fast-curing, non-shrinking grout. Outstanding chemical and vibration resistance and compressive strength to withstand maximum loads. Approved by all major classification societies, such as the American Bureau of Shipping.

Unit Per Can

CODE	Colour	Contents	CODE	Colour	Contents
25 17 07	Green	3.8 ltr	**25 17 10**	Green	10 kgs

Rust Converter & Prevention

Loctite® Extend SF7500 Rust Treatment

Converts existing rust (rust required) into a stable base. Cured product acts as a primer ready for painting with oil or solvent based paint. Protects surface from corrosion. Use on metal pipes, valves, fittings, outside surfaces of storage tanks, fences, guard rails, wrought iron furniture, conveyors, construction and agricultural equipment.

CODE	Contents	Colour	Unit
25 17 15	1 gallon	Milky White	Btl
25 17 16	5 gallon		Can
17	1 ltr		

StopStand Slip Protection Coating

StopStand increases the safety in slippery areas. Especially on the deck or at stairs in engine rooms a good foothold is essential for the safety. StopStand guarantees highest safety standards. The highly non-slippery coating can be easily applied on the spot.

Product Benefits:

Increases the safety in slippery areas.
3-compound-coating including all components.
Easiest application through a notched trowel.

Unit Per Set

CODE	Capacity	CODE	Capacity
25 17 26	5 kgs	**25 17 27**	20 kgs

Name of Mfr.: Diamant Metalplastic GmbH

Anticorrosive ZAP Paste

An anticorrosive compound mixed weather-proof Butyl Rubber bonding material and a high purity zinc powder retained electrical conductivity. Suitable for steel surface protection of pipes, fittings, stairs, etc. It doesn't need to add any primer or solvent, and you can paint as soon as you finished surface preparation. It doesn't contain harmful toluene. Suitable temperature below 60 degree centigrade. The expecting durability is designed for 20 years after spreading.

Unit Per Pc.

CODE	Contents	For	Applicable Space	Package
25 17 61	0.6 kgs	Caulking	Length 8 mtr	in cartridge
62	1.6 "	Brush	1 m²	in tin
63	8.4 "	Painting	5.3 m²	in tin

Name of Mfr.: Mitsui-Kinzoku Co., Ltd.

Anti-corrosion Zinc-Aluminium Paint DRALL

Made from zinc and aluminium flakes which realized superior anti-corrosion performance with only 30 μm film thickness for once coating. Besides the sacrificial anti-corrosion effects of zinc, aluminium also suppresses the oxidation of zinc through chemical reaction and forms stable film. Because it is single liquid type and has little metallic precipitate, it is easy to stir the liquid at the beginning of operation. Moreover, its low viscosity ensures easy coating.

Usage

* The touchup of products (bolt, nut) [Repair flaw after the treatment of anti-corrosion thin film DISGO and LAFRE].
* The repair of the rusted parts.
* The anti-corrosion treatment of the section and welding parts.
* The repair of the galvanized steel sheet section.
* The repair of leakage and rusted parts after hot dip galvanizing.

Painting area: 4 – 5 m²/kg (including 20% loss)

Unit Per Can

CODE	25 17 64	25 17 65	25 17 66
Kgs/Can	1 kg	5 kgs	20 kgs

Name of Mfr. : Nihon Ruspert Co., Ltd.

Metal Pigment Coatings

Unit Per Can

CODE	Product	Content	Description
25 21 01 02	Brushable Zinc Coating	375 ml 750 ml	Excellent solution for touch up and corrosion protection of galvanized parts. Colour: approaching hot galvanizing. (Specific weight: 1.25g/cm^3)
25 21 03 04	Brushable Zinc Paint	375 ml 750 ml	Brushable liquid zinc paint assures durable and ideal corrosion protection for all metal surfaces. (Specific weight: 1.90 g/cm^3)
25 21 05 06	Stainless Steel Paint	375 ml 750 ml	Stainless steel paint is a corrosion- and weathering-resistant surface coating based on metal pigments.
25 21 07 08	Aluminium Paint	375 ml 750 ml	Aluminium Paint is made on the basis of metal pigments and offers a high-quality and abrasion-resistant corrosion protection for all metal surfaces.
25 21 09 10 11	Corro-Protection	5 ltr 10 ltr 30 ltr	Forms a dry wax-like protective film which provides lasting protection of metal tools and precision parts for indoor storing and overseas shipment. TÜV approved.

Name of Mfr.: Weicon GmbH & Co. KG

Ferryl Coatings

One-component coatings with superior elasticity when dry, providing long-term anticorrosive protection without cracking. Also known as "plastics" because of the plastic-like coating that is created.

Unit Per Drm/Tin

CODE	Product No./Unit	Application
45 04 11	Ferryl 400R Anticorrosive White Coating 12 kgs/drum	One-component product applied like paint. Flexible, non-cracking plastic-like coating. Used on non-rotating wires, standing rigging, rubber insulated electrical cables and (hydraulic) hoses.
45 04 12	Ferryl 401 Anticorrosive Transparent Coating 1 kgs/tin	One-component product applied like paint. Flexible, non-cracking, plastic-like coating. For preservation of metals' original colour (steel, brass, bronze, copper). Also used as a wood varnish.
45 04 13	Ferryl 404 Dilution & Cleaning Liquid 10 ltr/drum	Solvent for cleaning and dilution of the Ferryl coatings. Used as a general thinner.
45 04 17	Ferryl 502 Anticorrosive Fluorescent Coating 1 kgs/tin	One-component product applied like paint. Fluorescent orange-red colour. Flexible, non-cracking, plastic-like coating. Used for safety applications. (life-saving equipment, warnings, bridge, low beams / steps).
45 04 15	Ferryl 505 Anticorrosive Fluorescent Coating 1 kgs/tin	One-component product applied like paint. Fluorescent yellow colour. Flexible, non-cracking, plastic-like coating. Used for high visibility marking applications (stairs, walkways, zone markings).

Name of Mfr.: Ferryl Sales Limited.

Rust Converting Latex Primer

A water based chemical rust converter which converts the rust to magnetite, creating a non rusting metallic barrier layer on the steel.

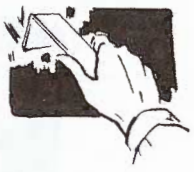
Requires less preparation time and cost as it is not necessary to remove the rust completely before application.

25 99 06	Rust converting latex primer Corroseal 5 gal/can	Can

Name of Mfr. : Corroseal Inc.

General Painting Instruction to Ship's Crew

Surface preparation



It is vitally important to prepare all surfaces sufficiently before painting, paying particular attention to ferrous metals. Rust and millscale must be removed by efficient scraping or vigorous wire brushing. When recoating over old paint, the surface must be free from soil, grease oil, and salt water deposits.

In the case there are salt water deposits on the surface, they are most easily removed by washing with water and common soda and then washing the surface clean again with fresh water and allowing the surface to dry completely.

Without these simple precautions the paint will not adhere well and will result in peeling and the need for subsequent recoatings.

Selecting the right paint specification or process

Care must be taken to ensure that the correct painting process is adopted. For example, it would be fatal to apply a slow drying oil base and heavily pigmented primer with the intention of finishing with a modern synthetic product, surface tension would quickly encourage film cracks and peeling. Therefore, always keep to the same system following carefully the manufacturer's recommendation.

Stir the paint well before use

Even today, with all the advantages of science and technology, a large number of paint failures are occasioned by not stirring the paint before use. Good pigment dispersion prevents heavy deposits sinking and lying on the bottom of the can or drum, but the medium and the pigment will, to some extent, settle out without severe sinkage: this encourages users to apply the paint without careful stirring. Technical failures experienced by not allowing adequate stirring are inconsistent gloss for enamels, poor coverage performance or early film failure.

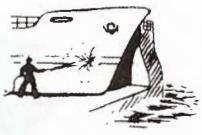
Give the surface the right pre-treatment to re-painting

Prior to re-painting, all old loose paint should be scraped off. Rust dots, if any, should be removed with a steel brush. Rust-scraping must be done to the point where the paint has good adhesion to the iron. Make sure that no rust has penetrated down under the old paint. Also make sure that there are no cracks in the old paint. Should there be any, they must be scraped and brushed down to the iron. Undamaged areas of the old paint need not be removed, but the old film should be washed with a common soda solution, and then rinsed according to the directions in surface preparation.

Adapt the priming to the finish required

Always bear in mind that the glossier the surface, the more important it is to ensure the proper preparation of that surface; for the least unevenness will be magnified on a high gloss surface.

Ships bottom (underwater area)



After the careful removal of marine life from the heel by scraping and rinsing, be sure to remove all millscale and rust pitted areas. It may be necessary to chip and scrape all corroded parts to get a clean painting surface. Be sure to let the surface dry thoroughly before any coating is applied.

In spots where rust is exposed during the preparation, it is important to "coat in" these areas with an anti corrosive composition, followed by the application of one or more coats of anti fouling to a grade suitable for the ships service life.

The belt

Special attention must be paid to this vital area of the vessel, which is normally contaminated with oil and grease from continuous harbour polution. It is most important to clean this area off, using a suitable cleaning agent or detergent. The preparation as suggested in the foregoing paragraph should be followed through.

Topside and superstructure

When dealing with the maintenance of the Topside and Superstructure, it is most essential to remove salt water deposits and to comply very carefully to the instructions as laid down in the points illustrated in our General Painting Instructions for the Guidance of Ships' Crew.

Decks

After carefully preparing steel decks and following the principles laid down in the General Painting Instructions, it is important to apply a good rust preventive primer prior to the application of the Deck Paint.

Main engines and machinery

Where re-painting is to be considered, special attention must be paid to adequately cleaning the surface and making it free from oil and grease deposits before re-coating is attempted.

Marine Paint Comparison Table by Paint Material

Mfr's Name	NKM Coatings (Japan)	Sigma Shinto Coatings (Japan)	Nippon Paint Marine Coatings (Japan)	International Paint (Japan)
Shop Primer Coating				
	Metalact H-15, Metalact H-5, SD Zinc 1000HA (S)	SigmaWeld 165, SigmaWeld 199	Nippon Ceramo, Nippon Ceramo T/U	Interplate Zero, Interplate 997, Interplate 937, Interplate 855
Hull Outside (AF), Exposed Deck, Superstructure (Upper) Coating				
Oleoresinous Paint				
Deck, Hold, or Upper AC (Primer)	SD Marine BTD, SD Marine Build Primer	Sigmarine 21, Sigmarine 24, Sigmarine 28	Nippon O-Marine Primer, Uniprime 20, Nippon O-Marine Finish, Nippon O-Marine Finish 300S	Interprime 198
Deck & Hold (Finish)	-	Sigmarine 48, Sigmarine 49	Nippon O-Marine Finish	-
Superstructure Inside & Others (Upper) (Finish)	-	Sigmarine 48, Sigmarine 49, Sigma Vikote 56	Nippon O-Marine Finish	-
Vinyl Paint				
	QD AC HB, Universal Primer, Vinylia BTM(P)	Sigma Vikote 15	-	Intertuf 203, Interfine 599, Interprime 539
Chlorinated Rubber Paint				
	Rabamarine BTD, Rabamarine Primer HB, C-Ruban AC HB	Sigma Vikote 18	-	-
Acrylic Paint				
	Pioner Topcoat	Sigma Vikote 46, Sigma Vikote 56	Uniprime AC, Uniprime 20, Nippon A- Marine Finish, Neoguard 10	Interprime 198 primer, Intersheen 579 Finish
Epoxy Paint				
	-	SigmaPrime 200, SigmaCover 280, SigmaCover 435, SigmaCover 456, SigmaShield 220, SigmaShield 420	-	-
Epoxy Paint Two-component				
	Epomarine GX, Epomarine BTD, Epomarine AC (M)	-	Nippon E-Marine 400, Nippon E-Marine 400 HS, NOA 10 F, NOA 10 M, NOA A/C II, NOA A/C II LT, Uniprime 100, Neoguard 100, Neoguard 100 GF	Intergard 821, Intergard 400, Intergard 740, Interbond 201, Intertuf 262, Intergard 263, Intergard 269, Intershield 300, Intergard 343, Intergard 269, Intergard 403
Two-pack Pure Epoxy Primer				
	-	-	Uniprotector, Nippon E-Marine Primer, Nippon E- Marine Primer GF, Nippon E-Marine Finish M	Intergard 343, Intergard 400, Intershield 300, Intershield 803, Intershield 803Plus
Modified Epoxy Paint				
	Epomarine EX500, Primastic, Jotamastic 87, Jotamastic 87 Aluminium, Jotamastic Universal, NU Forte	SigmaCover 435, SigmaCover 456	-	Interbond 201
Special (Unique) Epoxy Paint				
	Devran 237, NU Forte Barrier	-	Iceban 1600, NOA 60 HS, NOA 60 HS-LT	Intershield 163, Inerta 160, Interbond 808, Intershield 803, Intershield 300
Tar Epoxy Paint				
	-	SigmaCover 300, SigmaCover 510	-	-
Polyurethane Paint				
	-	SigmaDur 550	Nippon U-Marine Finish	Interthane 990

Mfr's Name	NKM Coatings (Japan)	Sigma Shinto Coatings (Japan)	Nippon Paint Marine Coatings (Japan)	International Paint (Japan)
Inorganic Zinc Paint				
	-	SigmaZink 158, SigmaGuard 750	Nippon Z-Marine 1000 QC S	Interzinc 22
Zinc Rich Primer				
	SD Zinc 100QD, SD Zinc 500, SD Zinc 1500A	-	Nippon Z-Marine 8000 MHB	Interzinc 22, Interzinc 52, Interzinc 72
Long Life Anti-Fouling Paint				
	Takata Quantum FB, Takata Quantum Ultra, Takata Quantum Classic, Takata Quantum Plus, Takata Quantum LLL, Takata Quantum LLL FB	Sigma Ecofleet 290, Sigma Ecofleet 530, Sigma Alphagen 240, Sigma Alphagen 650, Sigma Alpharim 210, SigmaGlide 790, SigmaGlide 890	Ecoloflex SPC 250 HyB, Ecoloflex SPC 150 HyB, Ecoloflex SPC 200 Z, Ecoloflex SPC 200 K, Ecolosilk, Ecolosilk Tie-Coat	Interswift 6800/6600 Intersmooth 360SPC Intersmooth7670SPC Intersmooth7460SPC Intersmooth7475SiSPC Intercept 8500LPP Interspeed 6200 Interspeed 6400 Intersleek 1000 Intersleek 1100SR
Anti-Abrasion (Abrasion Resistant) Paint				
	Flakeguard Primer, Flakeguard No.3000	SigmaShield 220, SigmaShield 420	Uniprotector, NOA 10 F	Intershield 300, Intershield 163, Inerta 160, Intershield 803, Interzone 1000
Tank & Heavy Duty (Protective) Coating				
Epoxy Paint				
	Epomarine PC100 Primer, Epomarine PC100 Topcoat, Epomarine FW100 Primer, Epomarine FW100 Topcoat	SigmaGuard 425, SigmaGuard CSF 650, SigmaGuard CSF 575, SigmaGuard CSF 585, SigmaGuard 720, SigmaGuard 790, SigmaGuard 240, SigmaGuard 440, Sigma Phenguard 930, Sigma Phenguard 935 Sigma Phenguard 940, Sigmaguard 795	NOA 60 HS, NOA 60 HS-LT, NOA FWT, NOA 1000 FWT SF, NOA PC, Uniprime 100, Neoguard Bulcon, Nippon E-Marine A/C, Nippon E-Marine A/C II	Intershield 300, Intergard 343, Intergard 840, Intergard 403, Interline 994, Interbond 808, Intergard 403, Intergard 423, Intershield 300, Interline 904, Interline 704, Interline 925, Interline 850 Interline 9001
Modified Epoxy Paint				
	Epomarine AC (M), Epomarine EX600, NU Forte DX	-	-	-
Tar Epoxy Paint				
	-	SigmaCover 300	-	-
Inorganic Zinc Paint				
	-	-	-	Interline 104
Glass Flake Mastic Paint				
	Flakeguard Primer, Flakeguard No.3000	SigmaShield 905, SigmaShield 460	Neoguard 100 GF, Nippon E-Marine Primer GF	Interzone 505, Interzone 1000
Miscellaneous Coating				
Heat Resistant Paint				
	Aluminium Paint H.R., Termo 300 Primer, Termo 300 Silver, Termo 600 Primer, Termo 600 Silver	SigmaTherm 175, SigmaTherm 500	Tetzsol P-200 ECO, Tetzsol 200 Silver, Tetzsol 200 ECO, Tetzsol P-500 ECO, Tetzsol 500 ECO, Tetzsol M Primer	Intertherm 891, Intertherm 50
Aluminium Paint				
	Aluminium Paint H.R.	-	Nippon O-Marine Finish 300 S	Intertherm 891
Fluorescent Paint				
	-	-	-	Interlac 648
AF for Propeller				
	-	-	-	Intersleek 1000, Intersleek 1100SR

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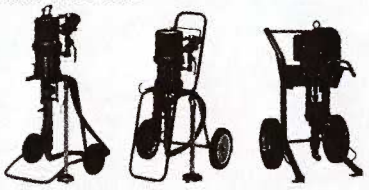
PAINTING EQUIPMENT

Graco Products



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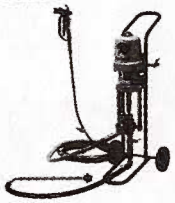
Asahi Sunac Products



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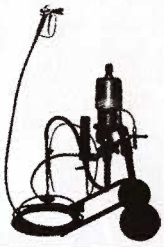
Iwata Products



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Paint Spray Guns and Containers

P. 27-10 ~ 12

Paint Stirrers

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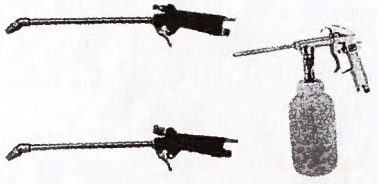
Cleaning Guns/Air Dusters



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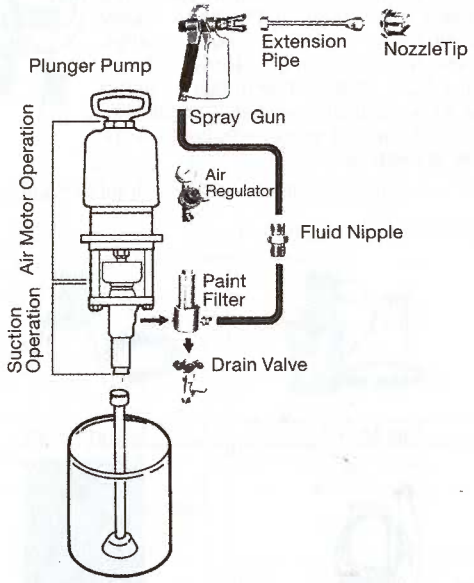
Airless Spray System

Airless spray systems operate using high pressure to apply paint by forcing it through a specially shaped nozzle into a confined spray which cleanly and fully covers the painting surface. The pressure is provided by a pump which draws the paint up through the hose to the airless spray gun.

Airless spray machines are 4 times faster and 35 - 55 % more efficient than air spray machines with less paint loss through overspray. Airless systems can also handle thicker based paints and applicators easier and with better results than air spray or conventional methods.



Safe Operation of Airless Equipment

Airless spray equipment generates very high fluid pressure. To reduce the risk of fluid injection injury, burns from fire or explosion, or splashing of fluid on the skin or in the eyes, the following precautions must be followed.

1. Always read and follow all safety warnings in the instruction manual.
2. Always follow all recommendations regarding the use of protective clothing, eyewear and equipment.
3. Never exceed the maximum working pressure of any component in your system.
4. High velocity fluid moving through sprayers and hoses generates static electricity. Ground all equipment and objects being sprayed.
5. Make certain that the fluids you are pumping are compatible with the wetted parts of all components in your system. Do not use 1, 1, 1 - trichloroethane, methylene chloride, or other halogenated hydrocarbons with the sprayers and accessories. Such use could result in a serious chemical reaction which could cause serious injury and property damage.
6. Spray solvent - based fluids only in well ventilated areas, to exhaust the solvent vapors.
7. To reduce the risk of serious bodily injury from high pressure fluid, keep your fingers and hands away from the gun nozzle. Do not alter the tip guard or remove the trigger guard. Always relieve pressure and engage the trigger safety lock when you stop spraying.

Airless Paint Sprayers

Air-powered Type

Many types of sprayers are available for various jobs. The most common products for marine use are described below with their respective specifications.

Sprayers with much tougher fittings including specially treated, chromed stainless steel rods and cylinders which withstand wear and operate over a longer span or time when pumping highly abrasive or corrosive materials.

27 01 06

27 01 07

27 01 08

Unit Per Set

CODE	27 01 06	27 01 07	27 01 08
Name	Monark Light Duty Cart	President SD Cart	Extreme Light Weight Cart
Model	232-411	231-922	X40DL4
Pump Ratio	23:1	30:1	40:1
Max. Flow Ratio	2 ltr/min.	4 ltr/min.	11 ltr/min.
Max. Air Work Pressure	0.7 MPa (7 kgf/cm²)		
Air Consumption	4-5 N ltr/cycle	11-14 N ltr/cycle	68-75 N ltr/cycle
Dimensions mm	370 x 400 x 1,000	530 x 510 x 980	860 x 690 x 1,140
Weight	20 kgs	39 kgs	111 kgs
Air Hose Connection	NPT 3/8 Female	NPT 3/8 Female	NPT 3/4 Female
Paint Hose Connection	NPSM 1/4 Male	NPT 1/4 Male	NPT 1/2 Male

Name of Mfr.: Graco

Electric Airless Sprayer e-Xtreme

The world's first electric sprayer for protective coatings approved for hazardous locations. ATEX, IECEx, and Class 1, Div. 1 approvals and can be used in shipyards, on-board, dry-docks, refineries and off-shore, or in any location where generating a spark is of concern. By eliminating the need for an air motor, it is possible to avoid all icing problems and compared to an air motor. The e-Xtreme sprayer is up to five times more quiet.

Runs on 240V/16A power, and able to handle Graco's most popular tip sizes and with a smooth pattern thanks to the low rate of pulsation.

The sprayer saves up to 80% of energy costs when compared to an air operated sprayer. Study completed on pump pressure of 241 bar (3,500 psi) for 20 hours/week; spraying 1,226 L (324 gal) of 73% volume solids epoxy with XHD519 tip.

Unit Per Set

CODE	27 01 09		27 01 10	
Mount Type	Cart			
Model	e-Xtreme Ex35		e-Xtreme Ex45	
Item No.	24Z901	24Z909	24Y901	24Y909
Max. Working Pressure	24.0 MPa (240 bar/3,500 psi)		31.0 MPa (310 bar/4,500 psi)	

(to be continued)

Unit Per Set

CODE	27 01 09	27 01 10
Max. Recommended Tip Size	0.58 mm (0.023")	0.53 mm (0.021")
Input Voltage	200 to 240V, single phase, 50/60 Hz	
Input Power	2.5 kVa	
Sound Pressure	70 dB(A)	
Pump Lower	180 cc	125 cc
Overall Dimensions (WxHxD)	65.4 x 123.82x 73.66 cm	
Weight	135 kgs (295 lbs)	
Accessories	Integrated filter and complete package	

Name of Mfr.: Graco

Accessories

CODE	Description	Item No.	Unit
27 01 19	Repair kit for Ex35, lower (180 cc)	24F969	Set
20	Repair kit for Ex45, lower (145 cc)	24F971	"
27 01 24	Fluid filter element, 60 mesh, twin pack	244459	Pkt
25	Fluid filter element, 100 mesh, twin pack	244468	"
27 01 29	Gear box oil for electric driver, 1 ltr	16W645	Btl
27 01 30	Cable insert for non-hazardous locations only, no cable	121171	Pc.

Airless Sprayers Heavy-duty Cart

KING®

The real pneumatic airless sprayer and gives you power, performance and dependability for the toughest protective coatings applications with the lowest operating cost. Less pulsation, no icing and simple maintenance. The King simply rules in all conditions.

- Outperforms and outlast traditional pneumatic airless sprayers.
- Designed to withstand the harshest environmental conditions.
- Easily handles the toughest protective coatings and corrosion control paint applications.
- Very simple maintenance. Low repair and spares costs. Comes with a removable valve cover and easy access to poppet valves.
- Reduced icing potential by up to 70% with thermally isolated poppets and external pilot lines.
- Improved sealing and strength with enhanced edge loading and seven throat packings instead of five.
- Multi-gun capabilities. With more powerful and efficient changeovers, the ability to spray with several guns is now a reality. *Depending on material, hose and tip size.
- Intrinsically safe for use in EX environments. Conforms to directives ATEX 2014/34/EU, Ex II 2 G c 230°C, Ex II 2 G h T6.

How to order : CODE

Sprayer, airless, heavy-duty cart type, King, De-icing motor type. Complete package that includes XTR airless gun, 15m x 3/8" hose and 1.8m x 1/4" whip hose with 519 tip.

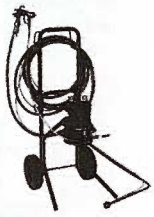
Unit Per Set

CODE	Pump Ratio	Motor Type	Package	Model
27 08 14	45 : 1	6,500cc XL Air Motor	King Airless Spray Unit	K45FH1
11	50 : 1			K50FH1
12	60 : 1			K60FH1
13	70 : 1			K70FH1
17	90 : 1			K90FH1

Name of Mfr.: Graco

Spray Packages

Triton™



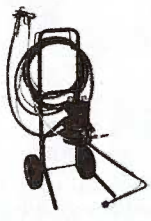
High quality fine finish spray packages for wood and metal applications. Low pulsation output and smooth pump change over deliver a consistent spray pattern. Quick colour changed and fast material refills save time and money. Stainless steel or aluminium pump handles a wide variety of fluids aluminium.

Material of Pump Handles: Stainless Steel or Aluminium

Type of Mount Configuration

Pail Mount

Stand Mount



Cart Mount

Wall Mount

Selection of Spray Gun

1. Determine feed : Pressure, Gravity, or Siphon
2. If Pressure feed, identify application type :
   General Metal Spray Guns
   General Metal with Stainless Steel Tip
   Wood Applications
   High Wear Applications
   Waterborne Applications
   Adhesive Applications
   Spatter Applications
3. Select spray type : HVLP, Compliant, or Conventional

Spray Type			
Type	HVLP	Compliant	Conventional
Finish Quality	Good	Better	Best
Transfer Efficiency	High	High	Medium
Fluid flow	Low	Medium	High
Air Flow	High	Low	Low

Select Material Viscosity

Metal Viscosity	Viscosity (centipoises)
Light	5 - 15
Light – Medium	15 - 30
Medium	30 - 70
Medium – Heavy	70 - 100
Heavy	>100

Average Flow Rate

Material Viscosity	oz/ min.	ltr/min.	Material Viscosity	oz/ min.	ltr/min.
Light	4 – 8	0.12 – 0.24	Medium	12 – 16	0.36 – 0.53
	4 – 10	0.12 – 0.30		12 – 18	0.36 – 0.53
	4 – 12	0.12 – 0.35		14 – 18	0.41 – 0.53
	6 – 12	0.18 – 0.35		14 – 25	0.41 – 0.74
	8 – 20	0.24 – 0.59		16 – 30	0.47 – 0.89
				16 – 35	0.47 – 0.95
Light-Medium	3 – 5	0.09 – 0.15	Medium-Heavy	16 – 20	0.47 – 0.59
	4 – 6	0.12 – 0.18		16 – 35	0.47 – 1.04
	4 – 10	0.12 – 0.30		16 – 40	0.47 – 1.18
	6 – 12	0.18 – 0.35		18 – 22	0.53 – 0.65
	8 – 12	0.24 – 0.36			
	8 – 14	0.24 – 0.41	Heavy	16 – 45	0.47 – 1.33
	8 – 20	0.24 – 0.59		20 – 24	0.59 – 0.71
	10 – 14	0.30 – 0.41			

Technical Specification of Spray Package

Max. Fluid Working Pressure	100 psi (0.7 MPa, 7 bar)	Pump Inlet	3/4 npt (f)
Max. Air Input Pressure	100 psi, (0.7 MPa, 7 bar)	Pump Outlet	3/8 npt (f)
Max. Fluid Flow (Pump at 212 cpm)	8.5 gpm (32 lpm)	Fluid Outlet Fitting	3/8 npt (m)
Pump Displacement	5 oz/cycle (160 cc cycle)	Weight	
Air Inlet Fitting	1/4 npt (f)	5 gal (18.9 ltr) pail package (Alum/SST)	22 lb (10 kgs)/ 28 lb (12.7 kgs)
Acetal Fluid Regulator Outlet Fitting	3/8 npt (m)	Stand Package	20 lb (9.1 kgs)/ 27 lb (12.3 kgs)
Stainless Steel Fluid Regulator Outlet Fitting	3/8 npsm (m)	Cart Package	30 lb (13.6 kgs)/ 36 lb (16.4 kgs)
		Wall Mount Package (Alum/SST)	19 lb (8.6 kgs)/ 24 lb (10.9 kgs)

Average Air Consumption

Type of Spray	HVLP	Compliant	Conventional
Gun	15.0 scfm	12.0 scfm	14.0 scfm
Pump	1.5 scfm	1.5 scfm	1.5 scfm
Total	16.5 scfm	13.5 scfm	15.5 scfm

How to order : CODE

Spray package, Triton TM, MATERIAL of PUMP HANDLE, TYPE of MOUNT, SELECTION of GUN (Type of Feed, Type of Spray, Material Viscosity, Average Flow Rate)

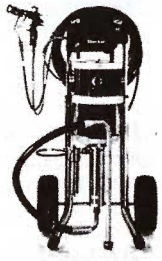
Unit Per Set

CODE	Mount Type	Gun			Model
		Feed	Spray	Viscosity	
Aluminium Pump Handle					
27 08 21	Pail	Pressure	General Metal	HVLP	233470
22				Conventional	233468
23	Stand				233475
24	Cart				233482
25	Wall				233489
Stainless Steel Pump Handle					
27 08 26	Stand	Pressure	General Metal	Conventional	233476
27	Cart				233483
28	Wall				233490

Name of Mfr.: Graco

Finishing Packages

Merkur™

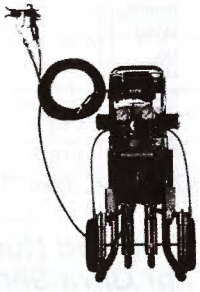


Merkur pumps are designed to improve productivity, reduce costs, lower emissions and provide consistent, high quality finishes. Ideal for small to medium jobs and easy to move around the jobsite.

Unit Per Set

CODE	27 08 46	27 08 48	27 08 44	27 08 49
Model No.	G30C55	G36C11	G48C07	16U918
Pump Ratio	30:1	36:1	48:1	72:1
Spray Gun Type	XTR	G40	G40	XTR
Fluid Flow @60 cpm	1.2 gpm (4.5 lpm)	1.6 gpm (6 lpm)	1.2 gpm (4.5 lpm)	0.8 gpm (3.0 lpm)
Max. Fluid Outlet Pressure	3,000 psi (206 bar)	3,600 psi (248 bar)	4,000 psi (275 bar)	7200 psi (500 bar)
Max. Air Inlet Pressure	100 psi (7 bar)	100 psi (7 bar)	85 psi (5.8 bar)	100 psi (7 bar)
Air Consumption @100 psi (7 bar, 0.7 MPa) @20 cpm	17 scfm (0.48 m³/ min)	26 scfm (0.74 m³/ min)	26 scfm (0.74 m³/ min)	-
Fluid Inlet Size	3/4 npt(m)			1-1/4 npt(m)
Fluid Outlet Size	3/8 npt(m)			
Air Inlet (Motor)	¼" npt(f)	½" npt(f)		

M2K



Easy to use, the fixed ratio M2K mixing and dosing system has all you need in one small package. The machine keeps your mix ratio consistent while only mixing what you use. It also saves your time and money by eliminating all of the wasted material and clean-up associated with hand mixing.

Unit Per Set

CODE	Pump Ratio	Type	Pressure	Max. Flow Rate	Packge	Model
27 08 80	1:1	Airless, Cart Type	200 Bar	2 L/min	XTR Gun	24V892
81	2:1		200 "	3 "		24V893
82	3:1		200 "	2 "		24V894
83	4:1		200 "	2.5 "		24V895
84	5:1		193 "	3 "		24V896
85	6:1		160 "	3.5 "		24V897

Name of Mfr.: Graco

Spray Guns

G40

Air-Assisted Gun designed for high pressure industrial applications.

XTR

Airless Spray Gun. Rugged design to handle the toughest protective coatings. Compact design allows for easy maneuverability.

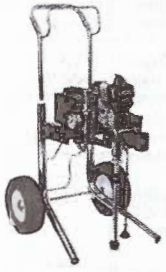
How to order : CODE

Finishing package, Merkur, TYPE of MOUNT, PUMP RATIO, with DRAIN VALVE OR NOT, TYPE OF SPRAY GUN

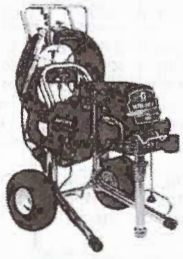
Airless Paint Sprayers

Electric-powered

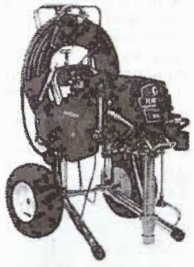
Portable electric paint sprayers with proven high performance and reliability. Choose Classic for small to medium paint and maintenance jobs, whilst in transit. The UltraMax and the Mark Procontracter range handles perfectly all protective coating primers and top coats, ideal for more demanding jobs.



Classic



Ultra Max II



Mark Procontractor

Unit Per Set

CODE	27 08 71	27 08 52	27 08 67	27 08 66	27 08 79	27 08 70	27 08 69
Type	Classic S 495		Ultra Max II 695		Mark Procontractor V		Mark Procontractor X
Power Source	110V	220V	110V	220V	110V	220V	220V
Model No.	17C347	17C348	16Y638	16Y635	16Y866	16Y864	16Y910
Max. Flow Ratio	1.8 l/min (0.47 gpm)		3.0 l/min (0.75 gpm)		4.3 l/min (1.2 gpm)		8.3 l/min (2.2 gpm)
Max. Pressure	227 bar (3,300psi)						

Name of Mfr. : Graco

Gun and Hose Kits for Ultra Series

Electric Airless Paint Sprayer

Unit Per Set

CODE	Model No.	Contents
27 01 17	288-497	* 1 pc FTX Gun * 1 pc Tip * 1 lgh Bluemax hose 1/4 x 15mtr

Name of Mfr.: Graco

Airless Paint Spray Hand Guns

Contractor Gun 288-420

Silver Gun 235-461

Unit Per Pc.

CODE	27 01 21	27 01 23
Name	Contractor Gun	Silver Gun
Model No.	288-420	235-461
Max. Working Pressure	24.8 MPa (248 bar)	34.5 MPa (345 bar)
Inlet Size	1/4 NPSM (M)	1/4 NPSM (M)
Orifice Diam.	3.2 mm	2.3 mm
Description	Durable Standard gun. Easy operation.	Light-weight. Recommendable for high ratio spray machines.

Name of Mfr.: Graco

Airless Spray Guns

XTR

A rugged design to handle the toughest protective coatings. The XTR gun is built for extreme conditions. A compact design allows for easy maneuverability and the trigger is designed for four fingers.

XTR-5: Maximum fluid pressure of 345 bar, 34.5 MPa (5,000 psi)

XTR-7: Maximum fluid pressure of 500 bar, 50 MPa (7,250 psi)

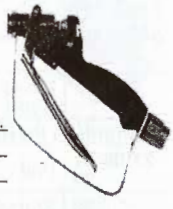
Tips: 519 XHD RAC
Orifice Size : 0.019"
Flow Width : 10" – 12" (254mm – 305mm)
Flow Rate : 0.38 gpm (1.47 lpm)

Unit Per Pc.

CODE	Handle Shape	Tip	Model
XTR-5			
27 09 01	Round	No tip	XTR500
02	Oval-Insulated	519 XHD RAC	XTR502
03	Round	519 XHD RAC	XTR504
XTR-7			
27 09 04	Round	No tip	XTR700
05	Oval-Insulated	519 XHD RAC	XTR702
06	Round	519 XHD RAC	XTR704

Name of Mfr.: Graco

Airless Spray Guns



Optimized flow for thicker materials. 30° bend at head of gun.

Unit Per Pc.

CODE	27 10 01
Model	Texspray Inline
Max. Working Pressure	280 bar
Fluid Orifice Diameter	6.35 mm

Name of Mfr.: Graco

Extensions for Airless Spray Gun

Increase comfort, speed and productivity needed to spray hard to reach areas without using ladders or scaffolding.

Unit Per Pc.

CODE	Length	Model	CODE	Length	Model
Tip Extensions			**Cleanshot Poleguns**		
27 10 11	25 cm	287019	**27 10 15**	90 cm	287026
12	40 "	287020	**16**	180 "	287027
13	50 "	287021			
14	75 "	287022			

Name of Mfr.: Graco

Airless Paint Spray Roller

Jet Roller

The JetRoller combines rolling and spraying into one action, saving time and labor on spray/back roll projects.

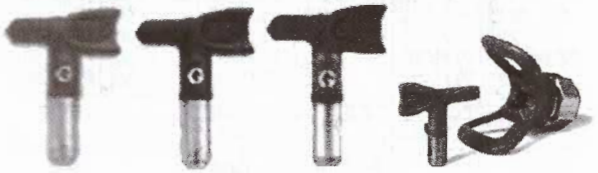
This consists of a spray roller, a spray extension and a hand roller in one complete kit. Lightweight and portable, It fits existing airless sprayers and is the ideal time-saving addition to your painting arsenal. Ideal for rough or porous surfaces.

Unit Per Pc.

CODE	27 04 21	27 04 22	27 04 23	27 04 24	27 04 25
Model	24U172	24W128	24V490	24V491	25A841
Roll Style	USA	USA	Europe	Europe	UK
Roll Frame	9"	18"	18 cm	25 cm	9"
Tip	LTX721	WR1223	PAA515	PAA721	LTX721
In-Line Valve	○	○	○	○	○
45° Swivel	-	-	-	-	-
Clean Shot	○	○	○	○	○

Name of Mfr. : Graco

High-Pressure Airless Spray Tips RAC10, XHD



RAC10-FFLP RAC10-PAA RAC10-HDA XHD

Improve spraying productivity and reduce downtime with the new HD RAC switch tip. Saves time – no screwdriver required. Change tip sizes in seconds – without removing the tip guard housing. Locking tab ensures tip stays securely in guard.

RAC10 tips

Choose the RAC10 tips for Airless applications up to 350 bar.

* FFLP tip (green) for Fine Finish applications.
* PAA/WA tip (blue) for all Professional Airless Applications.
* HDA tip (brown) for Heavy Duty Airless applications.

XHD

For heavy-duty applications up to 500 bar (50.0 MPa, 7,250 psi). Recommended for Xtreme® sprayers and XTR™ airless spray guns.

7TH 27

Specification of Reversible Tips

Model	Max. Pressure	Orifice (Inch)	Fan Width								
			5 cm	10 cm	15 cm	20 cm	25 cm	30 cm	35 cm	40 cm	60 cm
RAC10-FFLP	350	0.008"	FFLP-108	FFLP-208	FFLP-308						
		0.010"	FFLP-110	FFLP-210	FFLP-310	FFLP-410	FFLP-510				
		0.012"	FFLP-112	FFLP-212	FFLP-312	FFLP-412	FFLP-512				
		0.014"		FFLP-214	FFLP-314	FFLP-414	FFLP-514				
		0.016"					FFLP-516	FFLP-616			
RAC10-PAA	350	0.015"		PAA-215	PAA-315	PAA-415	PAA-515	PAA-615			
		0.017"		PAA-217	PAA-317	PAA-417	PAA-517	PAA-617		PAA-817	
		0.019"		PAA-219	PAA-319	PAA-419	PAA-519	PAA-619		PAA-819	
		0.021"		PAA-221	PAA-321	PAA-421	PAA-521	PAA-621	PAA-721	PAA-821	PAA-1221
		0.023"			PAA-323	PAA-423	PAA-523	PAA-623	PAA-723		WA-1223
		0.025"			PAA-325	PAA-425	PAA-525	PAA-625			WA-1225
RAC10-HDA	350	0.027"			HDA-327	HDA-427	HDA-527	HDA-627		HDA-827	WA-1227
		0.029"			HDA-329	HDA-429	HDA-529	HDA-629	HDA-729		WA-1229
		0.031"			HDA-331	HDA-431	HDA-531	HDA-631		HDA-831	WA-1232
		0.033"				HDA-433	HDA-533	HDA-633		HDA-833	WA-1233
		0.035"			HDA-335	HDA-435	HDA-535	HDA-635	HDA-735	HDA-835	WA-1235
XHD	500	0.13"					XHD-513	XHD-613			
		0.15"				XHD-415	XHD-515	XHD-615			
		0.017"				XHD-417	XHD-517	XHD-617			
		0.019"				XHD-419	XHD-519	XHD-619			
		0.021"				XHD-421	XHD-521	XHD-621			
		0.023"				XHD-423	XHD-523	XHD-623			
		0.025"				XHD-425	XHD-525	XHD-625			

Unit Per Pc.

CODE	Model	CODE	Model	CODE	Model
RAC10-FFLP Tips					
27 11 20	FFLP-108	**27 09 17**	FFLP-308	**27 09 38**	FFLP-510
21	FFLP-110	**18**	FFLP-310	**39**	FFLP-512
22	FFLP-112	**19**	FFLP-312	**40**	FFLP-514
27 09 07	FFLP-208	**20**	FFLP-314	**27 11 23**	FFLP-516
08	FFLP-210	**28**	FFLP-410	**24**	FFLP-616
27 09 09	FFLP-212	**27 09 29**	FFLP-412		
10	FFLP-214	**30**	FFLP-414		
RAC10-PAA Tips					
27 09 44	PAA215	**27 09 58**	PAA419	**27 09 78**	PAA619
45	PAA217	**59**	PAA421	**79**	PAA621
46	PAA219	**60**	PAA423	**80**	PAA623
47	PAA221	**68**	PAA425	**81**	PAA625
48	PAA315	**69**	PAA515	**82**	PAA721
27 09 49	PAA317	**27 09 70**	PAA517	**27 09 83**	PAA723
50	PAA319	**72**	PAA519	**84**	PAA817
53	PAA321	**73**	PAA521	**85**	PAA819
54	PAA323	**74**	PAA523	**86**	PAA821
55	PAA325	**75**	PAA525	**87**	PAA1221
27 09 56	PAA415	**27 09 76**	PAA615	**27 09 88**	WA1223
57	PAA417	**77**	PAA617	**89**	WA1225
RAC10-HDA Tips					
27 09 90	HDA327	**27 10 00**	HDA529	**27 11 10**	HDA735
91	HDA329	**27 11 01**	HDA531	**11**	HDA827
92	HDA331	**02**	HDA533	**12**	HDA831
93	HDA335	**03**	HDA535	**13**	HDA833
94	HDA427	**04**	HDA627	**14**	HDA835
27 09 95	HDA429	**27 11 05**	HDA629	**27 11 15**	WA1227
96	HDA431	**06**	HDA631	**16**	WA1229
97	HDA433	**07**	HDA633	**17**	WA1232
98	HDA435	**08**	HDA635	**18**	WA1233
99	HDA527	**09**	HDA729	**19**	WA1235
XHD Tips					
27 09 11	XHD415	**27 09 21**	XHD513	**27 09 31**	XHD613
12	XHD417	**22**	XHD515	**32**	XHD615
13	XHD419	**23**	XHD517	**33**	XHD617
14	XHD421	**24**	XHD519	**34**	XHD619
15	XHD423	**25**	XHD521	**35**	XHD621
27 09 16	XHD425	**27 09 26**	XHD523	**27 09 36**	XHD623
		27	XHD525	**37**	XHD625

Name of Mfr.: Graco

XHD Guard

XHD guard for pressures up to 7,250 psi (500 bar, 50.0 MPa).

27 09 41	Rac guard, XHD001	Pc.

Name of Mfr.: Graco

Kits

To be compatible with the original heavy duty RAC SwitchTips (GHDxxx).

You can use the new XHD tips in the old (GHD) guards.

You can use the old GHD tips in the new (XHD) guards.

CODE	Description	Model	Unit
27 09 51	Kit, seat and seals, 5 pack (for GHZD)	247634	Set
52	Kit, seat and seals, 5 pack (for XHD)	XHD010	"

Name of Mfr.: Graco

Accessories

CODE	Description	Model	Unit
27 09 61	Pro easy-out gun filter, 60 mesh× 1	287032	Pc.
62	Pro easy-out gun filter, 100 mesh×1	287033	"
63	Propack easy-out gun filter, 60 mesh and 100 mesh combination	287034	Set
27 09 64	Gun repair kit (includes gasket, needle and seat)	248837	Set
27 09 65	Retainer (Tip filter housing)	164120	Pc.
27 09 66	Tip Retainer 11/16 inch	220255	Pc.
67	Tip Retainer 7/8 inch	220251	"
27 09 71	Swivel 1/4"	204940	Pc.

Name of Mfr.: Graco

High Pressure Nylon Paint Spray Hose

Made of a PVC covered nylon material which is strengthened with stainless steel braided wire. These hoses are durable but lightweight and flexible.

Unit Per Lgh.

Name		Blue Hose				
CODE	Model	Lgh (mtr)	I.D. mm	Work Pressure Min. kgf/cm²	Work Pressure Max. kgf/cm²	Coupled with
27 01 61	849-515	10	6	210	280	1/4 NPSM (F)
62	849-516	15				
63	849-517	20				
64	849-518	30				
27 01 65	849-509	10	9	210	280	3/8 PF (F)
66	849-510	15				
67	849-511	20				
68	849-512	30				

Name of Mfr.: Graco

Airless High Pressure Hoses

Complete line of strong, safe and affordable hoses. Complete line of hoses for all your high pressure spraying. Colour-coded by pressure to take the guesswork out of using the right hose. Easy-to-order, configurable part numbering system. Durable design reduces downtime.

Unit Per Lgh

CODE	Size ID	Length mtr	Model
W/P: 310 Bar			
27 10 21	1/4"	7.6	H42525
22		15.2	H42550
23		30.5	H4251X
27 10 24	3/8"	7.6	H43825
25		15.2	H43850
26		30.5	H4381X
27 10 27	1/2"	7.6	H45025
28		15.2	H45050
29		30.5	H4501X

(to be continued)

Unit Per Lgh

CODE	Size ID	Length mtr	Model
W/P: 386 Bar			
27 10 31	1/4"	7.6	H52525
32		15.2	H52550
33		30.5	H5251X
27 10 34	3/8"	7.6	H53825
35		15.2	H53850
36		30.5	H5381X
27 10 37	1/2"	7.6	H55025
38		15.2	H55050
39		30.5	H5501X
W/P: 500 Bar			
27 10 41	1/4"	7.6	H72525
42		15.2	H72550
43		30.5	H7251X
27 10 44	3/8"	7.6	H73825
45		15.2	H73850
46		30.5	H7381X
27 10 47	1/2"	7.6	H75025
48		15.2	H75050
49		30.5	H7501X

Name of Mfr.: Graco

Airless Paint Spray Tips

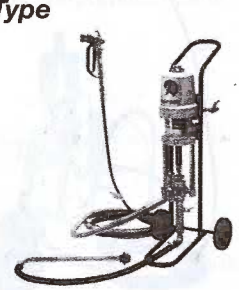
Made of tungsten carbide. Available in a wide range of sizes. The most commonly used models are listed below.

Unit Per Pc.

CODE	Model No.	Nominal No. of tip Diam.	Flow Rate Ltr/Min.	Pattern Width No.	Pattern Width mm
27 02 01	GGO-413	13	0.61		
02	GGO-415	15	0.80		
03	GGO-417	17	1.02		
04	GGO-419	19	1.29	4	200-250
05	GGO-421	21	1.59		
06	GGO-423	23	1.89		
07	GGO-425	25	2.27		
27 02 16	GGO-513	13	0.61		
17	GGO-515	15	0.80		
18	GGO-517	17	1.02		
19	GGO-519	19	1.29	5	250-310
20	GGO-521	21	1.59		
21	GGO-523	23	1.89		
22	GGO-525	25	2.27		
27 02 31	GGO-613	13	0.61		
32	GGO-615	15	0.80		
33	GGO-617	17	1.02		
34	GGO-619	19	1.29	6	310-360
35	GGO-621	21	1.59		
36	GGO-623	23	1.89		
37	GGO-625	25	2.27		

Name of Mfr.: Graco

Airless Paint Sprayers
Air-powered Type



Unit Per Set

CODE	**27 03 01**	**27 03 02**
Name	Mini Bear	Big Bear
Model No.	SP 1021	SP 1844
Pump Ratio	23:1	30:1
Max. Flow Ratio ltr/min.	4	14
Normal Delivery ltr/min.	1.3	4
Max. Output Pressure	11.5 MPa (115 kgf/ cm²)	15 MPa (150 kgf/ cm²)
Size mm (W × L × H)	320 × 400 × 750	600 × 720 × 1,280
Weight kgs	14	80

Name of Mfr.: Asahi Sunac Corporation

Unit Per Set

CODE	**27 03 03**	**27 03 04**
Name	Super Bear	
Model No.	SP 2544	SP 2554
Pump Ratio	65 : 1	45 : 1
Max. Flow Ratio ltr/min.	14	20
Normal Delivery ltr/min.	4	6
Max. Output Pressure	32.5 MPa (325 kgf/cm²)	22.5 MPa (225 kgf/cm²)
Size mm (W × L × H)	600 × 720 × 1,280	
Weight kgs	105	110

Name of Mfr.: Asahi Sunac Corporation

Standard Accessories

Items	Mini Bear	Big Bear	Super Bear
Gun	MG7	MG7	MG3
Nozzle	GN		
Material Hose	NSR 06100	NH 09200	NH 09200

Airless Paint Sprayers
Electric-powered Type

Unit Per Set

CODE	**27 03 12**	**27 03 15**
Name	AQ 600	
Power Source AC	110V	220V
Max. Flow Ratio	6 ltr/mn.	
Normal Output Pressure	20.0 Mpa (200 kgf/cm²)	
Max. Output Pressure	25.0 Mpa (250 kgf/cm²)	
Motor Output Rating	0.85 kW (11.3 PS)	
Phase Frequency	Single Phase, 50/60 Hz	
Size mm	W 350 × L 552 × H 539	
Weight kgs	41	

Name of Mfr.: Asahi Sunac Corporation

Standard Accessories

Items	AQ600
Gun	MG7
Nozzle	GN
Material Hose	NSR 06200
Motor Oil	○

Airless Paint Spray Guns

MG7 II Ace Gun

MG3 Marine Gun

PMG Pole Gun

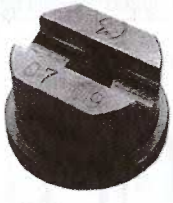
Unit Per Pc.

CODE	Item	Model	Remark
27 03 21	Ace gun	MG7 II	Light weight
22	Marine Gun	MG3	For Hi-pressure Paint
23	Ace Gun	MG7	Light weight
27 03 24	Pole Gun	PMGIVS-3	0.9 mtr lgh
25		PMGIVS-5	1.5 mtr lgh
26		PMGIVS-6	1.8 mtr lgh

Note : Size of paint hose and air hose are PF 1/4.
Name of Mfr. : Asahi Sunac Corporation

7TH 27

Airless Paint Spray Nozzles



GN Flat Spray Nozzle

RN Reversible Nozzle

Unit Per Pc.

CODE	Model No.	Nom. Tip Size ltr/min	Discharge Rate ltr/min	Pattern Width No.	Pattern Width cm	Applicable Paint Type
Type GN (Flat Spray)						
27 03 36	14C05	14	0.9	05	10-15	Marine/ Corrosion resistant paints
37	14C07			07	15-20	
38	14C09			09	20-25	
27 03 39	16C07	16	1.02	07	15-20	Marine/ Corrosion resistant paints
40	16C09			09	20-25	
41	16C11			11	25-31	
27 03 42	18C09	18	1.16	09	20-25	Marine / Chlorinated rubber paints
43	18C11			11	25-31	
27 03 44	20C11	20	1.29	11	25-31	Tar epoxy paints
45	20C13			13	31-36	
27 03 46	25C11	25	1.54	11	25-31	
47	25C13			13	31-36	
27 03 48	30C11	30	1.93	11	25-31	Non-solvent tar epoxy paints
49	30C13			13	31-36	
50	30C15			15	36-41	
27 03 51	40C13	40	2.57	13	31-36	
52	40C15			15	36-41	

Unit Per Pc.

CODE	Model No.	Nom. Tip Size ltr/min	Discharge Rate ltr/min	Pattern Width No.	Pattern Width cm	Applicable Paint Type
Type RN (Reversible)						
27 03 61	14C05	14	0.9	05	10-15	Marine / Corrosion resistant paints
62	14C07			07	15-20	
63	14C09			09	20-25	
27 03 64	16C07	16	1.02	07	15-20	
65	16C09			09	20-25	
66	16C11			11	25-31	
27 03 67	18C09	18	1.16	09	20-25	Marine / Chlorinated rubber paints
68	18C11			11	25-31	
27 03 69	20C11	20	1.29	11	25-31	
70	20C13			13	31-36	Tar epoxy paints
27 03 71	25C11	25	1.54	11	25-31	
72	25C13			13	31-36	
27 03 73	30C11	30	1.93	11	25-31	Non-solvent tar epoxy paints
74	30C13			13	31-36	
75	30C15			15	36-41	
27 03 76	40C13	40	2.57	13	31-36	
77	40C15			15	36-41	

Name of Mfr.: Asahi Sunac Corporation

High-Pressure Paint Spray Hose

Nylon and Reinforced

Made of reinforced nylon with a normal operating pressure of 150 kgf/cm².

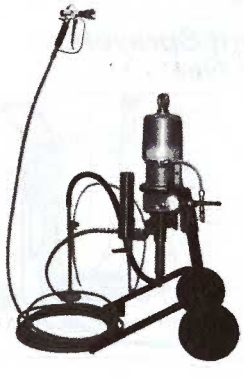
Unit Per Lgh.

CODE	Model	Diam. mm I.D.×O.D.	Joint Size	Flow Pressure	Length mtr
27 03 86	NSR06100	6 × 9	1/4"	20 MPa (200 kg/cm²)	10
87	NSR06200				20
27 03 88	NH09100	9 × 12	3/8"	25 MPa (250 kg/cm²)	10
89	NH09200				20
90	NH09300				30

Name of Mfr.: Asahi Sunac Corporation

Airless Paint Sprayers

Air-powered Type



Unit Per Set

CODE	27 04 02	27 04 04	27 04 05	27 04 06
Model	ALS-333C	ALS-433C	ALS-453C	ALS-653
Type	Cart Type			
Feature	Small Versatile Design	Medium Versatile Design	Medium Highest Pressure Type	Big for Medium and Heavy Viscosity Material Capable for Supporting Multiple Guns
Pump Ratio	25 : 1	30 : 1	53 : 1	45 : 1
Max. Flow Rate	2.5 ltr/min.	5.3 ltr/min.	3.0 ltr/min.	12.5 ltr/min.
Max. Fluid Pressure	17.5 MPa 178 kgf/cm²	20.6 MPa 210 kgf/cm²	36.3 MPa 370 kgf/cm²	27 MPa 275 kgf/cm²
Max. Air Work Pressure	0.7 MPa 7.13 kgf/cm²			0.6 MPa 6.11 kgf/cm²
Fluid Outlet	Male 1/4 PF			
Air Inlet	Male 1/4 PF			
Dimensions LxWxH mm	500x500x800	430x420x920		800x730x1,200
Weight	31 kgs	38 kgs		86 kgs

Name of Mfr.: Anest Iwata Co., Ltd.

Standard Accessories

ALS-333C	Airless Spray Gun ALG-7	1 Pc
	Paint Hose NHS-610C	10 mtrs
	Paint Filter TF-8B	1 Pc
	Drain Valve	Equipped
ALS-433C	Airless Spray Gun ALG-7	1 Pc
	Paint Hose NHS-610D	10 mtrs
	Paint Filter TF-8B	1 Pc
	Drain Valve	Equipped
ALS-453C	Airless Spray Gun ALG-7	1 Pc
	Paint Hose NHH-610B	10 mtrs
	Paint Filter TF-9B	1 Pc
	Drain Valve	Equipped
ALS-653	Airless Spray Gun ALG-7	Optional
	Nozzle Tip	Optional
	Paint Hose NHS-610B	Optional
	Paint Filter Intermediate and Intake	Equipped
	Drain Valve	Equipped
	Oiler	Equipped
	Air Filter	Equipped

Airless Paint Spray
Hand Guns and Pole Guns

The fluid needle packing can be tightened or loosened from the outside allowing for easy maintenance of the release handle mechanism. Safety features include a safety lock on the trigger and a hand guard. Soft touch triggering and a light weight gun body reduce operator fatigue.

Hand Gun

Airless Pole Gun

A) Hand Guns

Unit Per Pc.

CODE	27 04 11	27 04 12
Model	ALG-7	ALG-72
Max. Work Pressure	25 MPa (255 kgf/cm²)	
For Use	General Purpose	Hi-quality painting split-free shut off
Air Inlet	PF 1/4	

Name of Mfr.: Anest Iwata Co., Ltd.

B) Pole Guns

Unit Per Pc.

CODE	27 04 16	27 04 17	27 04 18
Model	AP96-10	AP96-15	AP96-20
Length	1 Mtr	1.5 Mtr	2 Mtr
Air Inlet	PF 1/4		

Name of Mfr.: Anest Iwata Co., Ltd.

High-Pressure Paint Spray Hose

Stainless steel braided flexible hose.

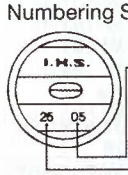
Unit Per Lgh.

CODE	Model	Size		Max. Working Pressure	Inlet Coupling
		I.D. mm	Lgh. Mtr		
27 04 26	NHS-6D	6	10	20.6 MPa 210 kgf/cm²	PF 1/4"
27			20		
28			30		
27 04 31	NHS-610B	6	10	42.5 MPa 433 kgf/cm²	

Name of Mfr.: Anest Iwata Co., Ltd.

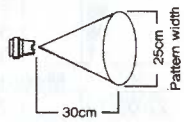
Airless Paint Spray Nozzle Tips

Numbering System (Ex. NT2505)



Fluid output (0.5 cc/sec/cm)

Pattern width (25cm) at 30cm distance



Distance from object

Unit Per Pc.

CODE	Nozzle Tip No.	Pattern Width cm.	Fluid Output ltr/min.	Orifice Diam. mm
27 04 41	NT-2006	18-23	0.72	0.39
42	2007	18-23	0.84	0.43
43	2009	18-23	1.08	0.47
27 04 48	NT-2505	23-28	0.75	0.40
49	2506	23-28	0.90	0.44
50	2507	23-28	1.05	0.47
51	2509	23-28	1.35	0.53
27 04 55	NT-3004	28-33	0.72	0.39
56	3005	28-33	0.90	0.44
57	3006	28-33	1.08	0.47
58	3007	28-33	1.26	0.51
59	3009	28-33	1.62	0.58
27 04 66	NT-3504	33-38	0.84	0.43
67	3505	33-38	1.05	0.47
68	3506	33-38	1.26	0.51
69	3507	33-38	1.47	0.55
70	3509	33-38	1.89	0.62

(to be continued)

Unit Per Pc.

CODE	Nozzle Tip No.	Pattern Width cm.	Fluid Output ltr/min.	Orifice Diam. mm
27 04 78	NT-4005	38-43	1.20	0.50
79	4006	38-43	1.44	0.55
80	4007	38-43	1.68	0.59
81	4009	38-43	2.16	0.67

Name of Mfr.: Anest Iwata Co., Ltd.

Spray Guns

There are many types of spray guns available and the spray gun required for a certain job is usually selected based upon the following specifications.

1. Material size to be sprayed
2. Quantity to be sprayed
3. Quality of finish
4. Paint viscosity

A wide variety of models from different manufacturers are available but the most common models are listed below.

Spray Pattern

Intersect Straight

Unit Per Pc.

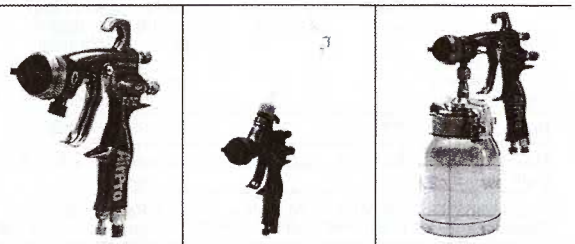
CODE	Fluid Nozzle Orifice I.D. mm	Fluid Out Put ltr/min.	Spray Pattern	Model for Reference
Small Size - Pressure Feed Type				
27 05 01	0.8	150	Intersect	W-100-082P
02	1.0	200	"	W-100-102P
Small Size - Suction Feed Type				
27 05 03	1.0	85	Straight	W-101-101S
04	1.3	150	"	W-101-131S
05	1.5	175	"	W-101-151S
06	1.3	150	Intersect	W-101-132S
07	1.5	170	"	W-101-152S
Medium Size - Pressure Feed Type				
27 05 12	1.2	500	Intersect	W-200-122P
Medium Size - Suction Feed Type				
27 05 13	1.5	240	Straight	W-200-151S
14	1.5	240	Intersect	W-200-152S
15	2.0	350	Straight	W-200-201S
16	2.0	350	Intersect	W-200-202S
17	2.5	440	Straight	W-200-251S
Large Size - Suction Feed Type				
27 05 21	1.8	290	Intersect	W-200-182S

Air Spray Guns

AirPro

Advanced spraying technology for automotive, metal, wood, waterborne, high wear and adhesive applications. This air spray gun delivers exceptional spraying performance while addressing your environmental and operator concerns. Cutting edge air cap and nozzle design optimize spray performance. Wide range of gun models to meet the needs of your specific application. Light weight design, low trigger force and ergonomic handle provide maximum operator comfort. Fewer parts means less maintenance and downtime. Air flow and consumption are tested to meet environmental compliance.

Type of Feed



Pressure Feed | Gravity Board | Siphon Board

Spray Type

Type	HVLP	Compliant	Conventional
Finish Quality	Good	Better	Best
Transfer Efficiency	High	High	Medium
Fluid Flow	Low	Medium	High
Air Flow	High	Low	Low

Unit Per Pc.

CODE	Feed Type	Spray Type	Nozzle Inch (mm)	Model
27 13 01	Pressure	Coventional	0.055 (1.4)	288931
02			0.070 (1.8)	288932
03		Compliant	0.055 (1.4)	288945
04			0.070 (1.8)	288946
27 13 05	Gravity with Plastic Cup	Conventional	0.055 (1.4)	289011
06		Compliant	0.055 (1.4)	289017

Name of Mfr.: Graco

Accessories

Unit Per Box

27 13 31	Cup & collar, 6 oz (150 ml), 8's/box	234941
32	Cup & collar, 25 oz (650 ml), 8's/box	234771
33	Lid & liner, 32 oz (850 ml), 25's/box	234938

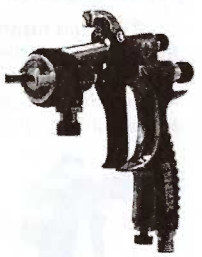
Unit Per Set

27 13 41	Air cap kit, General Metal, conventional	289773
42	Air cap kit, General Metal, conventional	289068
43	Air cap kit, General Metal, conventional	289069
44	Air cap kit, General Metal, compliant	289042
45	Air cap kit, General Metal, compliant	289044

Name of Mfr.: Graco

Air Spray Guns

Finex™



Well-balanced and lightweight, the gun design offers a more affordable way to spray. Air caps optimized for high quality spray performance. Lightweight, ergonomic gun, and light trigger pull. Integrated air inlet adjustment (cheater) valve.

Unit Per Pc.

CODE	Gun Style	Nozzle Inch (mm)	Model
27 13 11	Pressure feed conventional	0.055 (1.4)	289254
27 13 12	Gravity feed standard conventional	0.055 (1.4)	289244

Name of Mfr.: Graco

Accessories

CODE	Needle, Nozzle Size Inch (mm)	For Gun Style	Unit Per Pc. Model
Repair Kit (Needle, Nozzle, Air Cap)			
27 13 21	0.031 (0.8)	Pressure feed conventional	289305
22	0.039 (1.0)		289306
23	0.047 (1.2)		289307
24	0.055 (1.4)		289308
25	0.071 (1.8)		289309
27 13 26	0.039 (1.0)	Gravity feed conventional	289291
27	0.051 (1.3)		289292
28	0.055 (1.4)		289293
29	0.059 (1.5)		289294
30	0.071 (1.8)		289295

Unit Per Box

For use with Gravity Feed Guns (3M7s PPS Accessories)		
27 13 31	Cup & collar, 6 oz (150 ml), 8's/box	234941
32	Cup & collar, 25 oz (650 ml), 8's/box	234771
33	Lid & liner, 32 oz (850 ml), 25's/box	234938

Unit Per Pc.

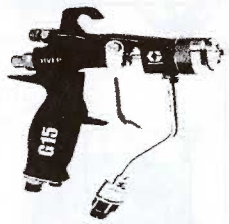
27 13 36	Gravity cup, plastic, 125cc	289323
37	Gravity cup, plastic, 600cc	289322
27 13 38	Gravity cup, aluminum, 125cc	289517
39	Gravity cup, aluminum, 250cc	289321
40	Gravity cup, aluminum, 600cc	289320

Name of Mfr.: Graco

Manual Air-assist Spray Guns

AA Seires

Manual air-assist spray guns designed for exceptional spray quality and ease of use. Designed for: High quality air-assisted spraying in a variety of applications, maximizing operator comfort and productivity, reducing overall cost of ownership, improving transfer efficiency and material usage, and versatile spraying of all shape and sizes.



Model	Recommended	Max. Working Fluid Pressure
G15 Carbide	for low to medium viscosity materials	1,500 psi (10 MPa,105 bar)
G15 Acetal Seat	for acid-catalyzed materials	
G40	for high viscosity materials above 150 psi	4,000 psi (28 MPa, 280 bar)

Air Spray Tips

Applications

AAM Tips	Fine finish tips for a high quality finish at low and medium pressure
GG4 Tips	High wear tips for industrial finishes at high pressure

AAM and GG4 Air-Assisted Spray Tip Selection Chart

Order desired tip (part no.AAAxxx or GG4xxx) from matrix below.

xxx = 3 digit number below Maximum Pattern Width. (Example : AAM409)

Orifice Size Inch (mm)	Fluid Output, fl oz/min (lpm) At 600 psi (4.1 MPa, 41 bar)	At 1,000 psi (7.0 MPa, 70 bar)	2 to 4 (100)	Max. Pattern Width at 12 inch (300 mm) 4 to 6 (150)	6 to 8 (200)	8 to 10 (250)	10 to 12 (300)	12 to 14 (350)	14 to 16 (400)	16 to 18 (450)	18 to 20 (500)
0.007 (0.178)	4.0 (0.1)	5.2 (0.15)	•107	207	307						
0.009 (0.229)	7.0 (0.2)	9.1 (0.27)	109	209	309	409	509				
0.011 (0.279)	10.0 (0.3)	13.0 (0.4)	111	211	311	411	511	611			
0.013 (0.330)	13.0 (0.4)	16.9 (0.5)		213	313	413	513	613	713		
0.015 (0.381)	17.0 (0.5)	22.0 (0.7)		215	315	415	515	615	715	815	
0.017 (0.432)	22.0 (0.7)	28.5 (0.85)		217	317	417	517	617	717	817	917
0.019 (0.483)	28.0 (0.8)	36.3 (1.09)		219	319	419	519	619	719	819	919
0.021 (0.533)	35.0 (1.0)	45.4 (1.36)			321	421	521	621	721	821	921
0.023 (0.584)	40.0 (1.2)	51.9 (1.56)				423	523	623	723		923
0.025 (0.635)	50.0 (1.5)	64.8 (1.94)				425		625	725	825	
0.027 (0.686)	58.5 (1.7)	75.8 (2.27)					527	627		827	
0.029 (0.737)	68.0 (1.9)	88.2 (2.65)						629			
0.031 (0.787)	78.0 (2.2)	101.1 (3.03)						631			
0.033 (0.838)	88.0 (2.5)	114.1 (3.42)						633		•833	
0.035 (0.889)	98.0 (2.8)	127.1 (3.81)									
0.037 (0.940)	108.0 (3.1)	140.0 (4.20)							737		
0.039 (0.991)	118.0 (3.4)	153.0 (4.59)					539	639			

Remark: Do not use tips in the gray shaded area of the chart with Model G15 guns

Gun Description

CODE	Description	Unit Per Pc. Model
27 13 51	G15 gun with Carbide Seat	24C853
52	G15 gun with Acetal Seat	24C854
53	G40 standard gun	24C855
54	G40 Hi-Flow gun	24C856
55	G40 Reverse-A-Clean(RAC) gun	24C857

Name of Mfr.: Graco

Others

		Unit Per Set
27 13 56	Tip filter kit, for spray tip orifice size 0.007, 0.009 and 0.011 10's (set)	241804
		Unit Per Lgh.
27 13 57	Air hose, max. w/p 100 psi (0.7MPa, 7 bar) 1/4" (6 mm) x 25' (7.62mtr)	241811
		Unit Per Set
27 13 58	Needle kit for G15 gun	249424
59	Needle kit for G40 gun	249456
27 13 61	Repair kit, gun	249422
62	Repair kit for the G15 or G40 trigger	249585
		Unit Per Pc.
27 13 63	Swivel fluid	115898
27 13 64	High pressure fluid ball valve, 5,000 psi (35 MPa, 350 bar), 3/8 NPT (MBE), PTFE seals	238694
		Unit Per Lgh.
27 13 65	Fluid hose, 3,500 psi (24 MPa, 242 bar) 3/16" (5 mm) x 25' (7.62 mtr)	241812
		Unit Per Set
27 13 66	Air fitting & tubing kit, Alpha G	249473

Name of Mfr.: Graco

Paint Containers
Suction Feed Type

Suction feed type container, designed to spray small quantities. Specify the spray gun type currently in use in order to supply the correct container when ordering.

Unit Per Pc.

CODE	Capacity ml	Weight gm	Applicable Spray Gun	Model for Reference	Type
27 05 31	1,000	410		PCL-10B-2	Cap Lock
32	1,000	330		PC-1S	Normal
33	700	370	W-101	PCL-7B-2	Cap Lock
34	600	270		PC-2	Normal
35	400	180		PC3	Normal
27 05 36	1,000	415		PCL-10B-3	Cap Lock
37	1,000	335	W-200	PC-1	Normal
38	700	375		PCL-7B-3	Cap Lock

7TH 27

Paint Stirrers

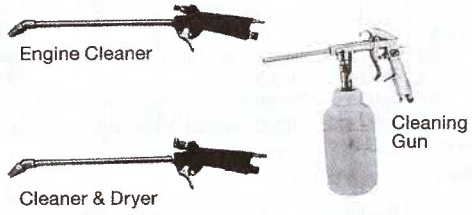
Set on the paint container, this device is driven by compressed air and used to stir and drive the paint up into the compressor unit. Equipped with a reduction gearbox it can be used with paint of comparatively high viscosity.

Unit Per Set

CODE	Capacity up to	R. P. M.
27 05 81	40 ltr	500
82	200 ltr	500

Engine Cleaner Guns

Used for fast and effective removal of grease and dirt from machinery, engine frames, etc. by kerosene and other special solvents. Furnished with 1.5 mtrs hose.

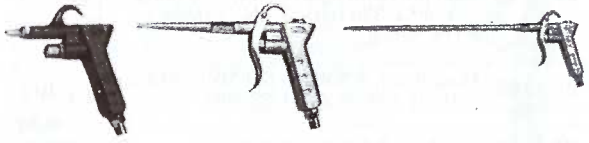


Unit Per Pc.

CODE	Description	Tip I.D. mm	Air Pressure kgf/cm²	Fluid Output ml/min
27 06 01	Engine cleaner	1.4	4	190
02	Cleaner & dryer	1.4	4	190
03	Cleaning gun	5.0	3.5	500

Note: Air inlet connection PF 1/4

Air Dusters



27 06 11 Common | 27 06 12 | 27 06 13 Long Nose

Unit Per Pc.

CODE	Nozzle mm Diam.	Nozzle mm Length	Weight grm	Uded for
27 06 11	2	24	230	Common purpose
27 06 12	2	100	260	Hard-to-reach or
13	2	300	330	high spot cleaning

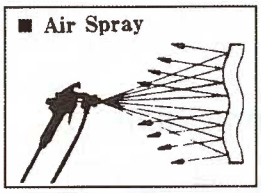
Note: Air inlet connection PF 1/4

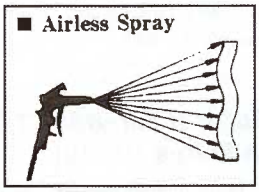
Screens, Stainless Steel
for Fluid Outlet Filter

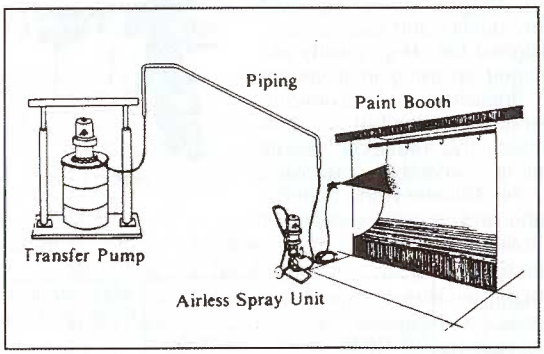
Unit Per Pc.

CODE	Mesh	Micron	Model
27 10 52	60	250	287032
53	100	149	287033

Name of Mfr.: Graco







Film thickness
Outside hull

120μ/2~3 coats	Chlorinated rubber anticorrosive
200μ/2 coats	Epoxy anticorrosive
250μ/2 coats	Tar epoxy paint

Tanks

250μ/1~2 coats	Tar epoxy paint
200μ/2~3 coats	Epoxy paint
125μ/4~5 coats	Vinyl paint

31

SAFETY PROTECTIVE GEAR

Head Protection P. 31-1 ~ 6	Eye Protection P. 31-7 ~ 8
Body Protection P. 31-8 ~ 16	Foot Protection P. 31-16 ~ 17
Anti-Piracy Goods P. 31-17 ~ 20	Anti-Vibration Goods P. 20

Slotted V-Gard Safety Helmets
with Staz-On Key Push Suspension

Made of polyethylene shell with suspension system working together as a protection system. MSA V-Gard caps meet or exceed all applicable requirements for a Type I (top impact) helmet as outlined in ANSI Z89.1-2014, Class E, and as outlined in CSA Z94.1-2005, Class E with 1-Touch® and Fas-Trac suspensions. For European versions, Push Key suspension fulfills EN 397:1995. MSA V-Gard caps are not specifically designed to protect against lateral blows from the front, side, or rear.

Available in three sizes for cap : small (6-7 1/8), standard (6 1/2-8), and large (7–8 1/2), Hat : medium (6 1/2–8") only and in a wide choice of colours in order to satisfy your requirements.

Cap

Hat

Cap

Unit Per Pc.

CODE	Colour	CODE	Colour
31 01 01	White	**31 01 09**	Hi-Viz Lime Green
02	Blue	**10**	Gold
03	Yellow	**11**	Robin's Egg Blue
04	Orange	**12**	Brown
05	Red	**13**	Silver
31 01 06	Green	**31 01 14**	Tan
07	Grey	**15**	Black
08	Hi-Viz Orange		
33 11 63	Staz-On Suspension		10087218
33 11 64	Helmet Chin Strap		88128

Name of Mfr.: MSA The Safety Company

Hat

Size: M only.

Unit Per Pc.

CODE	Colour	CODE	Colour
31 01 16	White	**31 01 35**	Grey
17	Blue	**36**	Hi-Viz Orange
18	Yellow	**37**	Bright Lime Green
19	Orange	**38**	Gold
20	Red	**39**	Silver
34	Green	**40**	Black
33 11 63	Staz-On Suspension		10087218
33 11 64	Helmet Chin Strap		88128

Name of Mfr.: MSA The Safety Company

Slotted V-Gard GREEN Safety Caps and Helmets
with Fas-Trac III Suspension

Shell made of green high-density polyethylene (GHDPE), a plant-derived plastic that has the benefit of cutting carbon emissions and reducing atmospheric CO_2, with Fas-Trac III suspension system working together as a protection system. Certified USDA Biobased (>95% biobased shell). MSA V-Gard GREEN caps and helmets meet or exceed all applicable requirements for a Type I (top impact) helmet as outlined in ANSI/ISEA Z89.1-2014, Class E and CSA Z94.1-2005.

MSA V-Gard GREEN caps and helmets are not specifically designed to protect against lateral blows from the front, side, or rear.

Available in size: standard (6 1/2-8).

Cap

Hat

Unit Per Pc.

Colour	Cap		Helmet	
	CODE	P/N	CODE	P/N
White	**31 01 41**	10160923	**31 01 46**	10150199
Blue	**42**	10160925	**47**	10150221
Yellow	**43**	10160924	**48**	10150220
Red	**44**	10160927	**49**	10150223
Green	**45**	10160926	**50**	10150222

Name of Mfr.: MSA The Safety Company

Replacement Suspensions
for Slotted MSA V-Gard Safety Helmet

Available 5 types of suspension as replacement for MSA V-Gard safety helmet.

- Fas-Trac : Adjustable head band by dial ratchet knob [US & EU]
- Staz-On : Adjustable head band by sliding [US]
- Push Key : Adjustable head band by sliding and releasing by pushing button [EU]
- 1-Touch : Easy squeeze opening and One-Hand slide adjustment [US]
- Swing Ratchet : The only self-adjusting reversible ratchet suspension [US]

Fas-Trac

Staz-On

Push Key

1-Touch

Swing Ratchet

Unit Per Pc.

CODE	Type	Size	Nom Inch	Part No. US	Part No. EU
31 01 21	Fas-Trac	Small	6 to 7-1/8"	492567	-
22		Standard	6-1/2 to 8"	10087220	-
23		Large	7 to 8-1/2"	492568	-
24			52 - 64 cm	-	10109261
31 01 25	Staz-On	Small	6 to 7-1/8"	467386	-
26		Standard	6-1/2 to 8"	10087218	-
27		Large	7 to 8-1/2"	492566	-
31 01 29	Push Key	Standard	52 - 64 cm	-	10165207
31 01 31	1-Touch	Standard	6-1/2 to 8"	10061123	-
31 01 33	Swing Ratchet	Standard	6-1/2 to 7-5/8"	816645	-

Name of Mfr.: MSA The Safety Company

MSA Vanguard II Helmets
for Lateral Protection

Designed to provide limited impact and penetration protection in the event of a top or lateral blow to the head, as well as limited protection against contact with high-voltage conductors. This helmet is tested to the same energy level for top and lateral blows. Compliant with test requirement of ANSI Z89.1-2003 Class E (electrical/high voltage) and are certified to CAN/CSA Z94.1-2005 for Type I and II helmets.

Fas-Trac III suspension is included. Shell is made of Polyethylene.

Unit Per Pc.

CODE	Colour	Part No.
31 02 01	Yellow	804939
02	White	804940
03	Red	804944
04	Blue	804946
05	Hi-Viz Orange	804947

Name of Mfr.: MSA The Safety Company

Reduced Peak Safety Helmets Linesman

High safety with low weight. Reassuring strength with feel-good comfort. Manufactured from high quality, strong ABS (Acrylonitrile-Buradiene-Styrene) material, the Concept is 20% lighter than most other helmets. Unique design, provides an extended nape, ensuring increased neck protection. Dry-Tech sweatband for maximum comfort, for extended periods of use. It satisfies all the electric insulation requirements of EN397 and ANSI Z 89 class E. It comes complete with a high security head harness, quick release chinstrap, comfortable terylene cradle and sweatband. Standard size is 51-63cm. Compliant with EN397–30°C (Low temperature), 440V a.c. (Electric resistance). Available also with wheel ratchet option.

Helmet Option: Reduced Peak Ratchet Non-Vented Weight 364 grm

Unit Per Pc.

CODE	Colour	CODE	Colour
31 03 01	White	31 03 06	Green
02	Blue	07	Black
03	Red	08	Light Blue
04	Yellow	09	Hi-Viz Yellow
05	Orange	10	Hi-Viz Orange

Name of Mfr.: Centurion Safety EU

Helmet Option: Reduced Peak Slip Non-Vented Weight345 grm

Unit Per Pc.

CODE	Colour	CODE	Colour
31 03 41	White	31 03 46	Green
42	Blue	47	Black
43	Red	48	Light Blue
44	Yellow	49	Hi-Viz Yellow
45	Orange	50	Hi-Viz Orange

Name of Mfr.: Centurion Safety EU

Replacement Accessories

Cable, Standard

Cradle with Ratchet

Sweatband

31 03 11	Harness (Chinstrap), 4 point quick release	Pc.
31 03 12	Sweatband, Dry-Tech, for Linesman helmet	"
31 03 13	Cradle, standard, with Dry-Tech sweatband	"
14	Cradle with Ratchet and Dry-Tech sweatband	"

Safety Helmets

V-Gard 900 series

Integrated Over-spectacle/Visor

V-Gard® 900 helmet range features a dynamic design and a premium shell for maximized strength. Various customization options (shell colors, stickers, badge holder, full color printing, etc.), ease of use and best in class comfort with Fas-Trac III suspension will optimize wearer acceptance.

The shell is made of ABS (Acrylonitrile Butadiene Styrene) and meet or exceed all applicable Standard requirements in EN397, including optional requirements of very low temperature (-30°C), LD (Lateral Deformation), MM (Molten Metal), 440 VAC & EN 50365 1000 VAC (non-vented version only for V-Gard 930), EN 134631-1, use in Explosive Atmosphere ATEX (zone 1, 2, 20, 21 and 22).

Size : 52 ... 64 cm.
Weight : V-Gard 930 is 495 Grams, V-Gard 950 is 635 Grams.

V-Gard 930 – Integrated over-spectacle with red micro-prismatic retro-reflective stickers

- Vented and non-vented shell in 6 different colors.
- Balanced, low profile with premium eye protection for Construction, Utilities, Shipping & OGPC.
- Premium anti-fog over-spectacle fits over all corrective glasses.
- Intelligent adjustment and innovative rubber seal to ensure gap free eye protection on the face.
- Grip area with rail system for quick and easy lens stowing.

Unit Per Pc.

Colour	Vented		Non-Vented	
	CODE	Part No.	CODE	Part No.
White	31 03 15	GVC1A-00000H0-000	31 03 21	GVD1A-00000H0-000
Blue	16	GVC5A-00000H0-000	22	GVD5A-00000H0-000
Yellow	17	GVC2A-00000H0-000	23	GVD2A-00000H0-000
Red	18	GVC3A-00000H0-000	24	GVD3A-00000H0-000
Orange	19	GVC6A-00000H0-000	25	GVD6A-00000H0-000
Green	31 03 20	GVC4A-00000H0-000	31 03 26	GVD4A-00000H0-000

Name of Mfr. : MSA the Safety Company

V-Gard 950 – Integrated visor with red micro-prismatic retro-reflective stickers

- Non-vented shell in 6 different colors.
- Balanced, low profile electrician helmet with full face protection.
- For shipping, Utilities & OGPC.
- Visor protects against impact, chemical splash, Ultra-Violet radiation, molten metal splash and electric arc to GS-ET-29 Class 1 (4kA).
- Fits over corrective glasses.
- Reliable one handed smooth movement, even gloved
- Complete with 4 point chinstrap for better helmet retention.
- Optional arc flash ear-flaps to ensure side protection against arc flash.

Unit Per Pc.

Non-Vented

Colour	CODE	Part No.
White	31 03 27	GVF1A-80A00H0-000
Blue	28	GVF5A-80A00H0-000
Yellow	29	GVF2A-80A00H0-000
Red	30	GVF3A-80A00H0-000
Orange	31	GVF6A-80A00H0-000
Green	31 03 32	GVF4A-80A00H0-000

Name of Mfr. : MSA the Safety Company

Ventilated Safety Helmets

Six-point, webbed suspension system conforms to wearer's head for maximum comfort, safety, and stability; chinstrap designed to reduce risk of helmet loss during fall (strength greater than 50 daN); includes foam inserts in two thicknesses for custom fit. Sliding vent covers allow for adjustments to air circulation inside helmet. Slots, clips, and inserts for mounting ear and face protection and headlamps. Weight: 455g. Circumference: minimum –53cm, maximum –63cm.

Certifications: CE EN 12492, UIAA, ANSI Z89.1-2009, Type I Class C.

Complies with EN 397 and EN 12492 for protection against impact and EN 397 for protection against lateral deformation and for wear in cold temperatures.

Unit Per Pc.

CODE	Colour	CODE	Colour
31 03 36	White	**31 03 39**	Orange
37	Blue	**40**	Red
38	Yellow		

Name of Mfr: Scandia Gear

V-Gard Headgear and Accessories

V-Gard Headgear is a brow guard that in combination with the wide range of V-Gard Visors offers a lightweight, comprehensive face protection system. Featuring a durable and stylish HDPE frame and the choice of over 20 visors it is ideal for many applications. With the unique 3-point visor load system visors are fitted or removed easily and quickly. Adjustable to all head sizes and with two comfort sweatbands all day comfort is for sure.

Headgear Frames

- Can be used with earmuffs, half-mask respirators and more ...
- V-shaped alignment guides for easy installation.
- Non-metal construction for use in electrical applications.
- Optional ET frame is made of heat resistant Nylon in grey with extended crown for additional coverage.
- ANSI tested to temperatures of 400°F (204°C).
- Fits head sizes 52 – 64 cm.

Approvals

ANSI/ISEA Z87-1:2010 / CSA Z94 / EN166:2001 389 BT / EN1731-F / AS/NZS 1337

Unit Per Pc.

CODE	Description	MSA No.
31 05 10	V-Gard Headgear Standard without visor	10127061
31 05 20	V-Gard Headgear Elevated Temperature without visor	10127062

Name of Mfr. : MSA The Safety Company

Faceshield Frames

This frame works with any MSA slotted or non-slotted helmet and features our unique sloped design to help material slide off the frame and out of site. Can be used with earmuffs, half-mask respirators and other personal protective equipment. Stays securely on the cap, thanks to the heavy-duty, flat, rubber strap. The elevated temperature model withstands temps up to 350°F (176°C).

- Sloped design helps material easily slide off the frame.
- Pivot location for use with earmuffs, half-mask respirators and more.
- V-shaped alignment guides for easy installation.
- Replaceable, optional debris control creates tight seal between frame and helmet.
- Heavy-duty, flat, rubber strap for easy and secure placement of frame on cap.
- Non-metal construction for use in electrical applications.
- ET frame is tested to temperatures of 350°F (176.7°C), reducing warping, cracking or crazing.
- Fits MSA slotted or non-slotted helmets.

Approvals

ANSI/ISEA Z87-1:2010 / CSA Z94 / EN166:2001 389 BT / EN1731-F / AS/NZS 1337

No. 10115730

No. 10121266

No. 10121268

Unit Per Pc.

CODE	Description	MSA No.
31 05 02	Frame with debris control, for slotted caps V-Gard	10115730
31 05 03	Frame with debris control, elevated temperature, for slotted caps V-Gard	10115821
31 05 04	Frame w/o debris control, for slotted caps V-Gard	10121266
31 05 05	Frame w/o debris control, elevated temperature, for slotted caps V-Gard	10121267
31 05 06	Universal frame with debris control, for caps V-Gard	10115822
31 05 07	Universal frame w/o debris control, for caps V-Gard	10121268
31 05 08	Universal frame with debris control, elevated temperature, for caps V-Gard	10116552
31 05 09	Universal frame w/o debris control, elevated temperature, for caps V-Gard	10124426
31 05 29	Frame, for full brim hats V-Gard	10116627
31 05 30	Frame elevated temperature, for full brim hats V-Gard	10116628

Name of Mfr. : MSA The Safety Company

Chin Protectors

V-Gard Chin Protectors work as a system with select V-Gard Nitrometer protector Visors to help provide extra protection from impact and splash hazards to face and neck.

Standard

Retractable

Approvals

ANSI/ISEA Z87-1:2010 / CSA Z94 / EN166:2001 389 BT / EN1731-F / AS/NZS 1337

Unit Per Pc.

CODE	Description	MSA No.
31 05 18	Chin protector V-Gard, standard	10115827
31 05 19	Chin protector V-Gard, retractable	10115828

Name of Mfr. : MSA The Safety Company

V-Gard Flat Polycarbonate Visors

A durable flat polycarbonate visors offer superior protection from flying debris, splash, or spray. Engineered wider than other visors, these visors provide improved resistance when it matters most. All V-Gard visors for general purpose can be worn with Cap-mounted ear muffs.

- Fits MSA slotted or non-slotted helmets.
- 8" (20.32 cm) x 17" (43.2 cm) x .06" (1.52 mm).
- Anti-fog and anti-scratch coatings.
- Sides of visor are contoured towards face for a closer fit and improved resistance to impact and splash hazards.
- Maximum UV protection.
- Slightly thicker for industrial impact applications.
- Nitrometer can only be used with V-Gard Retractable or Standard Chin Protector.

Approvals
ANSI/ISEA Z87-1:2010 / CSA Z94-3 / EN 166:2001 (2C-1.2 1B, 2C-1.2 1B 389, 2C-1.2 1B 38 KN, 2-2 1B 38 KN) / AS/NZS 1337

V-Gard Flat Visors for General Purpose Applications

Unit Per Pc.

CODE	Description	Size
31 05 27	10115836 Polycarbonate flat, clear, w/side contours	203×432×1.02 mm (8×17×0.04 inch)
31 05 28	10115837 Polycarbonate flat Nitrometer, clear, w/side contours	203×432×1.02 mm (8×17×0.04 inch)
31 05 36	10115840 Polycarbonate flat, clear, w/side contours	203×432×1.52 mm (8×17×0.06 inch)
31 05 37	10115863 Polycarbonate flat Nitrometer, clear, w/side contours	241×432×1.02 mm (9,5×1×0.04 inch
31 05 38	10117750 Polycarbonate flat, clear, non-CSA version	203×432×1.02 mm (8×17×0.04 inch)
31 05 39	10117781 Polycarbonate flat Nitrometer, clear, non-CSA version	203×432×1.02 mm (8×17×0.04 inch)
31 05 54	10117782 Polycarbonate flat, clear, non-CSA version	203×432×1.52 mm (8×17×0.06 inch)
31 05 55	10117783 Polycarbonate flat Nitrometer, clear, non-CSA version	203×432×1.52 mm (8×17×0.06 inch)
31 05 65	10118094 Polycarbonate flat, clear, non- CSA version	241×432×1.02 mm (9.5×17× 0.04 inch)

Name of Mfr. : MSA The Safety Company

V-Gard Molded Polycarbonate Visors

A durable molded poly-carbonate visors offer superior protection from flying debris, splash, or spray. Engineered wider than other visors, these visors provide improved resistance when it matters most. All V-Gard visors for general purpose can be worn with Cap-mounted ear muffs.

- Thickest visors on the market; helps prevent warping, cracking and crazing, especially when working in high heat.
- Available in both clear and green tint.
- Maximum UV protection.
- Wide, longer design for improved resistance to impact and splash hazards.
- Molded PC for superior optics.
- Anti-fog and anti-scratch coatings on select models.
- Select models accommodate cap-mounted earmuffs.
- Not for use in radiant heat hazards.

Approvals
ANSI/ISEA Z87-1:2010 / CSA Z94-3 / EN 166:2001 (2C-1.2 1BT 389 KN, 2-2 1BT 389 KN) / AS/NZS 1337

V-Gard Molded Visors for General Purpose Applications

Unit Per Pc.

CODE	Description	Size
31 05 40	10115853 Polycarbonate molded, clear, anti-fog, anti-scratch	263×432×2.49 mm (10.375×17×0.098 inch)
31 05 41	10115854 Polycarbonate molded, green tint [not IR], anti-fog, anti-scratch	263×432×2.49 mm (10.375×17×0.098 inch)

Name of Mfr. : MSA The Safety Company

V-Gard Molded Visors for Elevated Temperature Purpose Applications

Unit Per Pc.

CODE	Description	Size
31 05 42	10115844 Polycarbonate molded, clear, anti-fog, anti-scratch	235×432×2.49 mm (9.25×17×0.098 inch)
31 05 43	10115845 Polycarbonate molded, green tint, anti-fog, anti-scratch	235×432×2.49 mm (9.25×17×0.098 inch)
31 05 66	10115846 Polycarbonate molded, clear, anti-fog, anti-scratch	235x457x2,49 mm (9.25x8x0.098 inch)
31 05 67	10115849 Polycarbonate molded, green tint [not IR], anti-fog, anti-scratch	235x457x2,49 mm (9.25x18x0.098 inch)

Name of Mfr. : MSA The Safety Company

V-Gard Molded Welding, Cutting and Brazing Visors

MSA V-Gard Visors help protect against damage from impact and infrared (IR) radiation. They are thick to prevent warping from heat or weld spatter. Designed for metal pouring, gas soldering, welding, light cutting and brazing, these visors are engineered for heavy duty use.

- Suitable for most applications where welding, cutting and brazing hazards exist.
- Molded PC for superior optics.
- Wider design for improved resistance to impact and infrared (IR) radiation hazards, up to Shade 3 or Shade 5, depending on model.
- Thickness helps prevent warping, cracking and crazing. Shape accommodates cap-mounted earmuffs.
- Nitrometer version should be worn with V-Gard Chin Protector (sold separately).

Approvals
ANSI/ISEA Z87-1:2010 / CSA Z94-3 / EN 166:2001 [3 1BT 389 and 5 1BT 389] / AS/NZS 1337

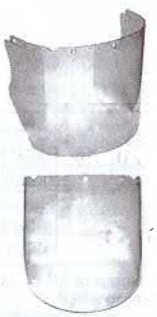
V-Gard Visors for Welding, Cutting and Brazing Purpose Applications

Unit Per Pc.

CODE	Description	Size
31 05 44	10115859 Polycarbonate molded, shade 3 IR	203x438x1.78 mm (8x17.25x0.07 inch)
31 05 45	10115860 Polycarbonate molded, shade 3 IR, Nitrometer	235x432x2.49 mm (9.25x17x0.098 inch)
31 05 46	10115861 Polycarbonate molded, shade 5 IR	235x457x2.49 mm (9.25x18x0.098 inch)
31 05 47	10115862 Polycarbonate molded, shade 5 IR, Nitrometer	235x457x2.49 mm (9.25x18x0.098 inch)

Name of Mfr. : MSA The Safety Company

V-Gard Molded Propionate Visors



These visors are for chemical and splash applications, and are ideal for use in manufacturing plants, laboratories, and other industrial applications that demand face protection against abrasive particles, splash and spray. Molded V-Gard Visors are manufactured with hand-polished molds for unsurpassed, distortion-free optical clarity and impact resistance.

- Green tint helps alleviate eye strain and fatigue by reducing excessive glare and light transmittance. Great for outdoor use in bright-light conditions.
- These visors provide maximum UV protection.

Approvals
ANSI/ISEA Z87-1:2010 / CSA Z94-3 / EN 166:2001 [1B 38] / AS/NZS 1337

V-Gard Visors for Splash/Chemical Purpose Applications

Unit Per Pc.

CODE	Description	Size
31 05 48	10115855 Propionate molded, clear	203x432x2.49 mm (8x17x0.098 inch)
31 05 49	10115856 Propionate molded, Nitrometer, clear	203x432x2.49 mm (8x17x0.098 inch)

(to be continued)

Unit Per Pc.

CODE	Description	Size
31 05 50	10115851 Propionate molded, clear	235x457x2.49 mm (9.25x18x0.098 inch)

Name of Mfr. : MSA The Safety Company

Fire Fighter Helmets

The perfect head protection solution for Fire & Rescue Services and Emergency Services demanding high performance as well as being cost effective without compromise.

Thanks to the helmet's easy maintenance and adjustment procedures due to extremely simple product design, this allows the end user to confidently maintain, adjust and secure the helmet safely prior to use. EN 443: 2008 and EN 14458 certified, using high quality materials for all of its elements, providing a very high level of protection against the main risks encountered in structural fire-fighting operations: heat, flame, shock and electrical hazards.

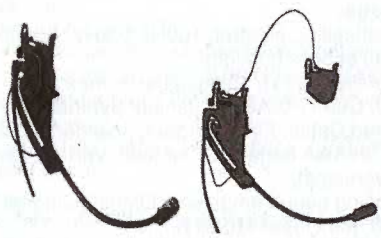
Sizes M (52-62 cm) and L (58 – 65 cm).

Unit Per Pc.

CODE	Description	Size
31 05 31	Fire Fighter Helmet F1XF, Colour: White, Blue, Yellow, Green, Grey, Hi-Viz Yellow,	M
31 05 68	Hi-Viz Orange, Photo Luminescent, Black	L

Name of Mfr. : MSA The Safety Company

Communication System integrated in Fire Fighter Helmet



Single Ear Headset

Communication headset for integration in MSA Gallet F1XF fire helmet

- One or two loudspeakers, in plastic housing with mounting clips.
- Flexible microphone, adjustable in length (80 mm) to optimize position in front of the mouth or the speech diaphragm (BA face piece)
- Downlead Cable with anti-tearing, LEMO connecting plug (green cover).

Operates with an MSA Push-to-Talk (PTT) module enabling connection to the PMR radio. Connection through an anti-tearing LEMO plug with color codification.

- PTT module with Yellow connector: non ATEX system
- PTT module with Green connector: ATEX system (for use with approved ATEX radios only)

Microphone:

- Noise cancelling Electret, 100Hz-10kHz, distortion < 3%
- Loudspeaker: 32 Ω, 20 Hz – 3 kHz, max power 100 mW
- Amplifier: adjustable gain (0 to 26 dB), 300 Hz-3 kHz Nominal output 50 mV RMS, Harmonic distortion 5%
- Down lead Cable: Fire retardant, shielded cable
- Housing: Polyamide (PA6), Fire resistant (V0)
- Operation Temperature: -20°C to +65°C, humidity < 98%

Approvals:
- EMC performance: ESD/EMI: 10 V/m
- Ingress Protection testing: IP56 (tested inside the helmet)
- ATEX (when used with an ATEX certified PTT module)
- ATEX level: II 2G Ex ia IIC T4

Connection with a wide range of brand and types of radios is possible.

CODE	Description	Unit
31 05 69	Communication headset for F1XF helmet, single ear type (specify brand and type of radio in use)	Set

Name of Mfr. : MSA The Safety Company

Helmet Mounted Headset

Active Hearing Protection headset with built-in communication capabilities, including:
- Two ear muffs with padding and noise attenuation foam
- Ear cup height adjustment system for optimal wearing position
- Flexible microphone attached to the left muff
- Down Lead Cable with anti-tearing, LEMO connecting plug (green).

Operates with an MSA Push-to-Talk (PTT) module enabling connection to the PMR radio.

Connection through an anti-tearing LEMO plug with color codification.
- PTT module with Yellow connector: non ATEX system
- PTT module with Green connector: ATEX system (for use with approved ATEX radios only)

Microphone:
- Noise cancelling electret, 100Hz-10kHz, sensitivity -61 dB (nominal) at 50% humidity
- Loudspeaker: 32 Ω, 100Hz-20kHz, max power 100mW
- Material: Cup: PC/ABS, Cushion: Synthetic leather
- Down lead Cable: Fire retardant, shielded cable
- Battery: 2xAAA batteries, Duracell, Varta, Energizer (ATEX versions),
- Surrounding sound amplifiers: Omnidirectional, sensitivity -38±2dB, Max input 110dB S.P.L
- Operation Temperature: -20°C to +65°C, humidity < 98%

Approvals:
- EMC performance: ESD/EMI: 10 V/m
- Fully watertight – equivalent to IP67
- ATEX (when used with an ATEX certified PTT module)
- ATEX level: II 2G Ex ia IIC T4
- SNR value: 26 dB / H=26 / M=23 / L=18

Connection with a wide range of brand and types of radios is possible.

CODE	Description	Unit
31 05 70	Communication headset for F1XF helmet, helmet mounted type (specify brand and type of radio in use)	Set

Name of Mfr. : MSA The Safety Company

Winter Liners for MSA Helmet

Get superior under-the-helmet warmth and protection with these winter liners. Choose Supreme, Select or Value in any of 8 different styles, including flame-retardant and flame-resistant models, for protecting the head and neck from outside cold wind, or refrigerator work. To be fitted under the helmet.
- Delivers extra warmth and protection under safety helmets
- Supreme liners offer three layers of true flame resistance (FR) and superior resistance to arc exposure (ATPV of 8 cal/cm²) ATPV denotes Arc Thermal Protective Value.
- Select liners can be laundered up to 50 times without affecting flame retardancy
- Many models offer quilted earflaps so earmuffs can be used without compromising hearing protection levels
- Adjustable chinstrap or extended neck closure helps ensure comfortable fit

Supreme: Offers multiple layers of warm flame resistant fabric, tested to withstand arc exposure to an ATPV of 8 cal/cm².
Water repellant.

31 05 56

31 05 57

31 05 58

Unit Per Pc.

CODE	Type	Part No.
31 05 56	Flame resistant V-Gard Supreme liner	10118421
31 05 57	Flame resistant V-Gard Supreme 1-piece liner, extended and quilted flaps for earmuffs	10118425
31 05 58	Flame resistant V-Gard Supreme 2-piece liner, extended with zipper	10118427

Name of Mfr. : MSA The Safety Company

Select:
Offers two layers of flame retardant fabric for extra warmth.
Water repellant.

31 05 59

31 05 61

Unit Per Pc.

CODE	Type	Part No.
31 05 59	Flame retardant V-Gard Select liner and quilted flaps for earmuffs	10118420
31 05 61	Flame retardant V-Gard Select liner, extended, quilted flaps for earmuffs and bright with reflective striping for high visibility	10118424

Name of Mfr. : MSA The Safety Company

Value:
Provides excellent protection against cold with maximum economy.

31 05 62

31 05 63

Unit Per Pc.

CODE	Type	Part No.
31 05 62	V-Gard Value liner, stylish skullie cap	10118417
31 05 63	V-Gard Value liner, Knit Hat-Cap Cover, extended and bright for high visibility	10118418

Name of Mfr. : MSA The Safety Company

Softframe Single Lens Goggles

MSA SightGard® Safety Goggle

For maximum visibility and all-around wear ability, this popular line of economical safety goggles offers impact protection. Choose anti-fog or anti-scratch coatings for improved visibility and lens life.

- Splash and impact resistant.
- Great fitting body provides all day comfort.
- Anti-fog coating protects against mist.
- Indirect vent allows air to circulate and reduce fogging.
- Meets ANSI/ISEA Z87.1-2010 and complies with CSA Z94.3.

Unit Per Pr.

CODE	Frame Colour	Lens Style	Head-band	Part No.
31 10 11	Clear	Sightgard NV, clear, Tuff-Stuff anti-scratch coated,anti-fog lens, non-vent	Elastic	10106268
31 10 13	Clear	Sightgard iV, Tuff-Stuff anti-scratch coated anti-fog, splash and impact resistant lens, indirect vent	Elastic	10106270

Name of Mfr. : MSA The Safety Company

MSA Flexi-Chem™ iV Safety Goggle

These clear, flexible safety goggles protect against significant eye impact hazards such as flying debris and splashes. Acetate lenses resist splashes while the pliable frame enhances comfort and fit. Features a wide, comfort-fit adjustable band.

- Chemical resistant acetate lens for maximum protection.
- Anti-fog coating for improved visibility.
- Indirect venting for comfortable, lasting wear.
- Adjustable band for a close-fitting seal.
- Meets ANSI/ISEA Z87.1-2010, including droplet and splash requirements. Certified to CSA Z94.3 by CSA International.

Unit Per Pr.

CODE	Frame Colour	Lens Style	Head-band	Part No.
31 10 15	Clear	Flexi-Chem iV, anti-fog acetate lens, indirect-vent	Elastic textile	10106281

Name of Mfr. : MSA The Safety Company

MSA Vault Safety Goggle

These high quality chemical goggles protect against all types of chemical, liquid and metal splash as well as coarse dust. Ideal for laboratory work, chemical handling, and stone dressing. Can be worn comfortably with prescription glasses or alone. Indirect venting permits proper air circulation while protecting against chemical or dust entry.

- Grade A polycarbonate lens resists impact at extreme temperatures, including molten metal splash.
- Indirect ventilation provides air movement as well as splash and dust protection.
- Clear, anti-fog lens offers high visibility.
- Medium impact rated lens (according to EN 166 (B)).
- Soft touch frame and adjustable strap provide extreme comfort and a custom fit.

Unit Per Pr.

CODE	Frame Colour	Lens Style	Head-band	Part No.
31 10 16	Black, grey	Vault Safety Goggle, clear, anti-fog lens, splash and impact resistant, Indirect-vent	Elastic textile	10106282

Name of Mfr. : MSA The Safety Company

UV-Resistant Goggles

Perspecta GIV 2300 a special UV-resistant soft frame goggle. The lens transmits less than 0.0012% below 400 nanometers. Above 400 nanometers (visible range), it transmits approximately 90% of the available light. Approval according EN166 34 BT

Specification

Frame colour : Light Green — Frame Style : 11-vent
Lens Type : Anti-Fog — Part No. : 00076384

31 10 31	Goggles, UV-resiistant	Pr.

Name of Mfr. : MSA The Safety Company

Protective Eyewear

Offers complete wrap around eye protection and the durability, compliance and comfort you'd expect from Sightgard® Protective Eyewear. It provides excellent side-and front-impact protection while still being comfortable to wear. All models comply with all applicable high-impact test requirements to ANSI Z87.1-2010 and certified by CSA International.

- Constructed of polycarbonate lens that stand up against impacts (Z87+).
- Temples flex for a custom fit.
- Easy-Fit nose bridge offers comfortable, non-slip support.
- Tuff Stuff™ Anti-scratch Coating provides excellent scratch resistance, extending lens life - a "must have" in abrasive work environments.
- Wraparound style offers maximum protection and unobstructed vision.
  - Clear lens
  - Grey tint lens offer glare reduction with least amount of color distortion
  - Amber lens increases contrast in low light
  - Rich-orange mirrored lens reflects light and reduces glare without color degradation

Unit Per Pr.

CODE	Frame Colour	Lens Colour	Part No.
31 10 51	Black	Clear	10070917
52		Grey	10070918
53		Amber	10070919
59		Orange Mirror	10070921

Name of Mfr. : MSA The Safety Company

Rx Overglasses

For users who wear prescription glasses, Rx Overglasses offer high protection while still providing excellent vision. The glasses fit over most prescription eyewear and feature horizontal and vertical adjustable temples, anti-fog lens and Tuff-Stuff™ anti-scratch lens coating. The limited lens curvature offers the best optics and distortion-free wide-angle viewing.

Meets general protector and impact requirements for ANSI/ISEA Z87.1-2010

- Glasses fit over most prescription eyewear.
- Panto/retroscopic tilt and sliding horizontal length. adjustment offers a custom and secure fit.

Unit Per Pr.

CODE	Frame Colour	Lens Colour	Part No.
31 10 61	Clear - Black	Clear	10008175
62	Grey - Black	Grey	10012855

Name of Mfr. : MSA The Safety Company

Ultrasonic Goggles

Uvex 9302

Ultrasonic goggle shaped ergonomically design with a super panoramic lens, soft face and nose pads, a clever ventilation system and an infinitely adjustable, extra-wide headband. The lens, made of polycarbonate, is easily replaceable and is available with the supervision HC-AF (Hard Coated Anti-Fog) coating. This unique technology guarantees a scratch-resistant surface as well as permanent anti-fog properties on the inside of the lens.

Recommendations for use: Grinding work, acid work and galvanization, dusty environments

Compliant with requirement of DIN EN 166

Unit Per Pr.

CODE	Frame Colour	Model
31 11 01	Orange	9302-210
02	Grey	9302-211

Name of Mfr.: Uvex Arbeitsschutz GmbH

7TH 31

Safety Glasses

Omnifit 3-way Adjustable

Ultra anti-fog and super anti-scratch. Polycarbonate lens with UV 400 protection (UV 400 which blocks all light rays with wavelengths up to 400 nanometers.) 3-way adjustable for various face types. Grey lens. Colours: Black & Orange.

Norms: CE Certified, EN 166-KN, EN 172, ANSI-Z87.1-2010, AS/NZS 1337.1-2010.

31 11 03	Glass, adjustable safety, omnifit 3-way, grey	Pr.

Name of Mfr. : Scandia

Harnesses

Fall Protection Range

Designed and used to prevent accidents at work or to protect against consequences of accidents at work.

Statistics prove, year after year, that lack of fall protection is a leading factor in job fatalities and injuries. The Fall Protection product lines enables your company to provide optimum quality, comfortable fall arrest systems for your workers. It combines quality, comfort and value.

- Excellent value / Optimum quality / Reliable protection / Practical operation / User-friendly design / Comfortable.

MSA Super Light EN

Especially designed to protect people working at height and keeping the cost of ownership low. Versatile range with three different models (single • back webbing loop, additional two loops at the front, integral waist belt).

- Orange polyester webbing improves worker safety through better visibility.
- Qwik-fit leg straps for quick and simple donning.

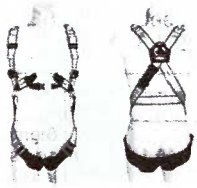
Approval: EN 361.

Unit Per Pc.

CODE	Size	Attachment Point			Part No. EUROPE
		Back	Front	Hip	
31 15 11	Small	1	0	0	10149777
12	Medium	1	0	0	10149778
13	Large	1	0	0	10149779
31 15 20	Small	1	1	0	10152174
21	Medium	1	1	0	10152175
22	Large	1	1	0	10152176
31 15 23	Small	1	1	2	10149768
24	Medium	1	1	2	10149769
25	Large	1	1	2	10149770

Name of Mfr.: MSA the Safety Company

MSA Workman Premier



Offers the user an additional attachment point at the front, with extra adjusters on the torso for even greater adjustment.

The harness also offers shoulder loops for use with the MSA Spreader Bar.

Available with Qwik-Fit (traditional mating buckle) or bayonet style (auto lock double action unlock) leg straps. Both styles offer fast and easy connection and adjustment.

Approvals

OSHA 1910.66 / OSHA 1926.502 / ANSI A10.32 / OSHA Z359.1-2007 / CSA: Z259.10-M90 classes A and P, EN 361 / EN 1497.

- Yellow polyester webbing for increased visibility.
- Color-contrasting thigh and torso straps simplify donning.
- Choice of Qwik-Fit™ or bayonet style leg straps for easy adjustment.
- Web retainer collars to keep excess webbing neat.

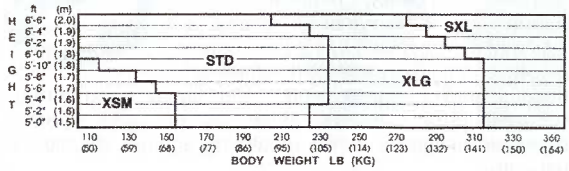
Unit Per Pc.

CODE	Size	Attachment Point			Part No. EU/US
		Back	Front	Shoulder	
Leg Straps: Qwik-Fit					
31 15 14	Small	1	1	2	10115541/10108771
15	Medium	1	1	2	10115542/10108772
16	Large	1	1	2	10115543/10108773
Leg Straps: Bayonet					
31 15 17	Small	1	1	2	10115544/10108767
18	Medium	1	1	2	10115545/10108768
19	Large	1	1	2	10115546/10108769

Name of Mfr.: MSA the Safety Company

Harness Size Information

Universal or One-Size-Fits-All harnesses do not offer proper fit for all users. You should wear proper size harness to provide you with the best possible fit, and optimum safety and comfort. Please refer to the table of Harness size information as below for your reference.



Classic Harness Belt Size Chart

Size	EX-Small	Small	Medium	Large	X-Large	XX-Large
Waist (Inches)	26"-35"	32"-41"	36"-45"	40"-49"	44"-53"	50"-59"

Gravity Harness Belt Size Chart

Size	EX-Small	Small	Medium	Large	X-Large
Waist (Inches)	28"-36"	32"-40"	36"-44"	40"-48"	44"-58"

Guide to European Norms and Selection Guide of Protective Workwear

To assist you with the selection of chemical protective clothing the EU has developed six "types" of chemical protective clothing.

EN Types	Definition	Microgard Products
Current European "Types" of Chemical Protective Clothing		
Type 1 EN943-1 EN943-2	**Gas Tight Chemical Protective Clothing** Protective clothing against liquid and gaseous chemicals, aerosols and solid particulates.	-
Type 2 EN943-1	**Non Gas Tight Chemical Protective Clothing** Suits which retain positive pressure to prevent ingress of dusts, liquids and vapours.	-
Type 3 EN14605	**Liquid Tight Suits** Suits which can protect against strong and directional jets of liquid chemical.	2500 PLUS / 3000 / 4000
Type 4 EN14605	**Spray Tight Suits** Suits which offer protection against saturation of liquid chemicals.	2000 Ts PLUS / 2500 PLUS / 3000 / 4000/CFR
Type 5 EN ISO 13982-1	**Dry Particulate Protection** Suits which provide protection to the full body against airborne solid particulates.	1500 / 1500 PLUS / 2000 COMFORT / 2000 STANDARD / 2000Ts PLUS / 2500 PLUS / 3000 / 4000/FR
Type 6 EN13034	**Reduced Spray Suits** Suits which offer limited protection against a light spray of liquid chemicals.	1500 / 1500 PLUS / 2000 COMFORT / 2000 STANDARD / 2000 Ts PLUS / 2500 PLUS / FR
Additional Standards achieved by the Microgard Product Range		
EN1073-2	Protective clothing against radioactive particulate contamination.	1500 PLUS / 2000 COMFORT / 2000 STANDARD / 2000 Ts PLUS / 2500 PLUS / 3000 / 4000 / FR
EN14126	Protective clothing against infective agents. ["Type" prefixed with "-B" (i.e. Type 3-B) indicates approval to this European Norm].	2000 STANDARD / 2000 Ts PLUS / 2500 PLUS / 3000 / 4000
EN1149-1 EN1149-5	Protective clothing with electrostatic properties.	1500 PLUS / 2000 COMFORT / 2000 STANDARD / 2000 Ts PLUS / 2500 PLUS / 3000 / 4000 / FR / CFR
DIN32781	Protective clothing. Protective suits against pesticides.	2000 STANDARD / 2000 Ts PLUS
EN ISO 14116	Protective clothing. Limited flame spread materials, material assemblies and clothing.	FR / CFR

Remark: This guide is an indication of your suits protection against a particular hazard (gas, liquid or dust). Please be aware that conformance to these types standards does not mean that your suit is 100% impervious to your hazard.

Application Table for Microgard Protective Workwear

Type	For	From
MICROGARD® 1500	Dust protection	Asbestos, powder.
MICROGARD® 1500 PLUS	Splash and particle protection.	Asbestos, brick, dust, cement dust.
MICROGARD® 2000 COMFORT	Working in warm environment, and spray protection.	Low hazard liquid, particles.
MICROGARD® 2000 STANDARD	Chemical & pharmaceutical industries, paint spraying and crime scene investigation.	Infective agents, pesticides, particulates, fibres & low hazard liquid chemical spray.
MICROGARD® 2000 Ts PLUS	Paint spraying.	Low hazard liquid and fine particulates.
MICROGARD® 2500 PLUS	Biological protection.	Heavy low hazard liquid spray and particulates.
MICROCHEM® 3000	Chemicals, oil and petrochemicals.	Inorganic chemicals and biological hazards.
MICROCHEM® 4000	Hazardous area.	Concentrated chemicals and biological agent.
MICROCHEM® FR	Working in potential explosive/flammable environments. (Wear over a thermal protective garment.)	Low hazard liquid spray and particulates, such as oil and petrochemicals, petroleum distribution and processing and utilities.
MICROCHEM® CFR	Working in potential explosive/flammable environments. (Wear over a thermal protective garment.)	Oil and petrochemicals, tank, pressure cleaning delete, petroleum, processing and utilities.

Microgard Coverall Size Chart

Size	Chest cm	Height cm
S	84 – 92	164 – 170
M	92 – 100	170 – 176
L	100 – 108	176 – 182
XL	108 – 116	182 – 188
2XL (XXL)	116 – 124	188 – 194
3XL (XXXL)	124 – 132	194 – 200

Protective Workwear

Protective workwear under an ISO 9001 approved quality control system, and meets the European Norms specified in Category III of the PPE (Personal Protective Equipment) directive for chemical protective workwear.

Designed for operatives who require particle (dust) and low hazard liquid splash protection.

Made from highly breathable SMS (Spunbond + Meltblown + Spunbond Nonwovens) fabric, and designed for workers involved in the stripping, clear up or handling of asbestos, general maintenance, construction and contract cleaning.

MICROGARD® 1500

Applications:

Where the need for dust (particle) protection is greatest, such as; asbestos related work, handling powders, general maintenance and construction.

Meets the following European Norms:

Type 5: EN ISO 13982-1 Dry particle suit

Type 6: EN 13034 Reduced spray suit

Note: Respirator is sold separately.

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
White		Navy Blue		Red	
31 20 01	S	31 20 07	S	31 20 13	S
02	M	08	M	14	M
03	L	09	L	15	L
04	XL	10	XL	16	XL
05	XXL	11	XXL	17	XXL
06	XXXL	12	XXXL	18	XXXL

Name of Mfr.: Ansell Microgard Limited

Designed for operatives who require particle (dust) and low hazard liquid splash protection.

MICROGARD® 1500 PLUS

High quality 3-layer anti-static SMS fabric for splash and particle protection. The SMS fabric is highly breathable, making it ideal for operatives working in warmer environments.

SMS fabrics are a particularly good barrier against particulates such as, asbestos, brick, dust and cement dust and will provide protection from light aerosol mists as found in some paint spray environments.

Applications:

Asbestos related work, handling powders, general maintenance, construction, pharmaceutical industries, wood & metal processing, Touch-up paint spraying, fibreglass/resin applications/ceramic fibres.

Meets the following European Norms:

Type 5 : EN ISO 13982-1 Dry particle suit
Type 6 : EN 13034 Reduced spray suit
EN1073-2 : Barrier to radioactive particulates - Class 1
EN1149-5 : Anti-static

Note: Mask and goggles are sold separately.

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
White		Light Blue		Navy Blue	
31 20 21	S	31 20 27	S	31 20 33	S
22	M	28	M	34	M
23	L	29	L	35	L
24	XL	30	XL	36	XL
25	XXL	31	XXL	37	XXL
26	XXXL	32	XXXL	38	XXXL

Name of Mfr.: Ansell Microgard Limited

Ideal for operatives working in warmer climates or environments.

MICROGARD® 2000 COMFORT

Specially designed for those working in warmer climates or warm working environments to help reduce heat stress. The critical areas to the front of the garment, including the hood, arms and legs, are MICROGARD® 2000 microporous PE laminate fabric which offers a high level of liquid and particle protection with a low level of water vapour resistance according to EN 31092 of Ret<15*.

* Ret is a measurement of a materials resistance to moisture vapour transfer.

Applications:

Critical production environments where dust and low level spray protection are required, such as: paint spraying, pharmaceutical industries, fibreglass product manufacturing, Windmill manufacturing, boat and ship building and mining.

Meets the following European Norms:

Type 5 : EN ISO 13982-1 Dry particle suit
Type 6 : EN 13034 Reduced spray suit
EN1073-2 : Barrier to radioactive particulates - Class 1
EN1149-5 : Anti-static

Unit Per Pc.

CODE	Size	CODE	Size
White			
31 20 41	S	31 20 44	XL
42	M	45	XXL
43	L	46	XXXL

Name of Mfr.: Ansell Microgard Limited

Ideal for a wide range of industrial applications such as; Pharmaceutical industries and Agriculture.

MICROGARD® 2000 STANDARD

Designed to allow water vapour (perspiration) to escape from the suit yet will withstand saturation of liquid chemicals and filter 100% of particulates down to 0.01 micron in size, and provides protection from infective agents, pesticides, particulates, fibres & liquid chemical spray.

Garment feature:

- Microporous PE laminate fabric.
- Optimised body fit.
- Bound seams ensure spray tight protection.

Applications:

Chemical & pharmaceutical industries, Cleanrooms, Paint spraying, Crime scene investigation.

Meet the following European Norms:

Type 5 : EN ISO 13982-1 Dry particle suit
Type 6 : EN13034 Low level spray tight suit
EN 14126 : Barrier to infective agents
EN1073-2: Barrier to radioactive particulates – Class 2
EN1149-5: Anti-static
DIN 32781: - Protection against pesticides

Unit Per Pc.

CODE	Size	CODE	Size
White			
31 20 51	S	31 20 54	XL
52	M	55	XXL
53	L	56	XXXL

Name of Mfr.: Ansell Microgard Limited

Ideal for a wide range of industrial applications such as; Pharmaceutical industries and Fibreglass product manufacturing.

MICROGARD® 2000 Ts PLUS

Designed to allow water vapour (perspiration) to escape from the suit yet will withstand saturation of liquid chemicals and filter 100% of particulates down to 0.01 microns in size. (EMSL test method) With stitched and taped seams, it provides an exceptional overall barrier to low hazard liquid spray and fine particulates.

Features and benefits:

Protection -
Proven barrier to low concentration liquid chemicals, diluted pesticides, liquid & particulate biological hazards.

Silicone Free –
Critical in spray painting applications.

Low Linting –
Reduced risk of contamination in critical areas.

Anti-static –
Tested according to EN 1149-5.

Applications:
Agriculture, paint spraying, pharmaceutical industries, fibreglass product manufacturing, boat and ship building and Mining.

Protection Levels & Additional Properties:

Type 4-B : Spray tight suits (Suits which offer protection against saturation of liquid chemicals)
Type 5-B : Dry particulate protection (Suits which provide protection to the full body against airborne solid particulates)
Type 6-B : Reduced spray suits (Suits which offer limited protection against a light spray of liquid chemicals)
EN 14126 : Protective clothing against infective agents ["Type" suffix with "-B" [i.e. Type 3-B] indicates approval to this European Norm].
EN 1073-2: Protective clothing against radioactive particulate contamination.
DIN 32781 : Protective clothing. Protective suits against pesticides.
EN 1149-5 : Protective clothing with electrostatic properties.

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
White		**Yellow**		**Green**	
31 20 61	S	**31 20 67**	S	**31 20 73**	S
62	M	**68**	M	**74**	M
63	L	**69**	L	**75**	L
64	XL	**70**	XL	**76**	XL
65	XXL	**71**	XXL	**77**	XXL
66	XXXL	**72**	XXXL	**78**	XXXL

Name of Mfr.: Ansell Microgard Limited

Ideal for operatives looking for protection from biological agents.

MICROGARD®
2500 STANDARD

Made from breathable microporous films, and designed to protect you from heavy liquid spray and particulates. The fabrics physical strength and flexibility ensures you are protected and comfortable in even the harshest environments.

Applications:
Where liquid tight protection and durability is required, such as Biological Protection (Risk Groups 1-2, as per definition in the European BioDirective: Directive 2000/54/EC), chemical and pharmaceutical industries, low pressure industrial cleaning, industrial paint spraying and nuclear industry.

Meets the following European Norms:
Type 4-B: EN 14605 Spray tight suit
Type 5-B: EN ISO 13982-1 Dry particle suit
Type 6-B: EN 13034 Reduced spray suit
EN14126: Barrier to infective agents
EN1073-2: Barrier to radioactive particulates - Class 1
EN1149-5: Anti-static

Note: Respirator is sold separately.

Unit Per Pc.

CODE	Size	CODE	Size
White			
31 20 81	S	**31 20 84**	XL
82	M	**85**	XXL
83	L	**86**	XXXL

Name of Mfr.: Ansell Microgard Limited

Effective barrier against both inorganic chemicals and biological agents.

MICROCHEM®
3000

A soft and flexible 3 layer fabric with strong ultrasonically welded seams and an extremely effective barrier against both inorganic chemicals and biological hazards.

Applications:
Protection against many concentrated inorganic chemicals, biological hazards and particles smaller than 1µm, in industries such as; Chemicals, oil and petrochemicals, pharmaceutical, food industry, sewage purification installations, industrial & tank cleaning and mining.

Meets the following European Norms:
Type 3-B: EN 14605 Liquid tight suit
Type 4-B: EN 14605 Spray tight suit
Type 5-B: EN ISO 13982-1 Dry particle suit
EN14126: Barrier to infective agents
EN1073-2: Barrier to radioactive particulates - Class 1
EN1149-1: Anti-static

Note: Respirator is sold separately.

Unit Per Pc.

CODE	Size	CODE	Size
Yellow			
31 20 91	S	**31 20 94**	XL
92	M	**95**	XXL
93	L	**96**	XXXL

Name of Mfr.: Ansell Microgard Limited

Effective barrier against both organic and inorganic chemicals and biological agents

MICROCHEM®
4000

A unique multi-layer barrier fabric which is renowned for its lightweight textile feel and exceptional barrier to organic and inorganic chemicals and biological agents.

Features and benefits:
- Double zip system, ultrasonically welded seams and new seam taping method ensure liquid tight protection.
- Double cuff design for improved protection.
- Knitted internal sleeve cuff for wearer comfort.

Applications:
For hazardous areas where protection against concentrated chemicals and biological agents is required, such as: chemicals, oil and petrochemicals, pharmaceutical, mining, agriculture, industrial & tank cleaning, sewage purification installations and emergency services (HAZMAT, CBRN).

Note:
HAZMAT – Hazardous Materials.
CBRN – Chemical, Biological, Radiological, Nuclear, and Explosive.

Meets the following European Norms:
Type 3-B : EN 14605 Liquid tight suit
Type 4-B : EN 14605 Spray tight suit
Type 5-B : EN ISO 13982-1 Dry particle suit
EN14126 : Barrier to infective agents
EN1073-2 : Barrier to radioactive particulates - Class 1
EN1149-5 : Anti-static

Note: Respirator is sold separately.

Unit Per Pc.

CODE	Size	CODE	Size
Green			
31 21 01	S	**31 21 04**	XL
02	M	**05**	XXL
03	L	**06**	XXXL

Name of Mfr.: Ansell Microgard Limited

Designed for operatives in potentially explosive/flammable environments.

MICROGARD® FR

Made from flame retardant material, and offers wearers protection from liquid chemicals to EN Type 6 and particulates to EN Type 5, and peace of mind to workers in potential explosive/flammable environments. To decrease the risk of burn injury, wear over thermal protective workwear. The fabric is designed to allow water vapour to escape from the suit helping to reduce the risk of heat stress.

Applications:

Wear over a thermal protective garment [EN ISO 14116 Index 2 or above] in areas with a risk of flash fire and where protection from low level liquid spray and particulates is required, such as: oil and petrochemicals, petroleum distribution and processing and Utilities.

Meets the following European Norms:

Type 5	: EN ISO 13982-1 Dry particle suit
Type 6	: EN 13034 Reduced spray suit
EN1073-2	: Barrier to radioactive particulates - Class 1
EN ISO 14116	: Limited flame spread materials and assemblies
EN1149-5	: Anti-static

Note: Respirator is sold separately.

Unit Per Pc.

CODE	Size	CODE	Size
Denim Blue			
31 21 11	S	**31 21 14**	XXL
12	M	**15**	XXXL
13	L		

Name of Mfr.: Ansell Microgard Limited

Designed for operatives in potentially explosive/flammable environments

MICROCHEM® CFR

Made from a flame retardant treated non-woven material with PVC barrier film it offers wearers protection from liquid chemicals to EN Type 3, 4 & 5, and peace of mind to workers in potential, explosive/ flammable environments. This protective suit has been proven to decrease the risk of burn injury when worn over thermal protective workwear.

Applications:

Wear over a thermal protective garment [EN ISO 14116 Index 2 or above] to provide chemical spray protection according to Type 3 & 4, in industries such as: Oil and petrochemicals, tank, pressure cleaning involving flammable liquids, petroleum distribution and processing and utilities.

Meets the following European Norms:

Type 3	: EN 14605 Liquid tight suit
Type 4	: EN 14605 Spray tight suit
Type 5	: EN ISO 13982-1 Dry particulate suit
EN ISO 14116	: Limited flame spread materials and assemblies
EN 1073-2	: Barrier to radioactive particulate
EN1149-5	: Anti-static

Note: Respirator is sold separately.

Unit Per Pc.

CODE	Size	CODE	Size
Red			
31 21 21	S	**31 21 24**	XL
22	M	**25**	XXL
23	L	**26**	XXXL

Name of Mfr.: Ansell Microgard Limited

Boilersuits, UV protection

Made of 100% fine cotton twill with UV protection finish with storage pockets for mobile phone/walkie-talkie, flashlight, and pen at chest, sleeve, side (×2, open access), and seat (×2). Attached with Velcro strips for rank and name badges, and epaulets can be affixed to shoulders.

Standards

CE Certified / EN340 (general requirements) / EN13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II AS/NZS 4399 UPF rating 50+

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Orange**		**Royal Aqua**	
31 22 01	S	**31 22 07**	S	**31 22 13**	S	**31 22 19**	S
02	M	**08**	M	**14**	M	**20**	M
03	L	**09**	L	**15**	L	**21**	L
04	XL	**10**	XL	**16**	XL	**22**	XL
05	2XL	**11**	2XL	**17**	2XL	**23**	2XL
06	3XL	**12**	3XL	**18**	3XL	**24**	3XL

Name of Mfr.: Scandia Gear

Boilersuits, UV protection

Short Sleeves

Made of 100% fine cotton twill with UV protection finish with storage pockets for mobile phone/walkie-talkie, flashlight, and pen at chest, sleeve, side (×2, open access), and seat (×2). Attached with Velcro strips for rank and name badges, and epaulets can be affixed to shoulders.

Standards

CE Certified / EN 340 (general requirements) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Orange**		**Royal Aqua**	
31 22 25	S	**31 22 31**	S	**31 22 37**	S	**31 22 43**	S
26	M	**32**	M	**38**	M	**44**	M
27	L	**33**	L	**39**	L	**45**	L
28	XL	**34**	XL	**40**	XL	**46**	XL
29	2XL	**35**	2XL	**41**	2XL	**47**	2XL
30	3XL	**36**	3XL	**42**	3XL	**48**	3XL

Name of Mfr.: Scandia Gear

Boilersuits, UV protection

Reflect Type

Made of 100% fine cotton twill with UV protection finish, and with storage pockets for mobile phone/walkie-talkie, flashlight, and pen at chest, sleeve, side (×2, open access), and seat (×2). Striped with 3M reflective 50 mm (2.0 in) width belts at shoulders, arms, legs, and back to provide high visibility for day and night. Attached with Velcro strips for rank and name badges, and epaulets can be affixed to shoulders.

Standards
CE Certified / EN 340 (general requirements) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Sky Blue**		**Royal Aqua**	
31 22 49	S	31 22 55	S	31 22 61	S	31 22 67	S
50	M	56	M	62	M	68	M
51	L	57	L	63	L	69	L
52	XL	58	XL	64	XL	70	XL
53	2XL	59	2XL	65	2XL	71	2XL
54	3XL	60	3XL	66	3XL	72	3XL
Eco Green		**Grey**		**Orange**		**Red**	
31 22 73	S	31 22 79	S	31 22 85	S	31 22 91	S
74	M	80	M	86	M	92	M
75	L	81	L	87	L	93	L
76	XL	82	XL	88	XL	94	XL
77	2XL	83	2XL	89	2XL	95	2XL
78	3XL	84	3XL	90	3XL	96	3XL

Name of Mfr.: Scandia Gear

Boilersuits, UV protection
Reflect Type Short Sleeves

Made of 100% fine cotton twill with UV protection finish, and with storage pockets for mobile phone/walkie-talkie, flashlight, and pen at chest, sleeve, side (x2, open access), and seat (x2). Striped with 3M reflective 50 mm (2.0 in) width belts at shoulders, arms, legs, and back to provide high visibility for day and night. Attached with Velcro strips for rank and name badges, and epaulets can be affixed to shoulders.

Standards
CE Certified / EN 340 (general requirements) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Sky Blue**		**Royal Aqua**	
31 22 97	S	31 23 03	S	31 23 09	S	31 23 15	S
98	M	04	M	10	M	16	M
99	L	05	L	11	L	17	L
31 23 00	XL	06	XL	12	XL	18	XL
01	2XL	07	2XL	13	2XL	19	2XL
02	3XL	08	3XL	14	3XL	20	3XL
Eco Green		**Grey**		**Orange**		**Red**	
31 23 21	S	31 23 27	S	31 23 33	S	31 23 39	S
22	M	28	M	34	M	40	M
23	L	29	L	35	L	41	L
24	XL	30	XL	36	XL	42	XL
25	2XL	31	2XL	37	2XL	43	2XL
26	3XL	32	3XL	38	3XL	44	3XL

Name of Mfr.: Scandia Gear

Boilersuits, UV protection
Reflect Type for Women

A boilersuit for women, made of 100% fine cotton twill with UV protection finish, and with storage pockets for mobile phone/walkie-talkie, flashlight, and pen at chest, sleeve, side (x2, open access), and seat (x2). Striped with 3M reflective 50 mm (2.0 in) width belts at shoulders, arms, legs, and back to provide high visibility for day and night. Attached with Velcro strips for rank and name badges, and epaulets can be affixed to shoulders.

Standards
CE Certified / EN 340 (general requirements) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Orange**	
31 23 45	XS	31 23 51	XS	31 23 57	XS
46	S	52	S	58	S
47	M	53	M	59	M
48	L	54	L	60	L
49	XL	55	XL	61	XL
50	2XL	56	2XL	62	2XL

Name of Mfr.: Scandia Gear

Boilersuits, Heat-regulating
UV Protection, Reflect Type

Designed for hot climates and engine rooms thanks to mesh moisture management at back pleats. Made of lightweight 100% fine cotton with UV protection finish, and with storage pockets for flashlight, and pen at chest, sleeve, side (x2, open access), and seat (x2). Striped with 3M reflective 50 mm (2.0 in) width belts at shoulders, arms, legs, and back to provide high visibility for day and night. Attached with Velcro strips for rank and name badges, and epaulets can be affixed to shoulders.

Standards
CE Certified / EN 340 (general requirements) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Grey**	
31 23 63	S	31 23 69	S	31 23 75	S
64	M	70	M	76	M
65	L	71	L	77	L
66	XL	72	XL	78	XL
67	2XL	73	2XL	79	2XL
68	3XL	74	3XL	80	3XL
Orange		**Red**			
31 23 81	S	31 23 87	S		
82	M	88	M		
83	L	89	L		
84	XL	90	XL		
85	2XL	91	2XL		
86	3XL	92	3XL		

Name of Mfr.: Scandia Gear

Boilersuits, Heat-regulating
UV Protection, Reflect Type Short Sleeves

Designed for hot climates and engine rooms thanks to mesh moisture management at back pleats. Made of lightweight 100% fine cotton with UV protection finish, and with storage pockets for flashlight, and pen at chest, sleeve, side (x2, open access), and seat (x2). Striped with 3M reflective 50 mm (2.0 in) width belts at shoulders, arms, legs, and back to provide high visibility for day and night. Attached with Velcro strips for rank and name badges, and epaulets can be affixed to shoulders.

Standards
CE Certified / EN 340 (general requirements) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Grey**	
31 23 93	S	**31 23 99**	S	**31 24 05**	S
94	M	**24 00**	M	**06**	M
95	L	**01**	L	**07**	L
96	XL	**02**	XL	**08**	XL
97	2XL	**03**	2XL	**09**	2XL
98	3XL	**04**	3XL	**10**	3XL
Orange		**Red**			
31 24 11	S	**31 24 17**	S		
12	M	**18**	M		
13	L	**19**	L		
14	XL	**20**	XL		
15	2XL	**21**	2XL		
16	3XL	**22**	3XL		

Name of Mfr.: Scandia Gear

Boilersuits, Flame-registant

Offshore, Multi-Hazard

Flame-resistant offshore boilersuit. Made of 99% mercerized cotton, 1% carbon fiber. Equipped pockets at chest (x2, slanted, concealed, zipped), sleeve, side (x2, open access), cargo, seat (x2), and inner. 2 walkie-talkie loops on upper chest. Striped with flame-resistant reflective 50 mm (2.0 in) width belts at shoulders, arms, legs, and back to provide high visibility for day and night. Attached with Velcro strips for rank and name badges.

Standards

CE Certified / EN 340 (general requirements) / EN 11611, Class 1 A1 (welding) / EN 11612, A1 B1 C1 F1 (flame-resistant) / EN 1149-5 (anti-static) / IEC 61482-2, Class 1 (electric arc) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+ / AS/NZS 1906.4 : 2010 / AS/NZS 4399 : 1996

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
White		**Orange**		**Red**	
31 24 23	S	**31 24 29**	S	**31 24 35**	S
24	M	**30**	M	**36**	M
25	L	**31**	L	**37**	L
26	XL	**32**	XL	**38**	XL
27	2XL	**33**	2XL	**39**	2XL
28	3XL	**34**	3XL	**40**	3XL

Name of Mfr.: Scandia Gear, Product Code: 1035.12

Boilersuits, Heat-regulating

Flame-resistant, Anti-static

Offshore boilersuit designed for hot climates and engine rooms. Made of 99% long staple cotton, 1% carbon fiber with mesh moisture management at back pleats. Equipped pockets at chest (x2, slanted, concealed, zipped), sleeve, side (x2, open access), seat (x2), and inner. 2 walkie-talkie loops on upper chest. Striped with flame-resistant reflective 50 mm (2.0 in) width belts at shoulders, arms, legs, and back to provide high visibility for day and night. Attached with Velcro strips for rank and name badges.

Standards

CE Certified / EN 13688 (general requirements) / EN 11612, A1 B1 C1 (flame-resistant) / EN 1149-5 (anti-static) / EN 13758-2 (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+ / AS/NZS 1906.4 : 2010 / AS/NZS 4399 : 1996

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size	CODE	Size
White		**Navy**		**Orange**		**Red**	
31 24 41	S	**31 24 47**	S	**31 24 53**	S	**31 24 59**	S
42	M	**48**	M	**54**	M	**60**	M
43	L	**49**	L	**55**	L	**61**	L
44	XL	**50**	XL	**56**	XL	**62**	XL
45	2XL	**51**	2XL	**57**	2XL	**63**	2XL
46	3XL	**52**	3XL	**58**	3XL	**64**	3XL

Name of Mfr.: Scandia Gear

UV Protection High Visibility Boiler Suits

Designed for high-visibility class 3, and UV protection finish. Mesh Moisture Management at back pleats. Reflective striping 50 mm (2.0 in): shoulders, arms, legs, and back. Storage: mobile phone/ walkie-talkie, flashlight, and pen. Pockets: chest, sleeve, side (x2, open access), and seat x2). Velcro strips for rank and name badges. Two-way zipper closure. Colours: High viz yellow & navy.

Norms

CE-certified, EN13688:2013 (general requirements), EN13758-2, 40+ (UV protection), EN20471, class 3 (high visibility), AS/NZS 1906.4, Class R+F (high visibility) , AS/NZS 4399 UPF Rating 50+ (UV protection), OEKO-TEX® Standard 100 Class II.

Unit Per Pc.

CODE	Size	CODE	Size
31 24 65	XS	**31 24 69**	XL
66	S	**70**	2XL
67	M	**71**	3XL
68	L		

Name of Mfr.: Scandia Gear

Multi-Hazard Offshore Boiler Suits

Flame-resistant fluo reflective perforated striping 2.0 inches (50 mm): shoulders, arms, legs, and back. Storage: mobile phone/walkie-talkie, flashlight, and pen. Pockets: chest, sleeve, side (x2, open access), seat (x2) and inner. Velcro strips for rank and name badges. 99% long staple cotton, 1% carbon fiber, and Chemical, oil, and stain-resistant.

Norms

NFPA 2112 - ASTM F1930 Bodyburn rate 7%, NFPA 70E - ASTM F1959, HRC 2 / ATPV 9.4 cal/cm², ASTMF1506, AS/NZS 4399 UPF rating 50+, AS/NZS 1906.4 : 2010, AS/NZS 4399 : 1996, CE Certified, EN 340 (general requirements), EN 11611, Class 1 A1 (welding), EN 11612, A1 B1 C1 F1 (flame-resistant), EN 13034:2005 (chemical protection), IEC 61482-2, Class 1 (electric arc), EN 13758-2, 40+ (UV protection).

Unit Per Pc.

CODE	Size	CODE	Size
Navy		**Orange**	
31 24 72	XS	**31 24 79**	XS
73	S	**80**	S
74	M	**81**	M
75	L	**82**	L
76	XL	**83**	XL
31 24 77	2XL	**31 24 84**	2XL
78	3XL	**85**	3XL

Name of Mfr.: Scandia Gear

Offshore Jackets & Trousers, Multi-Hazard

Jacket

Trousers

Made of 99% cotton, 1% carbon fiber with storage pockets [Jacket: at chest (x2, slanted, concealed, zipped), and sleeve and Trousers: at side (x2), seat (x2) and cargo]. Striped with flame-resistant reflective 50 mm (2.0 in) width belts at shoulders, arms, and back on jacket, and at legs on trousers to provide high visibility for day and night. Attached with Velcro strips on jacket for rank and name badges. Colour: Orange & Navy.

Standards

CE Certified / EN 340 (general requirements) / EN 11611, Class 1 A1 (welding) / EN 11612, A1 B1 C1 F1 (flame-resistant) / EN 1149-5 (anti-static) / IEC 61482-2, Class 1 (electric arc) / EN 13758-2, 40+ (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+ / AS/NZS 1906.4: 2010 / AS/NZS 4399: 1996

Unit Per Pc. Unit Per Pr.

CODE	Size	CODE	Size
Jacket		**Trousers**	
31 24 86	S	**31 24 92**	S
87	M	**93**	M
88	L	**94**	L
89	XL	**95**	XL
90	2XL	**96**	2XL
91	3XL	**97**	3XL

Name of Mfr.: Scandia Gear

Multi Hazard Winter Offshore Boiler Suits

Thermal insulation to -20°C (-4°F), and lined and padded body, sleeves, and legs. Ultra soft down feel padding for optimal comfort. Flame-resistant reflective striping 50 mm (2.0 in): shoulders, arms, legs, and back. Storage: flashlight. Pockets: chest (x 2, slanted, concealed, zipped), side, sleeve, seat (x2), and cargo. Velcro strips for rank and name badges. Shell: 99% cotton, 1% carbon fiber, Lining: 55% modacrylic, 45% cotton. Colours : Orange & Navy.

Norms

CE Certified, EN 340 (general requirements), EN 11611, Class 1 A1 (welding), EN 11612, A1 B1 C1 F1 (flame-resistant), EN 1149-5 (anti-static), IEC 61482-2, Class 1 (electric arc), EN 13758-2, 50+ (UV protection), OEKO-TEX® Standard 100 Class II, AS/NZS 4399 UPF rating 50+, AS/NZS 1906.4 : 2010, AS/NZS 4399: 1996.

Unit Per Pc.

CODE	Size	CODE	Size
31 24 98	S	**31 25 01**	XL
99	M	**02**	2XL
25 00	L	**03**	3XL

Name of Mfr.: Scandia Gear

High Visibility Waterproof Winter Boiler Suits

Suitable for thermal insulation to -50°C (-58°F), and waterproof breathable polyester oxford with fur lining in body. Reflective striping 50 mm (2.0 in): chest, waist, shoulders, arms, legs, and back. Storage: flashlight. Pockets: chest (x2), side (x2), slanted and covered), sleeve (x1), seat (x2 covered), hammer pocket (x1) and inner (x2). Velcro strips for rank and name badges. Two-way zipper closure on front. Shell: 100% polyester Oxford / PU-coated (breathable), Lining body: 100% acrylic fur and Lining arms and legs: 100% polyester.

Norms

CE Certified, EN ISO 13688 (general requirements), EN 342 Icler 0.431 X-2-2 (cold weather), EN 343 Class 3-1 (foul weather), EN 20471 Class 3 (high-visibility).

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
High Viz Orange & Navy		**High Viz Yellow & Navy**		**High Viz Orange & Grey**	
31 25 04	S	**31 25 10**	S	**31 25 16**	S
05	M	**11**	M	**17**	M
06	L	**12**	L	**18**	L
07	XL	**13**	XL	**19**	XL
08	2XL	**14**	2XL	**20**	2XL
31 25 09	3XL	**31 25 15**	3XL	**31 25 21**	3XL

Name of Mfr.: Scandia Gear

High Visibility Waterproof Winter Parkas & Trousers

Thermal insulation to -45°C (-49°F) in combination with Scan Polar HV 002 trousers. Waterproof breathable polyester twill with teddy lining in body. Pockets: chest (x2), waist (x2), inner (x2) for parka, and side (x2, slanted and covered), seat (x2, covered) and hammer pocket (x1) for trousers. Reflective striping 50 mm (2.0 in): chest, shoulders, arms, back and legs. Velcro strips for rank and name badges, and double zipper closure. Shell: 100% polyester twill / PU-coated (breathable), and Lining body: 100% acrylic teddy for parka, and shell: 100% polyester twill / PU-coated (breathable), and Lining: 100% polyester for trousers. Wearing Bib & Brace Trousers in combination with Winter Parka together conforms to class 3 protection.

Norms

CE Certified, EN 13688 (general requirements), EN 342, Icler 0.359 X-2-2 (cold weather), EN 343, Class 3-1 (foul weather), EN 20471, Class 2 (high-visibility) for parka and Class 1 (high-visibility) for trousers.

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
High Viz Yellow & Navy		**High Viz Orange & Navy**		**High Viz Orange & Grey**	
Parks					
31 25 22	S	**31 25 28**	S	**31 25 34**	S
23	M	**29**	M	**35**	M
24	L	**30**	L	**36**	L
25	XL	**31**	XL	**37**	XL
26	2XL	**32**	2XL	**38**	2XL
27	3XL	**33**	3XL	**39**	3XL
Trousers					
31 25 40	S	**31 25 46**	S	**31 25 52**	S
41	M	**47**	M	**53**	M
42	L	**48**	L	**54**	L
43	XL	**49**	XL	**55**	XL
44	2XL	**50**	2XL	**56**	2XL
45	3XL	**51**	3XL	**57**	3XL

Name of Mfr.: Scandia Gear

Work Shirts, Flame-resistant Multi-Risk

A flame-resistant workwear shirt made of 99% cotton, 1% carbon with pockets at chest (x2), pen pocket opening, and sleeve. Colour : Navy.

Standards

CE Certified / EN 13688 (general requirements) / EN 11612 (flame-resistant) / EN 1149-5 (anti-static) / EN 13758-2 (UV protection) / OEKO-TEX® Standard 100 Class II / AS/NZS 4399 UPF rating 50+ / AS/NZS 1906.4 : 2010 / AS/NZS 4399: 1996

Unit Per Pc.

CODE	Size	CODE	Size
31 25 61	S	**31 25 64**	XL
62	M	**65**	2XL
63	L	**66**	3XL

Name of Mfr.: Scandia Gear

Antistatic Safety Shoes
Conformed to BS EN 345-1

Made of black smooth leather with double density polyurethane sole. Extra wide fit with the following safety features.

- 200 joules toe protection to EN 345-1 and oil resistant outsole.
- Antistatic (dissipates static electricity between 100 kilohms - 1000 megohms).
- Energy absorbing and shock absorbing heel.
- Heat resistant up to 200°C.

Unit Per Pr.

CODE	Size		CODE	Size	
	U.K.	cm		U.K.	cm
31 35 01	3	22	**31 35 09**	8.5	27
02	4	23	**10**	9	27.5
03	5	23.5	**11**	9.5	28
04	6	24.5	**12**	10	28.5
05	6.5	25	**13**	10.5	29
31 35 06	7	25.5	**31 35 14**	11	29.5
07	7.5	26	**15**	12	30.5
08	8	26.5	**16**	13	31.5

Reference Model: Totectors Limited #3038

Leather Safety Hi Shoes
European Safety Footwear Protection Type: S3

Made of upper in black printed leather and water repellent lining in full leather. Fiberplast® toecap and Kevlar midsole, and dual density TPU (Thermoplastic Polyurethane) sole. Acid-, oil-, and alkali-resistant sole. Anti-static sole and shock absorbing heel. Colour: Black.

Standards

EN ISO 20345:2012 compliant / ASTM F2413-11 compliant

Unit Per Pr.

CODE	Size			CODE	Size		
	EU	UK	USA		EU	UK	USA
31 35 61	37	4	5	**31 35 67**	43	9	10
62	38	5	6	**68**	44	10	11
63	39	6	7	**69**	45	10.5	11.5
64	40	6.5	7.5	**70**	46	11	12
65	41	7	8	**71**	47	12	13
31 35 66	42	8	9	**31 35 72**	48	13	14

Name of Mfr: Scandia Gear

S3: 200 joule toecap protection.
Closed seat region (fully enclosed heel).
Antistatic properties. Energy absorption of seat region.
Water penetration and water absorption resistance.
Sole penetration resistance. Cleated outsole.

Antistatic Rigger Boots
Conformed to BS EN 345-1

Made of rustic tan smooth leather, and with double density polyurethane sole. Extra wide fit with the following safety features.

- 200 joules toe protection to EN 345-1 and oil resistant outsole.
- Antistatic (dissipates static electricity between 100 kilohms - 1000 megohms)
- Energy absorbing and shock absorbing heel.
- Heat resistant up to 200°C

Unit Per Pr.

CODE	Size		CODE	Size	
	U.K.	cm		U.K.	cm
31 35 21	6	24.5	**31 35 25**	10	28.5
22	7	25.5	**26**	11	29.5
23	8	26.5	**27**	12	30.5
24	9	27.5			

Reference Model: Totectors Limited #4207

Antistatic Ski Boots
Conformed to BS EN 345-1

Made of black grain leather, and with double density polyurethane sole. Wide fit with the following safety features.

- 200 joules toe protection to EN 345-1 and oil resistant outsole.
- Antistatic (dissipates static electricity between 100 kilohms - 1000 megohms)
- Energy absorbing and shock absorbing heel.
- Heat resistant up to 200°C

Unit Per Pr.

CODE	Size		CODE	Size	
	U.K.	cm		U.K.	cm
31 35 31	3	22	**31 35 38**	9	27.5
32	4	23	**39**	10	28.5
33	5	23.5	**40**	10.5	29
34	6	24.5	**41**	11	29.5
35	6.5	25	**42**	12	30.5
31 35 36	7	25.5	**31 35 43**	13	31.5
37	8	26.5			

Reference Model: Totectors Limited #3415

Industrial Wellington Boots

PVC / Nitrile knee length Wellington. Green with crepe coloured sole, and steel midsole. Resistance to most oils, fats, grease, acids and alkalis. Sole tread designed to give maximum grip.

200 joules toe protection to EN 345-1.

Unit Per Pr.

CODE	Size		CODE	Size	
	U.K.	cm		U.K.	cm
31 35 51	6	24.5	**31 35 55**	10	28.5
52	7	25.5	**56**	11	29.5
53	8	26.5	**57**	12	30.5
54	9	27.5			

Reference Model: Totectors Limited #A8793G

Anti-shatter Films
(Blast Mitigation)

Anti-shatter film provides protection from flying glass in the event of a natural disaster or demolition by pirates. It forms an almost invisible protective coating on the glass surface. This window film should only be applied to flat glass. It should never be applied to polycarbonate (plastic). Adhesive window films are constructed from a multi-lamination of micro-thin polyester. They also have a scratch resistant coating to protect the film surface and enhance durability (except films for external application). The film should be cut 10 mm over size in both dimensions, and trim around the oversized edges using a sharp trimming knife after squeezed the film.

15 08 21	Film, anti-shatter (Blast mitigation), 200 micron, Width 152 cm x Length 15 mtr	Roll

Anti-Piracy Goods
Bulletproof Accessories

Bulletproof Combat Helmet	DC4-4NIJ IIIA level 9mm colour Black, included cotton protection cover.
Bulletproof Body Armer (Vest)	DC2-3NIJ IIIA level 44mm colour Black Due the layer of fibers in a vest, the protection level (resistance level) was determined. This model has the NIJ level IIIA protection, which against the heaviest bullets from a handgun, such as the 44 and 9mm.
Bulletproof Plate	Vests with level III and IV require hard plates in the vest for protection against machine gun fire.

Bulletproof Helmet

Bulletproof Helmet Visor

Bulletproof Body Armor (Vest)

Bulletproof Plate

Plate Carrier

Unit Per Pc.

CODE	Description	Weight grms
31 03 51	Combat helmet, NIJ IIIA 9mm DC4-4	1,500
31 05 71	Helmet visor NIJ level IIIA	1,500
31 41 11	Body armor (vest) DC2 NIJ Standard IIIA -.44	2,600
31 41 12	Plate DC3-5 Alumina ceramic	3,000
13	Plate DC3-7 Silicone carbide ceramic	2,550
14	Plate carrier, black (Universal size)	-

7TH 31

Gunsafes

For quantity of weapons maximum 8 and 125 cm. 4 points lock system and mechanical or electronic lock possible. Thickness of steel 3mm, door 45mm with anthracite green colour. One separate ammunition safe inside. Safetyclass A/VDMA and Safe II-NCP, and Securitylevel I.

Unit Per Pc.

CODE	No. of Weapons	Dimensions L x W x D mm	Weight kgs
31 41 15	8	150 x 55 x 35	97

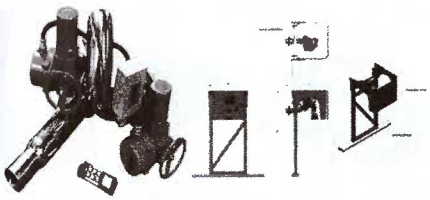
Anti-Piracy Dummies

A false security patrol man to assist deterring pirates from boarding ships. Any equipment dummy wearing are separate order.

31 41 16	Dummy, anti-piracy, bare	Pc.

Anti-Piracy Water Jet Cannons

A water jet cannon is based on the use of high quality oscillating water cannons, which are installed on several points on the ship and prevent any boarding attempt when activated. The system is sent to the ship as a modular package that is installed by the crew without any required external help. Training will be given to operate the system and a user manual will enable smooth operation of the system.



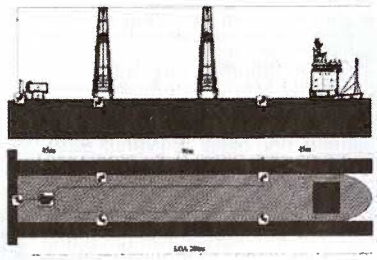
The installation of the system is divided into 2 main categories.

A – Engine room related installation

- Ensure existing pump has enough capacity.
- Else, in case the capacity is not available, connect engine room pumps to on deck diesel powered booster pump.
- Connection of hoses from pump (via engine room or deck).

B – Deck related installation

- Install water cannons on deck or railing, using supplied connection kit.
- Run 6" feeder hoses from main pump outlet / manifold.
- Run 4" hoses from feeder to water cannon.



System Components

- Storage container.
- High quality oscillating water cannons, (a modified type of the systems used by fire fighting departments).
- Special fittings to temporarily attach the cannons to deck or railing.
- Hoses, supplying water from pump to water cannons.
- Ballistic shields to protect water cannons from direct small caliber fire arms.

Typical Installation Pattern per Ship's Overall Length

Overall Length	No. of Cannon	Water Supply	
		ltr/min.	m3/hr
200 mtr	5 cannons	10,000	600
280 mtr	7 cannons	14,000	840
360 mtr	9 cannons	18,000	1,080

Performance of Water Jet Cannon

- Ultra compact
- Weight : just 11.4 kgs
- Totally adjustable
- Capacity 2,000 ltr/min at 5.5 bar
- Range 50 – 55 meters
- High quality aluminium
- Includes manometer
- Left right radius between -180 degrees to +180 degrees
- Up down radius between -45 degrees to +90 degrees
- 12/24V electro motor
- Remote control option with joystick
- 10 year warranty

Water Supplying Hose:

Made from thick woven synthetic thread with a bacl PVC/ Nitril protection coating. The internal and external tubes are seamlessly interwoven to long levity. Consequently the internal tube cannot disconnect from the external tube.

Totally oil and chemical resistant as well as extreme UV and Ozon protected.

Long levity, remains flexible, no maintenance, no rotting, temperature range -35°C to +100°C, sea water proof, high resistance to tearing and bending, and special textile cuff protect connector areas.

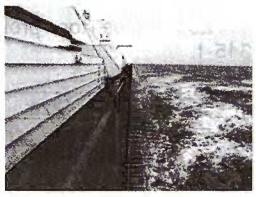
Couplings & Connectors:

High quality aluminium connectors with fast connect and release system, as used by fire fighting department worldwide.

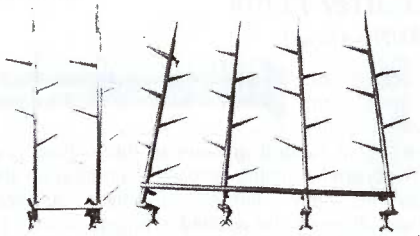
How to order : 31 - 41 - 21

Water jet cannon system,With further details

Anti Piracy Spike Fence (APSF)



Specially designed to safeguard ships sailing across high-risk sea area. The fence is steel welded with galvanized surface treatment, effective to prevent pirates or stealers to climb onboard. It can work for much longer time with effective anti-corrosive function, and easily installed firmly one by one along deck fishplate, gunnels with wing bolts. 2-spikes type fence and 4-spikes type fence are available, and can be designed other type as per requirement.



Unit Per Pc.

CODE	Model	Dimension L x B mm	Weight (kgs/pcs)	Typical qty as per Ship's LOA
31 41 25	4-spikes	850x680	4.9	Quantity required =LOAx2/0.95
26	2-spikes	425x680	2.45	Quantity required =LOAx2/0.5

Night Vision Binoculars
for Anti-piracy

An optical instrument that you can see a night view even in a moonless, cloudy night.

Bushell Night Vision	Yukon Night Vision	Nikon Ocean Pro
· Night vision: Generation 1 · Infrared illuminator: Built-in · Water resistant	· Day and night operation · Higher resolution than Gen. 1 · Effective over 300 yards	· Multiple layers of anti-reflective compounds offer excellent brightness and resolution

Bushell Night Vision	Yukon Night Vision	Nikon Ocean Pro
· Great for close-range viewing (Security). Long-range viewing (Wildlife observation) · Magnification× objective lens: 2.5×42	· Brightness adjustment control · Stealth IRTM operation with invisible, powerful dual IR illuminators · Direct video output capability · Magnification× objective lens: 5×42	· Fast range of focus for quick viewing · 22.7mm of eye relief provides comfortable viewing for eyeglass wearers. · Maximum exit pupil ensures you catch the image, even with motion at sea · Magnification× objective lens: 7×50

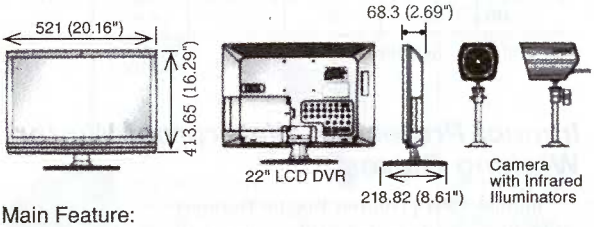
Unit Per Pr.

CODE	Model	Capacity Magnification × Objective Lens
37 03 55	Bushell night vision	2.5 × 42
56	Yukon night vision	5 × 42
57	Nikon oceanpro	7 × 50

Camera Monitoring System with Infrared Illuminators

Camera monitoring system provides maximum protection for any spot 24 hours a day, 7 days a week. Simple to set up, you can monitor any time from anywhere around the world. All four cameras are waterproof to IP66, compact and highly durable to achieve clear stable video, even in harsh outdoor conditions. Single cable to each camera cover all wiring needs including power so you have the freedom to place them anywhere, even if there is no electrical outlet in the area. The four night vision cameras are equipped with 30 infrared LEDs which allow them to detect and show objects as far as 50 feet, even in the darkest conditions. The built in 500 GB hard drive allows for extended recording time and is expandable to 1 TB for maximum data capacity. Please contact your local supplier about more details.

Dimensions



Main Feature:

- Smartphone ready
- 4 x infra red night vision cameras – 600TV lines of high super resolution
- H.264 high performance compression
- 8 channel digital video recorder
- Vivid 22" LCD display
- 500GB of storage USB 2.0

Accessories:

4 pcs	Camera & bracket	1 pc	Power cable
4 pcs	60ft. extension cable	1 pc	Remote control
1 pc	User manual	1 pc	Quick guide
1 pc	VGA cable	1 pc	Mouse
1 pc	Network setup guide	1 pc	Ethernet cable
2 pcs	Battery		

37 05 43	Camera monitoring system with infrared illuminators Samsun model SME-4220	Set

Razor Wire

A concertina configured galvanized steel wire used for outer boundary fencing on ship's deck to defend ships from the vandals, like pirates. The razor wire prevent any intruders from penetrating by piercing or gripping them. Two patterns of loop are available ; Single Loop or Crossed Loop, and also standard diameter are available from 400 mm to 900 mm. Standard coil length when extended is 15 mtr, and they can be lengthen by connecting clips.

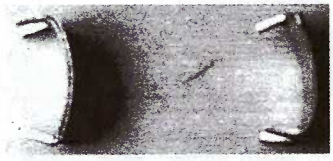
Single Loop

Crossed Loop

Unit Per Mtr

CODE	Diameter	Standard Extended Length	CODE	Diameter	Standard Extended Length
Single Loop			Crossed Loop		
67 12 01	400 mm	15 mtr	**67 12 11**	400 mm	15 mtr
02	500 mm		**12**	500 mm	
03	600 mm		**13**	600 mm	
04	700 mm		**14**	700 mm	
05	800 mm		**15**	800 mm	
67 12 06	900 mm	15 mtr	**67 12 16**	900 mm	15 mtr

Connecting Clips and Ties for Razor Wire



Connecting Clip

Connecting Tie

CODE	Unit	CODE	Unit
Connecting Clip		**Connecting Tie**	
67 12 18	Per Piece	**67 12 20**	Per Piece
19	100's / Packet	**21**	100's / Packet

Stainless Steel Razor Wire

Unit Per Mtr

CODE	Circle Diam.	CODE	Circle Diam.
67 12 25	900 mm	**67 12 26**	1,000 mm

Remark: Standard length is 15 mtr per coil

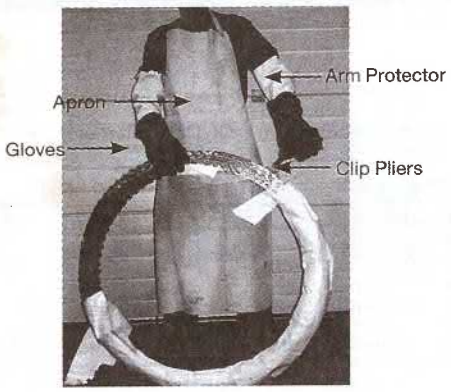
Flat Wrap Razor Wire

A flat wrap razor wire is suitable for installations where a neat appearance is required. Due to its flat construction, it does not overhanging into neighboring property and will therefore not harm innocent bystanders. The flat wrap razor wire can be used to upgrade any existing fence or wall, by adding directly to a wire mesh fence, or adding it on top of a brick or pre-cast wall to instantly upgrade your security.

Unit Per Lgh

CODE	Diam.	Length
67 12 31	500 mm	10 mtr
32	700 mm	"

Tools for Razor Wire Installation



19 01 41	Gloves for razor wire installation	Pr.
43	Arm Protector for razor wire installation	Pr.
45	Apron for installation razor wire	Pc.
61 17 65	Razor wire clip pliers	Pr.

Barbed Wire

A galvanized wire with sharp edges to protect your property from invaders by fencing around.

67 12 41	Barbed wire, 250 mtr (App.28 kgs)	Roll

Reference Table of EU Glove Size

EU	EU	Palm circumference
7	S	< 17.8 - 20.2
8	M	20.3 - 22.8
9	L	22.9 - 25.3
10	XL	25.4 - 27.8
11	2XL	27.9 - 30.4
12	3XL	30.5 >

Anti-Vibration Gloves

To protect the worker from impact and vibration, reducing the vibration and absorbing the shock from handheld power tools, according to the recommendation of "Maritime Labour Convention 2006" – Guideline B4.3.3 – Exposure to vibration".

Leather

Oil Resistant

Unit Per Pr.

CODE	Description	Material
31 45 01	Leather	Palm : leather / Back : canvas
31 45 02	Oil resistant	Palm and back : Nitril-latex

Flame Resistant Impact Protection Gloves

Flame resistant stitching tread, and provide protection from heat, flames and sparks. Made of digital goat leather palm. CE Category III.

Unit Per Pr.

CODE	Size (EU)		CODE	Size (EU)	
31 45 05	M	8	**31 45 07**	XL	10
06	L	9			

Name of Mfr. : Scandia Gear

Impact Protection Waterproof Winter Working Gloves

Impact TPR (Thermo Plastic Rubber) protection, and waterproof palm and back. Silicone palm for improved grip. Cold resistance up to -30°C (-22°F), and washable at 30°C (86°F). CE category II.

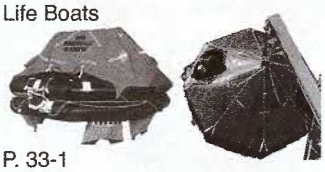
Norms:
CE Certified, EN 420, EN 388 (4543), EN 511 (X13), ANSI 105:2011 cut level 4, ANSI 105:2011 puncture level 4, ANSI 105:2011 abrasion level 6.

Unit Per Pr.

CODE	Size (EU)		CODE	Size (EU)	
31 45 08	M	8	**31 45 10**	XL	10
09	L	9	**11**	2XL	11

Name of Mfr. : Scandia Gear

SAFETY EQUIPMENT

Liferafts and Life Boats  P. 33-1	Life Jackets/ Lifebuoys P. 33-1 & 2	Lifeboat/ Liferaft Accessories P. 33-2 ~ 7
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330140	33-1	330215	33-3/7	330351	33-55	330469	33-59	330590	33-73	330665	33-80	330758	33-90
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330151	33-2	330236	33-4	330362	33-55	330527	33-62	330605	33-66	330675	33-65	330772	33-90
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338587	33-25	338945	33-43	338957	33-43	339240	33-25	339540	33-25
338619	33-30/32	338946	33-43	338958	33-43	339241	33-25	339541	33-25
338658	33-25/32	338947	33-43	338959	33-43	339242	33-25	339542	33-25
338684	33-25	338948	33-43	338960	33-43	339243	33-25	339543	33-25
338690	33-25/28	338949	33-43	338961	33-43	339244	33-25	339544	33-25
338691	33-25/28	338950	33-43	338962	33-43	339245	33-25	339545	33-25
338692	33-28	338951	33-43	338963	33-43	339246	33-25	339546	33-25
338695	33-28	338952	33-43	338964	33-43	339247	33-25	339547	33-25
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338902	33-43	338955	33-43	338967	33-43	339250	33-25	339550	33-25
338903	33-43	338956	33-43	338968	33-43	339251	33-25	339551	33-25
338904	33-43	338957	33-43	338969	33-43	339252	33-25	339552	33-25
338905	33-43	338958	33-43	338970	33-43	339253	33-25	339553	33-25
338911	33-43	338959	33-43	338971	33-43	339254	33-25	339554	33-25
338912	33-43	338960	33-43	338972	33-43	339255	33-25	339555	33-25
338913	33-43	338961	33-43	338973	33-43	339256	33-25	339556	33-25
338914	33-43	338962	33-43	338974	33-43	339257	33-25	339557	33-25
338915	33-43	338963	33-43	338975	33-43	339258	33-25	339558	33-25
338921	33-43	338964	33-43	338976	33-43	339259	33-25	339559	33-25
338922	33-43	338965	33-43	338977	33-43	339260	33-25	339560	33-25
338923	33-43	338966	33-43	338978	33-43	339261	33-25	339561	33-25
338924	33-43	338967	33-43	338979	33-43	339262	33-25	339562	33-25
338925	33-43	338968	33-43	338980	33-43	339263	33-25	339563	33-25
338926	33-43	338969	33-43	338981	33-43	339264	33-25	339564	33-25
338927	33-43	338970	33-43	338982	33-43	339265	33-25	339565	33-25
338928	33-43	338971	33-43	338983	33-43	339266	33-25	339566	33-25
338929	33-43	338972	33-43	338984	33-43	339267	33-25	339567	33-25
338930	33-43	338973	33-43	338985	33-43	339268	33-25	339568	33-25
338931	33-43	338974	33-43	338986	33-43	339269	33-25	339569	33-25
338932	33-43	338975	33-43	338987	33-43	339270	33-25	339570	33-25
338933	33-43	338976	33-43	338988	33-43	339271	33-25	339571	33-25
338934	33-43	338977	33-43	338989	33-43	339272	33-25	339572	33-25
338935	33-43	338978	33-43	338990	33-43	339273	33-25	339573	33-25
338936	33-43	338979	33-43	338991	33-43	339274	33-25	339574	33-25
338937	33-43	338980	33-43	338992	33-43	339275	33-25	339575	33-25
338938	33-43	338981	33-43	338993	33-43	339276	33-25	339576	33-25
338939	33-43	338982	33-43	338994	33-43	339277	33-25	339577	33-25
338940	33-43	338983	33-43	338995	33-43	339278	33-25	339578	33-25
338941	33-43	338984	33-43	338996	33-43	339279	33-25	339579	33-25
338942	33-43	338985	33-43	338997	33-43	339280	33-25	339580	33-25
338943	33-43	338986	33-43	338998	33-43	339281	33-25	339581	33-25
338944	33-43	338987	33-43	338999	33-43	339282	33-25	339582	33-25
338945	33-43	338988	33-43	339000	33-25	339283	33-25	339583	33-25
338946	33-43	338989	33-43	339001	33-25	339284	33-25	339584	33-25
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33X056	33-8	851531	33-75	851596	33-76		
33X057	33-8	851532	33-75	851597	33-76		
33X058	33-8	851533	33-75	851598	33-76		
33X059	33-8	851534	33-75	851599	33-76		
33X062	33-8	851535	33-75	851701	33-76		
33X063	33-8	851536	33-75	851702	33-76		
33X064	33-8	851537	33-75	851703	33-76		
33X065	33-8	851538	33-75	851704	33-76		
33X066	33-8	851539	33-75	851705	33-76		
33X067	33-8	851540	33-75	851706	33-76		
33X068	33-8	851541	33-75	851707	33-76		
33X069	33-8	851542	33-75	851708	33-76		
33X070	33-8	851543	33-75	851709	33-76		
33X082	33-8	851544	33-75	851710	33-76		
33X100	33-9/11	851545	33-75	851711	33-76		
33X101	33-9	851546	33-75	851712	33-76		
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33X104	33-9	851549	33-75	851715	33-76		
33X105	33-9	851550	33-75	851716	33-76		
33X106	33-9	851551	33-75	851717	33-76		
33X107	33-9	851552	33-75	851718	33-76		
33X108	33-9	851553	33-75	851719	33-76		
33X109	33-9	851554	33-75	851720	33-76		
33X112	33-9	851555	33-75	851721	33-76		
33X113	33-9	851556	33-75	851722	33-76		
33X114	33-9	851557	33-75	851723	33-76		
33X115	33-9	851558	33-75	851724	33-76		
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33X117	33-9	851560	33-75	851726	33-76		
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33X119	33-9/11	851562	33-75	851728	33-76		
33X120	33-9/11	851563	33-75	851729	33-76		
33X123	33-9	851564	33-75	851730	33-76		
33X124	33-9	851565	33-75	851731	33-76		
33X126	33-9	851566	33-75	851732	33-76		
33X128	33-9	851567	33-75	851733	33-76		
33X134	33-9	851568	33-75	851734	33-76		
33X141	33-9	851569	33-75	851735	33-76		
851507	33-75	851570	33-75	851736	33-76		
851508	33-75	851571	33-75	851737	33-76		
851509	33-75	851572	33-75	851738	33-76		
851510	33-76	851573	33-75	851739	33-76		
851511	33-75	851574	33-75	851740	33-76		
851512	33-75	851575	33-75	851741	33-76		
851513	33-75	851576	33-75	851742	33-76		
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851515	33-75	851578	33-75	851746	33-77		
851516	33-75	851581	33-75	851747	33-77		
851517	33-75	851582	33-75	851748	33-77		
851518	33-75	851583	33-75	851749	33-77		
851519	33-75	851584	33-75	851750	33-77		
851520	33-75	851585	33-75	851751	33-77		
851521	33-75	851586	33-75	851752	33-77		
851522	33-75	851587	33-75	851753	33-77		
851523	33-75	851588	33-75	851754	33-77		

Inflatable Liferafts

A wide variety of models from different manufacturers are available to meet the requirements of the International Convention for the Safety of Life at Sea (SOLAS), known as "96SOLAS".

They are furnished with standard equipment and additional features as the customer specifies, such as Deck Cradle, Hydrostatic Release, etc.

An exceptionally rugged construction supplied in glass-reinforced plastic (GRP) containers.

There are two types of inflatable liferaft mainly used on board, Throw-over type and Davit-Launching type. Throw-over type can be launched manually or by securing the tow line to a strong point on deck and throwing the container overboard. When the tow line is pulled taut, an integral CO_2 gas cylinder is activated which inflates the boarding step, buoyancy chambers and canopy support. Davit- Launching type is obliged to use for either Port or Starboard side on Bulk Carriers since 2007, lowering down by davit and inflate manually by pulling the tow line.

Every liferaft shall be serviced at intervals not exceeding 12 months.

Please specify the following points when ordering.
1) Capacity, 2) Throw-over or DL(Davit-launching) type,
3) Ship's registered flag, 4) Installation Height,
5) Classification society

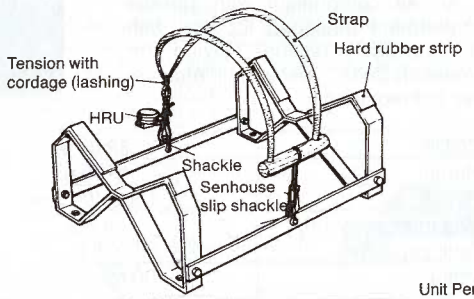
Unit Per Set

Throw-over type		Davit-Launching type	
CODE	Capacity	CODE	Capacity
33 01 01	6 men	**33 02 06**	6 men
02	10 men	**08**	10 men
03	16 men	**14**	16 men
04	20 men	**19**	20 men
05	25 men	**20**	25 men

Note : Deck cradle and hydrostatic release are not included with the above unit.

Deck Cradles for Liferaft

When ordering, please specify the capacity and manufacturer's name of the liferaft to be installed.



Unit Per Set

CODE	For Liferaft	CODE	For Liferaft
33 01 61	6 men	**33 01 64**	20 men
62	10 "	**65**	25 "
63	16 "		

Hydrostatic Release Units

Double Looped Rope Line Type

These units consist of a double looped rope line, a release mechanism, and a weak link. This release unit conforms with the requirements of the 1983 amendments to SOLAS 1974.

For Liferaft

For Epirb

These units will release the liferaft or EPIRB (Emergency Position Indicating Radio Beacon) at a depth of between 1.5 and 4 mtrs underwater. The units could be round or square shape. Below is a reference of brand & manufacturers, but there are specific types of HRU for certain EPIRB brand. Please specify the types and brand when ordering.

Unit Per Set

33 01 19	Hammar H20R	Liferaft	C M Hammer AB
26	Hammar H20-YSE	Epirb	
33 01 28	Thanner DK-2004	Liferaft	Thanner
33 01 29	SafeteTmate LR-1	Liferaft	SafeTmate
93	SafeteTmate EP-1	Epirb	

Totally Enclosed Lifeboats

According to the 1983 amendments to the International Convention for the Safety of Life at sea 1974, all new building ships of which the keel is laid on or after July 1st 1986 require the installation of fully enclosed lifeboats.

Please specify the required number of persons on board and also specify the required classification society.

33 01 30	Lifeboat, totally enclosed with further detail	Set

7TH 33

Life Jackets

A life jacket, comply with new SOLAS regulations (Amendments to chapter II of LSA (Life-Saving Appliance) Code effective on July 01, 2010) should be provided for every person on board the ship. Each life jacket is fitted with a whistle, retro-reflective material, lifting loop and buddy line. Made of polyethylene foam material covered by polyester. Life Jacket for Infants should be supplied to all passenger ships.

Adult	Child	Infant
Weight : Over 43 kgs Chest : Under 175 cm	Weight: 15–43 kgs	Weight: Under 15 kgs

Unit Per Pc.

CODE	Usage	Approved	CODE	Usage	Approved
33 01 31	Adult	H.K.	**33 01 38**	Adult	U.K. DOT
32	Child		**39**	Child	
33	Infant		**47**	Infant	
33 01 34	Adult	U.S.C.G.	**33 01 48**	Adult	MED
35	Child		**49**	Child	
46	Infant		**50**	Infant	

Inflatable Life Jackets

Made of air and watertight rubberlined nylon. Inflation is done by means of CO_2 cylinders provided with the jacket.

Unit Per Pc.

CODE	Approved	Usage	Material	Required time to expand
33 01 40	U.K. DOT	Adult	Rubber lined nylon	app. 5 min.
41	H.K.			
42	U.S.C.G.			
66	MED			

Life Jacket Lights

Each life jacket shall be fitted with a light complying with the requirements for a 0.75 cd light for 8 hours. The battery will be operated automatically upon entry into the water.

33 01 43	Life jacket light	Pc.
45	Bag for life jacket light	"

Lifebuoys

Normally made from polyethylene outer skin and polyurethane foam inner core.

Cargo ships shall carry no less than the number or lifebuoys complying with the requirements of SOLAS described in the table below. In compliance with requirements it is fitted with a buoyant lifeline.

When being in used for operating the quick-release arrangement provided for the self-activated smoke signals and self-igniting lights, the lifebuoy have a mass sufficient to operate the quick-release arrangement or 4 kgs, whichever is the greater.

Required quantity by Regulation 32

Length of ship	Numbers of Lifebuoys
Under 100 mtr	8 pcs
100 and under 150	10 "
150 and under 200	12 "
200 and over	14 "

Throw-over Lifebuoy

Quick Release Lifebuoy

Unit Per Pc.

CODE	Approved	O.D.	I.D.	Weight
Weight Over 2.5 kgs (Throw-over Lifebuoy)				
33 01 51	H.K.	Under 800 mm	Over 400 mm	Over 2.5 kgs and less than 4.0 kgs
56	U.K.DOT			
57	N.V.			
58	U.S.C.G.			
59	MED			
Weight Over 4 kgs (For Quick-release Arrangement)				
33 01 54	H.K.	Under 800 mm	Over 400 mm	Over 4.0 kgs
53	U.K.DOT			
55	N.V.			
52	U.S.C.G.			
60	MED			

Immersion Suits

Made of foam rubber. Serves to prevent the loss of body heat when submerged in cold water. Shall be provided for every person assigned to the crew of the rescue boat and at least three immersion suits shall be provided for each open type lifeboat on the ship.

Below is reference of sizes available from several manufacturers.

Size		Height
Universal	M	140 - 170 cm
	L	170 - 190 cm
Oversize	XL	190 - 210 cm

Unit Per Set

CODE	Approved	Material
33 01 69	U.K. DOT	Foam rubber
70	H.K.	
71	N.M.D.	
72	U.S.C.G.	
95	MED	

Universal Testing Device
for Immersion Suit/Anti-exposure Suit

Complies with IMO guidelines for periodic testing of seams and closures on immersion suits and anti-exposure suits. Universal compatibility, including universal maintenance and repair kit. Consists of Stainless steel pressure gauge, Pressing and stable board and Connecting hose, including Metal carrying case and "Super Repair", contains: Neoprene gasket, Waterproof marker, Two emergency lights.

Note: Two whistles, Sleeve cones for detachable gloves available separately.

Standards: MED/SOLAS-certified.

33 01 97	Universal testing device for immersion suit & anti-exposure suit, MED/SOLAS certified	Set

Name of Mfr: Scandia Gear

Sleeve Cones for use with Universal Testing Device for Immersion Suit

Designed to test immersion suits with detachable gloves. Cone shape creates a universal fit.

Standards: MED/SOLAS-certified.

33 01 98	Sleeve cones for use with universal testing device for immersion suit, MED/SOLAS certified	Set

Name of Mfr: Scandia Gear

Portable Air Compressors for use with Universal Testing Device

An Air compressor with storage compartment designed for use with the Universal Testing Device for Immersion Suits. Easy maintenance, does not require oil.

Unit Per Set

CODE	33 01 99
Model	8100.04
Power	1,100W/1.5 pk.
Maximum pressure	8 bar
Tank capacity	6 L
Motor	3,400 rpm. 230 Vac.
Dimensions	470 x 580 x 330mm
Weight	12 kgs

Name of Mfr: Scandia Gear

Thermal Protective Aids

A thermal protective aid is made of waterproof material with low thermal conductivity, and shall be provided for every person on the ship who has not been provided with one of the immersion suits in the open type lifeboat.

Unit Per Set

CODE	Approved	Material	Thermal Conductivity
33 01 75 **76** **77** **96**	H.K. U.S.C.G. U.K.DOT MED	Polyethylene	Not more than 7,800 W/(m²,K)

Retro-Reflective Tapes

Retro-reflective tape which reflects light. All life-saving equipment (Liferafts, Life Jackets, etc.) shall be fitted with retro-reflective tapes where it will assist in detection.

CODE	Colour	Width	Usage	Unit
33 01 86	Silver SOLAS grade	50 mm	For life saving equipment, conforms to IMO Res. A.658 (16) and approved by numerous national authorities.	Mtr
33 01 87	Orange	50 mm	Marking to vehicles or sign boards	Mtr
33 01 88	Silver white	50 mm	Marking to raingear, leisure or emergency equipment	Mtr
33 01 89	Silver SOLAS grade	50 mm × 45.7 mtr	For life saving equipment, conforms to IMO Res. A.658 (16) and approved by numerous national authorities.	Rol

Radar Reflectors

For reflecting radar signals back to their source. Used to inform a position to rescue squads while at open sea.

Prefabricated

Inflatable

Unit Peer Pc.

CODE	Type	Material	Diam
33 01 90	Prefabricated	Polypropylene panel & alum. coated	320 mm
33 01 91	Inflatable	Double high density polymer	460 mm

Note: All conforms to SOLAS requirement

Bailers

For bailing out water accumulated in the bottom of the boat.

33 02 01	Bailer for lifeboat	Pc.
02	Bailer for liferaft	"

Hatchets

Tonop

A short handled, single edge rectangular head, usually with a lanyard.

33 02 03	Hatchet for lifeboat	Pc.

Sponges

For absorbing water.

33 02 04	Sponge for liferaft	Pc.

Lifeboat Oil Lamps

Made of brass with a clear glass globe operated by kerosene.

33 02 05	Lifeboat oil lamp	Pc.

Lifeboat Matches

Windproof matches for use during inclement weather conditions.

33 02 07	Lifeboat match	Pkt

Lifeboat Buckets

For bailing out water.

33 02 09	Lifeboat bucket	Pc.

Dippers

Rustproof dipper with lanyard.

33 02 10	Lifeboat dipper with lanyard	Pc.

Lifeboat Compasses

A small liquid compass, card dia 100 mm in a binnacle.

33 02 11	Lifeboat compass 100 mm w/cover	Pc.

Rescue Quoits

Attached to not less than 30 mtr of buoyant line.

33 02 12	Rescue quoit for lifeboat	Pc.
13	" " " liferaft	"

Sea Anchors

Fitted with a shock-resistant hawser & tipping line.

33 02 15	Sea anchor for liferaft	Pc.
16	" " " lifeboat	"

Sea Anchor Oil Cans

Made of galvanized sheet iron for holding storm oil.

33 02 17	Lifeboat sea anchor oil can	Pc.

Signal Tables

Waterproof card or in a waterproof container.

33 02 18	Signal table plastic	Pc.

Rations

Approved by M.I.T.I. (Ministry of Industry and Transport, Japan). Each ration contains 9 meals.

33 02 23	Ration combination 9 meals	Pc.

Rations "Seven Ocean"

Compressed vitaminized biscuit bars. Takes up little space and will keep for 5 years.

33 02 25	Ration seven ocean, 500 grm	Pkt
26	" , 1,000 grm	"

Drinking Water

Completely sterile, vacuum-sealed water in a can. Required 1.5 ltr per person.

33 02 36	Drinking water 385 ml	Can
37	" 500 ml	Btl

Drinking Cups

Should be rustproof and graduated.

33 02 41	Drinking cup for lifeboat	Pc.
42	" liferaft	"

First Aid Kits

Stores medicines and medical instruments in a watertight container.

33 02 45	First aid kit for liferaft	Set
46	" lifeboat	"

Anti-Seasickness Medicine

Required 6 doses per person.

33 02 47	Anti-seasickness medicine	Pkt

Seasickness Bags

1 seasickness bag required for each person.

33 02 48	Sea-sickness bag	Pc.

Can Openers

3 pieces required for each liferaft or lifeboat.

33 02 49	Can openers, 3's	Set

Jack Knives

Furnished with lanyard for attaching the knife to the boat.

33 02 50	Jack knife for liferaft	Pc.
51	" lifeboat	"

Whistles

Made of seawater resistant tough plastic.

33 02 52	Whistle	Pc.

Signalling Typhoons

Made with waterproof tin plate. Will provide a loud sound.

33 02 53	Signalling typhoon	Pc.

Fishing Tackles

Contains hooks, lines and other equipment packed in a watertight container.

33 02 54	Fishing tackle	Set

Survival Manuals

A guide book for survival at sea to meet the requirement of the SOLAS convention.

33 02 56	Survival manual	Pc.

Instructions for Immediate Action

A guide book for immediate action aboard a liferaft.

33 02 58	Instruction for immediate action for liferaft	Vol

Waterproof Torches

For Morse signalling, sealed in a waterproof container.

33 02 61	Torch electric waterproof	Pc.

Seawater Torches

Electric torch automatically activated in seawater.

33 02 62	Seawater torch	Pc.

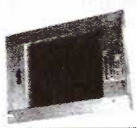
Searchlights

Provides illumination for a total period of 6 hours and will remain in operation for at least 3 hours.

33 02 64	Searchlight for lifeboat	Pc.

Daylight Signal Mirrors

For daylight signalling to ships and aircraft.



33 02 71	Daylight signal mirror	Pc.

Lifeboat Ditty Bags

Consist of a strong waterproof canvas bag containing a sail makers palm, sail needles, sail twine, a marline spike, and beewax.

33 02 76	Lifeboat ditty bag	Pc.

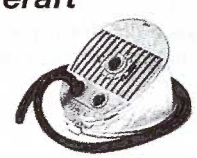
Repair Outfit for Liferaft

For repairing punctures in buoyancy compartments.

33 02 77	Repair outfit for liferaft	Set

Topping up Pump for Liferaft (Bellows)

For pumping air into a liferaft when reinflation is required.



33 02 79	Topping up pump (Bellows) for liferaft	Pc.

Pumps for Lifeboat

For bailing water out of the lifeboat.

33 02 80	Manual bilge pump for lifeboat	Pc.

Storm Oil

A vegetable oil which is spread on the sea to reduce the crest.

33 02 81	Storm oil, 4 ltr	Tin

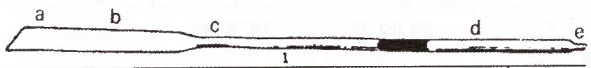
Paddles

Shall be buoyant and light for easy propulsion of the raft.

33 02 83	Paddles buoyant for liferaft	Pc.

Oars

Usually made of ash or similar wood. When ordering, please specify the overall length, if possible, also specify the sizes of (a) tip, (b) blade, (c) neck, (d) loom and (e) handle.



33 02 84	Oar buoyant for lifeboat	Pc.

Boat Hooks

When ordering, please specify the hook material and the overall length.

33 02 85	Boat hook for lifeboat	Pc.

Lifeboat Rowlocks (Crutches)

Made of galvanized malleable iron. When ordering, please specify the size of the opening and the overall length.

33 02 86	Rowlock, lifeboat, length × opening	Pc.

Manually Powered Reverse Osmosis Desalinator

LSA Code 4.1.5.1.19 requires the watertight receptacles containing a total of 1.5 liters of fresh water for each person the liferaft is permitted to accommodate. Of which either 0.5 liter per person may be replaced by a desalting apparatus capable of producing an equal amount of fresh water in 2 days, or 1 liters per person may be replaced by a manually powered reverse osmosis desalinator capable of producing an equal amount of fresh water in 2 days;

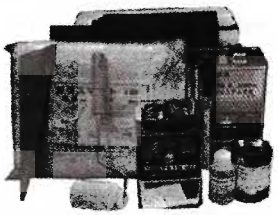
An emergency desalinator, which produces enough water up to 2.0 litres per hour.
* Desalination degree : more than 95%, eliminating bacteria or virus
* Optimum pump frequency: 40 pumps per minute.
* Weighs only 1.6 kgs

33 02 24	Desalinator, reverse osmosis, manually powered, conformed to LSA Code 4.1.5.1.19	Pc.

Name of Mfr. : Kyumei

Lifeboat Repair Kits

Used for lifeboat leakage repair in emergency. Consists of polyester resin, hardener, glass fibre mat, wool roller, etc. The ThistleBond kit is also used for the repair of liferaft containers.

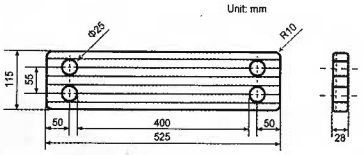


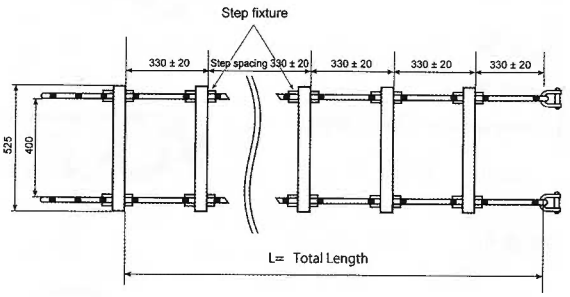
Unit Per Set

CODE	**33 02 87**	**33 02 88**	**33 02 89**
Type	Thistle Bond	Standard Set	Plus Abrasive Paper Set
Contents	• 2 set Resin & hardener • 1 sht Glass mat/05 m² • 1 sht Surface/ tissue 0.35 m² • 1 rol Cellophane • 1 pc Brush • 2 pcs Stirring/ tools • 1 sht emery cloth • 1 pr Polythene/ gloves • 1 pc Barrier cream • 1 pc Resin/ removing cream • 1 vol Instruction/ manual • 1 pc container	• 1 set Resin & hardener 2.05 kgs • 1 btl Poly putty/200 grm • 1 can Acetone/1 ltr • 1 sht Glass mat/2 mtr • 1 pc Wool roller/3" • 1 pc Syringe • 1 pc Spatula • 1 vol Instruction manual	• 1 set Resin & hardener 4.1 kgs • 1 btl Poly putty/500 grm • 1 sht Glass mat/4 mtr • 1 pc Wool roller/3" • 1 sht Sand paper/#100 • 1 sht Sand paper/#180 • 2 sht Silicon paper/#240 • 2 sht Silicon paper/#400 • 1 pc Spatula • 1 can acetone/1.8 ltr • 1 pc Syringe • 1 vol Instruction manual
Name of Mfr.:	Unique Polymer Systems Ltd.		

Lifeboat Embarkation Ladders

This lifeboat embarkation ladder conforms to ISO 5489 -2008, SOLAS 1974 & LSA Code. When ordering, please specify the length required.





Specifications

Length	According to users option but the overall length must be an integral multiple of 330 mm and be enough to ensure safe embarkation from the boat deck even when the ship is at its lightest sea-going draught and is listed 15 degrees to the opposite side.
Material	Steps are hard wood and step fixtures must be secured on both top and bottom of each step. The bottom 4 steps may be made of rubber of sufficient strength and stiffness. Side Rope 22 mm Manila Rope or 22 mm Synthetic fibre rope
Step Size	Length 525 mm, Width 115 mm, Thick 28 mm
Step Space	330 mm ±20
Side Rope Distance	400 mm

33 02 96	Lifeboat embarkation ladder overall length mtrs	Pc.

Liferaft Accessories

International Life-Saving Appliance (LSA) Code, Regulation Chapter 4.1.5.

CODE	Description	Quantity
33 01 75	Thermal protective aid	Minimum 2 pc. For 25 men capacity, minimum. 3 pc
90	Radar reflector	1 pc.
33 02 02	Buoyant bailer	1 pc.
04	Sponges	2 pcs.
13	Buoyant rescue quoit	1 pc.
33 02 15	Sea anchors	2 pcs.
18	Life-saviing signal	1 copy
26	Food rations. Not less than 10,000 kj/person	For each person
37	Watertight receptacle containing 1.5 ltr of fresh water/person	For each person
42	Rustproof graduated drinking cup	1 pc.
33 02 46	First-aid kit	1 set
47	6 tablets of anti-seasickness medicine(for 48 hours)	For each person
48	1 seasickness bag	For each person
49	Can openers	3 pcs.
50	Knife	1 pc.
33 02 52	Whistle, or equivalent	1 pc.
54	Fishing tackle	1 set
56	Survival manual	1 copy
58	Instructions for immediate action	1 copy
33 02 61	Waterproof electric torch (w/1 spare battery, 1 spare bulb)	1 pc.
71	Daylight signal mirror	1 pc.
77	Repair outfit	1 pc.
79	Topping-up pump (Bellows)	1 pc.
83	Buoyant paddles	2 pcs.
33 03 11	Rocket parachute flares	4 pcs.
14	Hand flares	6 pcs.
31	Buoyant smoke signals	2 pcs.

Note: 1. Thermal protective aids: Shall be equipped for 10 % of the number of persons or 2, whichever is greater.

2. Buoyant bailer: In the case where 13 persons or more are aboard the liferaft, it shall be equipped with an additional buoyant bailer.

3. Knife: In the case where 13 persons or more are aboard the liferaft, it shall be equipped with an additional knife.

Lifeboat Accessories

International Life-Saving Appliance (LSA) Code, Regulation Chapter 4.4.8.

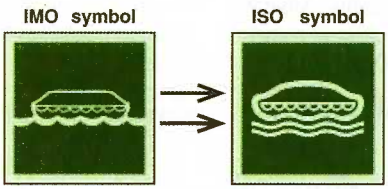
CODE	Description	Quantity
33 01 75	Thermal protective aid	10% of the number of persons
90	Radar reflector	1 pc.
33 02 01	Buoyant bailer	1 pc.
03	Hatchets	2 pcs.
09	Buckets	2 pcs.
33 02 10	Rustproof dipper with lanyard	1 pc.
11	Binnacle containing an efficient compass	1 pc.
12	Buoyant rescue quoits	2 pcs.
16	Sea-anchor	1 pc.
18	Life-saving signal	1 copy
33 02 26	Food ration. Not less than 10,000 kj / person	For each person
37	Watertight receptacle containing 3 ltr of fresh water/ person	For each person
41	Rustproof graduated drinking vessel	1 pc.
46	First-aid kit	1 Set
47	6 tablets of anti-seasickness medicine(for 48 hours)	For each person
33 02 48	1 seasickness bag	For each person
49	Can openers	3 pcs.
51	Jack-knife	1 pc.
52	Whistle, or equivalent	1pc.
33 02 54	Fishing tackle	1 set
56	Survival manual	1 copy
61	Waterproof electric torch (w/1 spare battery, 1 spare bulb)	1 pc.
64	Searchlight	1 pc.
71	Daylight signal mirror	1 pc.
33 02 80	Manual pump	1 pc.
84	Buoyant oars with thole pins or crutches	Sufficient
85	Boat-hooks	2 pcs
90	Tools for minor adjustments to the engine	Sufficient
93	Painters	2 pcs
33 03 11	Rocket parachute flares	4 pcs
14	Hand flares	6 pcs
31	Buoyant smoke signals	2 pcs
33 10 01	Portable fire-extinguishing equipment	1 pc.

Note: 1. Thermal protective aids: Shall be equipped for 10 % of the number of persons or 2, whichever is greater.

IMO / ISO Symbols, on self adhesive photoluminescent vinyl

The signs below have been developed in relation to ISO 24409 series of standards. SSE 3/16 has proposed a draft MSC Circular to MSC 97 to revise Resolution 760(18) to incorporate these symbols for use as shipboard signage. Member Governments will be urged to bring the ISO 24409 series of standards to the attention of interested parties for use on a voluntary basis until such time as the revised resolution is adopted.

When ordering please make sure to specify which symbols you require, IMO or ISO.



IMO 33.4050 150x150mm ISO 33.X050 150x150mm	IMO 33.4051 150x150mm ISO 33.X051 150x150mm	IMO 33.4052 150x150mm ISO 33.X052 150x150mm	IMO 33.4053 150x150mm ISO 33.X053 150x150mm	IMO 33.4054 150x150mm ISO 33.X054 150x150mm
IMO 33.4055 150x150mm ISO 33.X055 150x150mm	IMO 33.4056 150x150mm ISO 33.X056 150x150mm	IMO 33.4057 150x150mm ISO 33.X057 150x150mm	IMO 33.4058 150x150mm ISO 33.X058 150x150mm	IMO 33.4082 150x150mm ISO 33.X082 150x150mm
IMO 33.4059 150x150mm ISO 33.X059 150x150mm	IMO / ISO 33.4060 150x150mm	IMO / ISO 33.4061 150x150mm	IMO / ISO 33.4080 150x150mm	IMO 33.4062 150x150mm ISO 33.X062 150x150mm
IMO 33.4063 150x150mm ISO 33.X063 150x150mm	IMO 33.4064 150x150mm ISO 33.X064 150x150mm	IMO 33.4065 150x150mm ISO 33.X065 150x150mm	IMO 33.4066 150x150mm ISO 33.X066 150x150mm	IMO 33.4067 150x150mm ISO 33.X067 150x150mm
IMO 33.4068 150x150mm ISO 33.X068 150x150mm	IMO 33.4069 150x150mm ISO 33.X069 150x150mm	IMO 33.4070 150x150mm ISO 33.X070 150x150mm	IMO / ISO 33.4071 150x150mm	IMO / ISO 33.4075 150x150mm
IMO / ISO 33.4076 150x150mm	IMO / ISO 33.4078 150x150mm	IMO / ISO 33.4081 150x150mm	IMO / ISO 33.4150 150x150mm	IMO / ISO 33.4420 150x150mm 33.4421 150x150mm

IMO / ISO Symbols, on self adhesive photoluminescent vinyl

IMO 33.4100 150x150mm
ISO 33.X100 150x150mm
IMO 33.4123 300x300mm
ISO 33.X123 300x300mm

IMO 33.4101 150x150mm
ISO 33.X101 150x150mm

IMO 33.4102 150x150mm
ISO 33.X102 150x150mm

IMO 33.4103 150x150mm
ISO 33.X103 150x150mm

IMO 33.4104 150x150mm
ISO 33.X104 150x150mm

IMO 33.4105 150x150mm
ISO 33.X105 150x150mm

IMO 33.4106 150x150mm
ISO 33.X106 150x150mm

IMO 33.4107 150x150mm
ISO 33.X107 150x150mm

IMO 33.4108 150x150mm
ISO 33.X108 150x150mm

IMO 33.4109 150x150mm
ISO 33.X109 150x150mm

IMO / ISO 33.4110 150x150mm

IMO / ISO 33.4111 150x150mm

IMO / ISO 33.4142 150x150mm

IMO / ISO 33.4143 150x150mm

IMO 33.4112 150x150mm
ISO 33.X112 150x150mm

IMO 33.4113 150x150mm
ISO 33.X113 150x150mm

IMO 33.4114 150x150mm
ISO 33.X114 150x150mm

IMO 33.4115 150x150mm
ISO 33.X115 150x150mm

IMO 33.4116 150x150mm
ISO 33.X116 150x150mm

IMO 33.4117 150x150mm
ISO 33.X117 150x150mm

IMO 33.4118 150x150mm
ISO 33.X118 150x150mm

IMO 33.4119 150x150mm
ISO 33.X119 150x150mm
IMO 33.4124 300x300mm
ISO 33.X124 300x300mm

IMO 33.4141 150x150mm
ISO 33.X141 150x150mm

IMO 33.4120 150x150mm
ISO 33.X120 150x150mm

IMO / ISO 33.4121 150x150mm

IMO / ISO 33.4125 150x150mm

IMO 33.4126 150x150mm
ISO 33.X126 150x150mm

IMO 33.4128 150x150mm
ISO 33.X128 150x150mm

IMO / ISO 33.4129 150x150mm

IMO / ISO 33.4131 150x150mm

IMO 33.4134 150x150mm
ISO 33.X134 150x150mm

IMO / ISO 33.4127 150x150mm

IMO / ISO 33.4146 150x150mm

7TH 33

IMO Symbols, on self adhesive photoluminescent vinyl

33.5100 150x150mm

33.5101 150x150mm

33.5102 150x150mm

33.5103 150x150mm

33.5104 150x150mm

33.5105 150x150mm

33.5106 150x150mm

33.5107 150x150mm

33.5108 150x150mm

33.5109 150x150mm

33.4210 150x75mm
33.4250 300x150mm

33.4211 150x75mm
33.4251 300x150mm

33.4212 150x75mm
33.4252 300x150mm

33.4213 150x75mm
33.4253 300x150mm

33.4214 150x75mm
33.4254 300x150mm

33.4215 150x75mm
33.4255 300x150mm

33.4200 150x75mm
33.4240 300x150mm

33.4201 150x75mm
33.4241 300x150mm

33.4202 150x75mm
33.4242 300x150mm

33.4203 150x75mm
33.4243 300x150mm

33.4204 150x75mm
33.4244 300x150mm

33.4205 150x75mm
33.4245 300x150mm

33.4206 150x75mm
33.4246 300x150mm

33.4207 150x75mm
33.4247 300x150mm

33.4208 150x75mm
33.4248 300x150mm

33.4209 150x75mm
33.4249 300x150mm

Safety Signs, on self adhesive photoluminescent vinyl

33.4170 200x150mm

33.4171 100x300mm

33.4172 100x300mm

33.4173 100x300mm

33.4174 100x300mm

33.4175 100x300mm

33.4176 100x300mm

33.4177 100x300mm

33.4178 100x300mm

33.4130 250x150mm

33.4179 100x300mm

33.4180 100x300mm

33.4181 100x300mm

33.4182 100x300mm

33.4183 100x300mm

33.4184 100x300mm

33.4185 100x300mm

33.4186 100x300mm

33.4132 150x150mm

33.4187 100x300mm

33.4188 100x300mm

33.4189 100x300mm

33.4193 100x300mm

33.4133 150x150mm

33.4135 150x150mm

33.4139 150x150mm

33.4152 150x150mm

33.4154 150x150mm

33.4427 150x300mm

33.4426 75x200mm

33.4156 150x150mm

33.4137 150x150mm

33.4151 150x150mm

33.4153 150x150mm

33.4155 150x150mm

33.4157 150x150mm

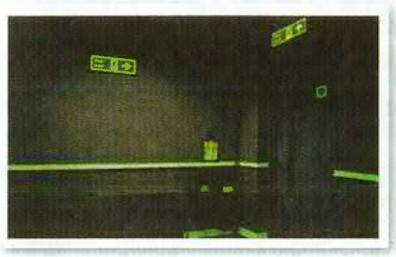
33.4420 150x150mm

33.4421 150x150mm

Direction Signs, on self adhesive photoluminescent vinyl

Photoluminescent Low Location Lighting System (LLL)

As identified in SOLAS consolidated edition 2004, Chapter II-2 Regulation 13.3.2.5.1 to 13.3.2.5.2 and Chapter II-1 1/42 or Chapter II-1 1/43 as appropriate ships carrying passengers shall be fitted with electric or photoluminescent Low Location Lighting and if carrying more than 36 passengers these regulations also apply to the crew accommodation.



Reference should also be made to IMO Resolution A.752(18) for the evaluation, testing and application of Low Location Lighting.

- Internal and external corners, and drops up and down stairways, are easily made by mitering the carrier and cutting the photoluminescent panels to suit.
- LLL signs, should be used to give direction indication. End caps are available to neatly terminate the extrusion where required.

PVC LLL Carrier

These products consists of a 5mm thick strong PVC carrier with rounded edges compatible with Part No's 33.2338 and 33.2329 end caps. There is a central channel to fit a strip of photoluminescent material. These products can be easily cut, screwed and/or adhered to bulkheads to provide low location way guidance.

33.2327 - Carrier 70x1200mm (with 40mm Class C insert)
33.2328 - 70mm end cap

33.2329 - Carrier 60x1200mm (with 40mm Class C insert)
33.2330 - 60mm end cap

The above range of PVC products and templates can be supplied in the standard colours, including black. They are not an exact match but the closest available to the RAL range right. A complete sign framing system in a matching or complimentary colour can be produced to accompany the LLL carriers.

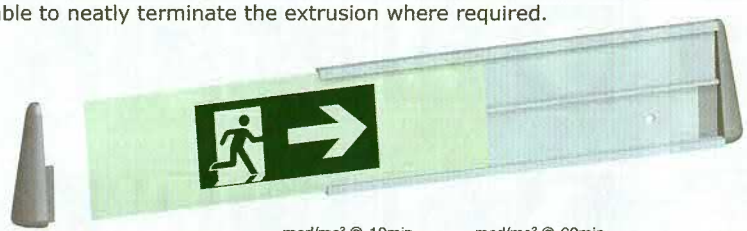
Ral 3018 Ral 8025 Ral 6024
Ral 5002 Ral 5017 Ral 7046

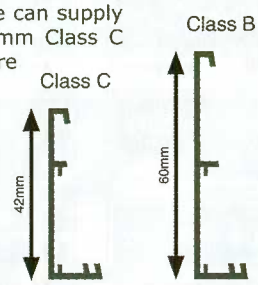
Optional alternative colours are available at prices depending on volume required.

NB. Please note that B and C Class material (D Class is also available) require adequate light source to energise the material so that in the event of lighting failure way guidance is provided.

Aluminum LLL Carrier

Consisting of an aluminum carrier extrusion with a rigid photoluminescent PVC insert, which provides a quick and easy installation, combined with rugged and durable quality. We can supply in two sizes which offer a 50mm visible width of Class B photoluminescent or 35mm Class C photoluminescent. LLL signs should be used to give direction indication. End caps are available to neatly terminate the extrusion where required.





	mcd/mc² @ 10min	mcd/mc² @ 60min
ISO 15370 Requirement	15.0	2.0
Class B - Insert	47.59	7.97
Class C - Insert	85.40	14.98

33.2394 - 50mm angled carrier 60x3000mm
33.2395 - 50mm angled carrier end cap
33.2374 - 35mm angled carrier 42x3000mm
33.2375 - 35mm angled carrier end cap

MARITIME PROGRESS

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*UK designers and manfacturers of good quality, signage and H&S products. Our **Telscape**™ route marking photoluminescent system is supported by our technical personnel.*

*Don't **RISK** your **CREW** or **VESSELS**, insist on a Maritime Progress ISM Poster, your definitive guide and training aid, always current, always legislatively correct - **don't get fooled by cheap copies!***

- IMO Life Saving App. Symbols
- IMO Fire Control Symbols
- Fire Equipment Signs
- Safety Signs
- Direction Signs
- Prohibition Signs
- Mandatory Signs
- Hazard Signs
- ISPS Code
- Combination Signs
- Departmental Signage
- Temporary Tie Tags
- Tapes
- IMDG Hazardous Substance
- Safety Awareness & Training Posters
- Publications
- Port & Air Terminal Signage
- Systems
- Fire & Safety Plans
- Fixings & Frames
- International Products

Everlux® Maritime photoluminescent safety signs

Life-Saving Appliance Signs - Available in the following sizes (mm): 150x150 | 200x200 | 300x300

S 02 01 | 33.4050

S 02 02 | 33.4051

S 02 03 | 33.4052

S 02 05 | 33.4054

S 02 07 | 33.4056

S 02 08 | 33.4057

S 02 09 | 33.4058

S 02 10 | 33.4059

S 02 12 | 33.4060

S 02 15 | 33.4062

S 02 18 | 33.4066

S 02 20 | 33.4065

S 02 26 | 33.4150

S 02 27 | 33.4078

Escape Route and Muster Station Directional Signs - Available in the following sizes (mm): 150x150 | 200x200 | 300x300 |400x400

S 03 61 | 33.4069

S 04 61 | 33.4422

S 04 62 | 33.4423

S 04 63 | 33.4425

S 04 64

S 03 64 | 33.4420

S 03 65 | 33.4421

Available in the following sizes (mm): 300x100 [1][3] | 400x120 [1] | 300x150 [2] | 400x200 [2] | 600x300 [2] | 400x150 [3] | 600x200 [3]

S 03 71 [1] | 33.4335

S 03 75 [3] | 33.4334

S 04 21 [2]

S 04 26 [2]

S 04 45 [3] | 33.4411

S 04 46 [3] | 33.4410

Fire Control IMO Signs - Available in the following sizes (mm): 150x150 | 200x200

S 10 43 | 33.6079

S 13 52

S 13 57

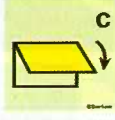
S 13 65

S 13 66

S 10 77 | 33.6072

S 12 37 | 33.6787

S 12 38 | 33.6788



S 12 39 | 33.6789

S 10 41 | 33.6057

S 12 65 | 33.6815

S 12 96 | 33.6846

S 10 31 | 33.6058

S 13 12 | 33.6872

Fire-Fighting Equipment Signs in Compliance with ISO 24409 - Available in the following sizes (mm): 150x150 | 200x200 | 300x300

S 16 01 | 33.6100

S 16 06 | 33.6102

S 16 07

S 16 91

S 16 92

S 16 93

S 16 98

Everlux® Maritime photoluminescent safety signs

Warning, Mandatory and Prohibition Action Safety Signs - Available in the following sizes (mm): 300x100 | 400x150

S 30 51 | 33.7540

S 30 54 | 33.7544

S 36 03 | 33.5825

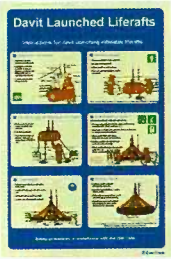
S 36 17 | 33.5851

S 38 51 | 33.8530

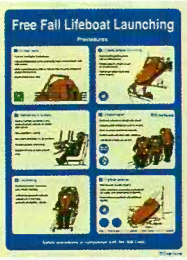
S 39 82 | 33.8691

Safety Awareness and Training Procedures - Available in the following sizes (mm): 300x400 | 400x600

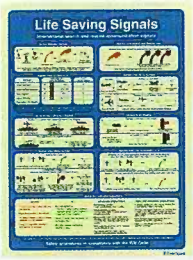
S 60 53 | 33.1502



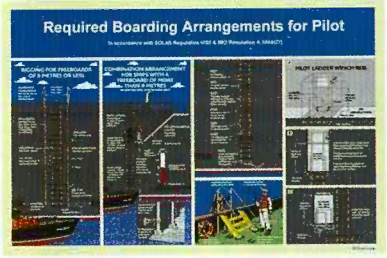
S 60 54



S 60 59 | 33.1520



S 60 61 | 33.1558



S 62 00

S 63 21 | 33.1542

Low Location Lighting System (LLL) - Contact us for detailed information on the Everlux LLL complete system

S 21 31 | S 21 51 | S 21 76 | S 21 80 | S 21 85 | S 21 90

ISPS Code Signs - Available in the following sizes (mm): 200x180 [1] | 300x200 [2] [3] | 200x300 [4] | 150x150 [5]

S 42 10 [1] | 33.2703

S 42 20 [2]

S 42 31 [3] | 33.8695

S 42 40 [4] | 33.2896

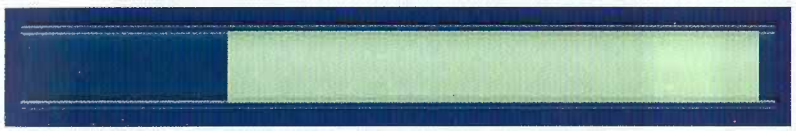
S 42 42 [5] | 33.2889

Specialists in high luminance photoluminescent safety signs and providers of complete maritime safety signage solutions.

Photoluminescent Low Location Lighting System

Opaque LLL Carrier

A simpler option of carrier is offered which allows a 50mm B class material to slide into the 1m length carrier after it has been secured to the wall. The advantage of this form of installation is that only the photoluminescent material is 100% visually seen while the material is protected by the carrier.



33.2396 Opaque LLL Carrier (50mm x 2m)

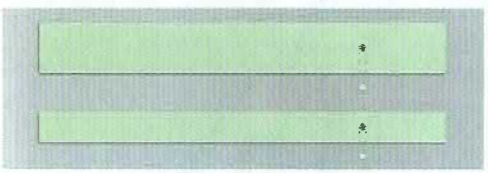
33.2389 Rigid photoluminescent insert (50mm x 1m)

LLL Strips

The simplest option is to screw and adhere 50 or 30mm width rigid material directly to the wall of the escape route walkways. Same are supplied in 1.2m lengths.

33.2331 Class B - 2.5mm thick x 50mm width - with screw caps

33.2332 Class D - 2.5mm thick x 30mm width - with screw caps



LLL Signage

33.2380 50x100mm

33.2381 50x100mm

33.2384 50x100mm

33.2382 50x100mm

33.2383 50x100mm

33.2385 50x100mm

33.2386 150x50mm

33.2387 150x50mm

A range of signs sized to fit the systems above. The signs are printed on transparent, heavy duty vinyl which allows the photoluminescent LLL strip to shine through, highlighting the printed symbol.

The signs are supplied in packs of ten.

7TH 33

Self Adhesive Photoluminescent Tape

Installation

When used as part of a low location lighting system, the installer must ensure that there is sufficient ambient light available to activate the tape to attain the required performance.

Photoluminescent Vinyl Tape

40mm wide x 10m	33.2014
80mm wide x 10m	33.2018

Photoluminescent Green Diagonal Tape

40mm wide x 10m	33.2034
80mm wide x 10m	33.2038

Photoluminescent Black Diagonal Tape

40mm wide x 10m	33.2044
80mm wide x 10m	33.2048

Photoluminescent Red Diagonal Tape

40mm wide x 10m	33.2054
80mm wide x 10m	33.2058

Photoluminescent Wayfinding Tape

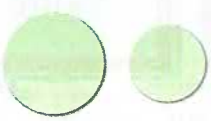
40mm wide x 10m	33.2024
80mm wide x 10m	33.2028

10 right & 10 left handed decals supplied with each roll.

Photoluminescent Wayfinding Dots

With Arrows

60mm diameter	33.2086
80mm diameter	33.2088

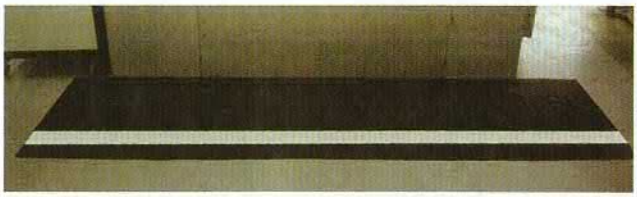


Without Arrows

60mm diameter	33.2096
80mm diameter	33.2098

Photoluminescent Path Way Matting

A system and collection of products to aid the evacuation of passengers and crew in the event of blackout conditions. One of these products is walkway matting which incorporates photoluminescent "roadway" marking. This matting can also illuminate the placement of machinery, high light the area restricted to the operator and for health and safety reasons will alleviate fatigue.



33.2352 Safety-way matting 2400x610mm

33.2353 Work-station matting 1200x1200mm

33.2354 Work-station matting 2400x1200mm

The flexible black PVC matting is resistant to a wide range of chemicals, it is resistant to attack by dilute acids at room temperature, although there may be some discolouration of the surface. Due to its "rubbery" material, this PVC product is non-slip.

Matting is used in a wide variety of applications and responds very well but the user should always consult the material data sheets. These highlight the qualities of electrical resistance, anti-slip, resistance to chemicals, oils, oil with additive, aqueous solutions (organic and alkalis). They also warn against contaminates such as chlorinated hydrocarbons, ketone's and others etc.,

Fire plan identification

Fire plan signs specified within MSC/Circ.451 to aid shoreside fire fighters in locating the vessels fire control plan.

33.6093
300x400mm

33.6092
300x400mm

33.6094
300x400mm

Fire control symbols (A654), on self adhesive photoluminescent vinyl

Regulations:

Resolution A654(16) amending Chapter II - 2, Regulation 20 requires the use of these symbols on fire control plans and booklets as international standard. These symbols are often used to identify actual equipment where no standard sign is available.

Fire control plan
33.6001
150x150mm

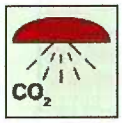
Push - button/switch for fire alarm
33.6002
150x150mm

Horn, fire alarm
33.6003
150x150mm

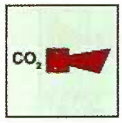
Bell, fire alarm
33.6004
150x150mm

Manually operated call point
33.6005
150x150mm

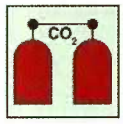
Space protected by automatic fire alarm
33.6006
150x150mm



Space protected byCO2
33.6007
150x150mm



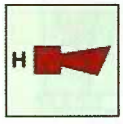
CO2 horn
33.6008
150x150mm



CO2 release station
33.6009
150x150mm

Halon 1301 battery
33.6010
150x150mm

Space protected by halon 1301
33.6011
150x150mm



Halon horn
33.6012
150x150mm

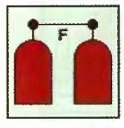
Foam installation
33.6013
150x150mm

Foam monitor (gun)
33.6014
150x150mm

Foam nozzle
33.6015
150x150mm

Space protected by Foam
33.6016
150x150mm

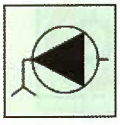
Foam valve
33.6017
150x150mm



Foam release station
33.6018
150x150mm

Emergency fire pump
33.6019
150x150mm

Remote controlled p/p or em switches
33.6020
150x150mm



Bilge pump
33.6021
150x150mm

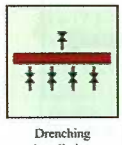
Emergency bilge pump
33.6022
150x150mm

Water monitor (gun)
33.6023
150x150mm

Water fog applicator
33.6024
150x150mm

Emergency telephone station
33.6025
150x150mm

Fire axe
33.6026
150x150mm



Drenching installation
33.6027
150x150mm

Space protected by drenching installation
33.6028
150x150mm

Section valves drenching
33.6029
150x150mm

Fire station
33.6030
150x150mm

'A' class division
33.6031
150x150mm

'A' class fire door
33.6032
150x150mm

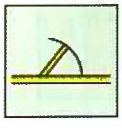
'A' class fire door self - closing
33.6033
150x150mm

'A' class sliding fire door
33.6034
150x150mm

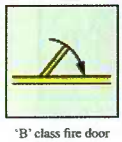
'A' class sliding fire door self - closing
33.6035
150x150mm

Portable Foam applicator
33.6036
150x150mm

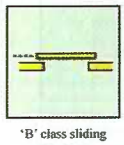
'B' class division
33.6037
150x150mm



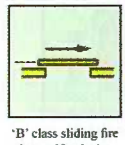
'B' class fire door
33.6038
150x150mm



'B' class fire door self - closing
33.6039
150x150mm

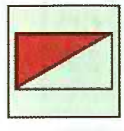


'B' class sliding fire door
33.6040
150x150mm



'B' class sliding fire door self - closing
33.6041
150x150mm

Main vertical zone
33.6042
150x150mm



Fire alarm panel
33.6043
150x150mm

Sprinkler installation
33.6044
150x150mm

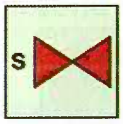
Fire control symbols (A654), on self adhesive photoluminescent vinyl

Space protected by sprinkler

33.6045
150x150mm

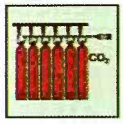
Sprinkler horn

33.6046
150x150mm



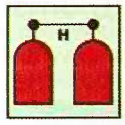
Sprinkler section valve

33.6047
150x150mm



CO2 battery

33.6048
150x150mm



Halon release station

33.6049
150x150mm

Halon 1301 bottles in a protected area

33.6050
150x150mm

Powder installation

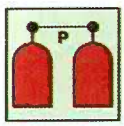
33.6051
150x150mm

Powder monitor (gun)

33.6052
150x150mm

Powder hose and hand gun

33.6053
150x150mm



Powder release station

33.6054
150x150mm

Flame detector

33.6055
150x150mm

Smoke detector

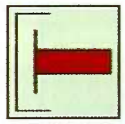
33.6056
150x150mm

Fire main with valves

33.6057
150x150mm

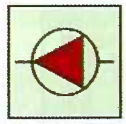
Hose box with spray/jet

33.6058
150x150mm



International shore connection

33.6059
150x150mm



Fire pump

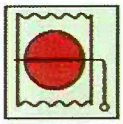
33.6060
150x150mm

Heat detector

33.6061
150x150mm

Gas detector

33.6062
150x150mm



Fire damper in vent duct

33.6063
150x150mm

Remote controlled skylights

33.6064
150x150mm

Remote controlled fuel/ lubricating oil valves

33.6065
150x150mm

Control station

33.6066
150x150mm

Locker with fireman's outfit

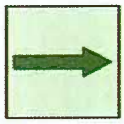
33.6067
150x150mm

Locker with additional breathing apparatus

33.6068
150x150mm

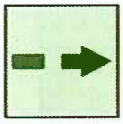
Locker with additional protective clothing

33.6069
150x150mm



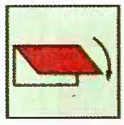
Primary means of escape

33.6070
150x150mm



Secondary means of escape

33.6071
150x150mm

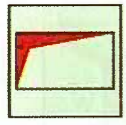


Closing appliance for exterior vent in/out

33.6072
150x150mm

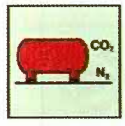
Inert gas installation

33.6073
150x150mm



High expansion Foam supply tank

33.6074
150x150mm



CO2/Nitrogen bulk installation

33.6075
150x150mm

Emergency generator

33.6076
150x150mm

Emergency switchboard

33.6077
150x150mm

Remote ventilation shut-off

33.6078
150x150mm

6kg Powder fire extinguisher

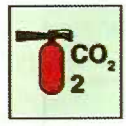
33.6079
150x150mm

9l Foam fire extinguisher

33.6080
150x150mm

4kg Halon 1211 fire extinguisher

33.6081
150x150mm



2kg CO2 fire extinguisher

33.6082
150x150mm

2kg Powder fire extinguisher

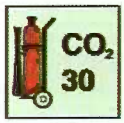
33.6083
150x150mm

1kg Powder fire extinguisher

33.6084
150x150mm

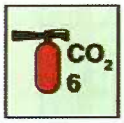
50kg Wheeled Powder fire extinguisher

33.6085
150x150mm



30kg Wheeled CO2 fire extinguisher

33.6086
150x150mm



6kg CO2 fire extinguisher

33.6087
150x150mm

9kg Powder fire extinguisher

33.6088
150x150mm

45l wheeled Foam fire extinguisher

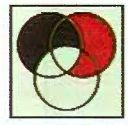
33.6089
150x150mm

5kg Powder fire extinguisher

33.6090
150x150mm

9l Foam fire extinguisher

33.6091
150x150mm



Extinguisher spare charges

33.6715
150x150mm

Fire control symbols (ISO 17631), on self adhesive photoluminescent vinyl

Regulations:

ISO 17631 requires the use of these symbols on fire plans and booklets for new vessels or where existing fire plans have been significantly modified. These symbols are currently intended for use solely on fire plans, but in response to requests from the industry they are offered as signs to identify actual equipment where no standard sign is available. Purchasers should be aware that they are not currently recommended for use as signs by any official body. Although this situation may change if the future, there is no guarantee that the designs will be identical to those shown below.

A class division

33.6751
150x150mm

B class division

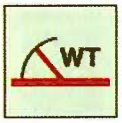
33.6752
150x150mm

Main vertical zone division

33.6753
150x150mm

A class fire door

33.6754
150x150mm

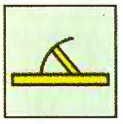


A class Watertight fire door

33.6755
150x150mm

A class semi - Watertight fire door

33.6756
150x150mm



B class fire door

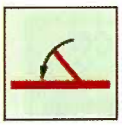
33.6757
150x150mm

B class Watertight fire door

33.6758
150x150mm

B class semi - Watertight fire door

33.6759
150x150mm



A class self closing fire door

33.6760
150x150mm

A class self closing Watertight fire door

33.6761
150x150mm

A class self closing semi - Watertight fire door

33.6762
150x150mm

B class self closing fire door

33.6763
150x150mm

B class self closing Watertight fire door

33.6764
150x150mm

B class self closing semi - Watertight fire door

33.6765
150x150mm

A class sliding fire door

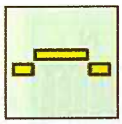
33.6766
150x150mm

A class Watertight sliding fire door

33.6767
150x150mm

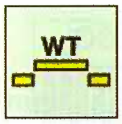
A class semi - Watertight sliding fire door

33.6768
150x150mm



B class sliding fire door

33.6769
150x150mm

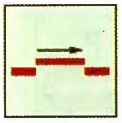


B class Watertight sliding fire door

33.6770
150x150mm

B class semi - Watertight sliding fire door

33.6771
150x150mm



A class self closing sliding fire door

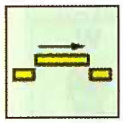
33.6772
150x150mm

A class self closing Watertight sliding fire door

33.6773
150x150mm

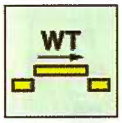
A class self closing semi - Watertight sliding fire door

33.6774
150x150mm



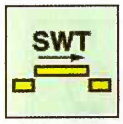
B class self closing sliding fire door

33.6775
150x150mm



B class self closing Watertight sliding fire door

33.6776
150x150mm



B class self closing semi - Watertight sliding fire door

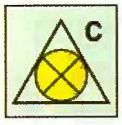
33.6777
150x150mm

Remote ventilation shut - off for the accommodation

33.6778
150x150mm

Remote ventilation shut - off for machinery spaces

33.6779
150x150mm



Remote ventilation shut - off for cargo spaces

33.6780
150x150mm

Skylight remote control

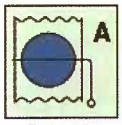
33.6781
150x150mm

Watertight doors remote control

33.6782
150x150mm

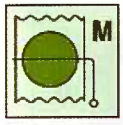
Fire doors remote control

33.6783
150x150mm



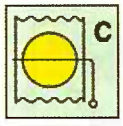
Fire damper for accommodation and service spaces

33.6784
150x150mm



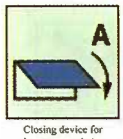
Fire damper for machinery spaces

33.6785
150x150mm



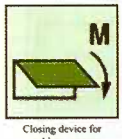
Fire damper for cargo spaces

33.6786
150x150mm



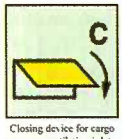
Closing device for the accommodation ventilation inlet or outlet

33.6787
150x150mm



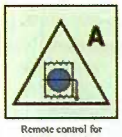
Closing device for machinery spaces ventilation inlet or outlet

33.6788
150x150mm



Closing device for cargo spaces ventilation inlet or outlet

33.6789
150x150mm



Remote control for fire dampers for accommodation

33.6790
150x150mm

Remote control for fire dampers for machinery spaces

33.6791
150x150mm

Remote control for fire dampers for cargo spaces

33.6792
150x150mm

Remote control for closing devices for accommodation

33.6793
150x150mm

Remote control for closing devices for machinery spaces

33.6794
150x150mm

Remote control for closing devices for cargo spaces

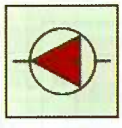
33.6795
150x150mm

Fire plans and associated plans

33.6001
150x150mm

Remote control for fire pump

33.6797
150x150mm



Fire pump

33.6060
150x150mm

Fire control symbols (ISO 17631), on self adhesive photoluminescent vinyl

Remote control for emergency fire pump

33.6799
150x150mm

Emergency fire pump

33.6019
150x150mm

Fuel pumps remote shut - off

33.6801
150x150mm

Lub oil pumps remote shut - off

33.6802
150x150mm

Bilge pump remote control

33.6803
150x150mm

Emergency bilge pump remote control

33.6804
150x150mm

Fuel oil valves remote control

33.6805
150x150mm

Lub oil valves remote control

33.6806
150x150mm

Fire pump valves remote control

33.6807
150x150mm

Remote release station for CO2

33.6808
150x150mm

Remote release station for Nitrogen

33.6809
150x150mm

Remote release station for Halon equivalent

33.6810
150x150mm

Remote release station for Foam

33.6811
150x150mm

Remote release station for Powder

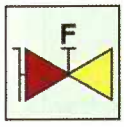
33.6812
150x150mm

Remote release station for Water

33.6813
150x150mm

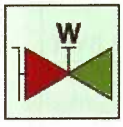
International shore connection

33.6059
150x150mm



Foam hydrant

33.6879
150x150mm



Fire hydrant

33.6815
150x150mm

Foam section valve

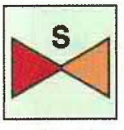
33.6816
150x150mm

Powder section valve

33.6817
150x150mm

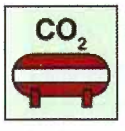
Fire main section valve

33.6818
150x150mm



Sprinkler section valve

33.6819
150x150mm



Fixed CO2 fire extinguishing installation

33.6820
150x150mm

Fixed nitrogen fire extinguishing installation

33.6821
150x150mm

7TH
33

Fixed Halon equivalent fire extinguishing installation

33.6822
150x150mm

Fixed Foam fire extinguishing installation

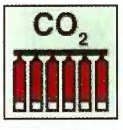
33.6823
150x150mm

Fixed Powder fire extinguishing installation

33.6824
150x150mm

Fixed Water fire extinguishing installation

33.6825
150x150mm

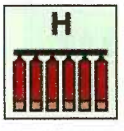


Fixed CO2 fire extinguishing battery

33.6826
150x150mm

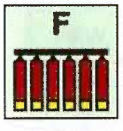
Fixed Nitrogen fire extinguishing battery

33.6827
150x150mm



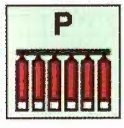
Fixed Halon equivalent fire extinguishing battery

33.6828
150x150mm



Fixed Foam fire extinguishing battery

33.6829
150x150mm

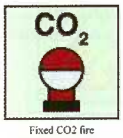


Fixed Powder fire extinguishing battery

33.6830
150x150mm

Fixed Water fire extinguishing battery

33.6831
150x150mm



Fixed CO2 fire extinguishing bottle in protected area

33.6832
150x150mm

Fixed Nitrogen fire extinguishing bottle in protected area

33.6833
150x150mm

Fixed Halon equivalent fire extinguishing bottle in protected area

33.6834
150x150mm

Fixed Foam fire extinguishing bottle in protected area

33.6835
150x150mm

Fixed Powder fire extinguishing bottle in protected area

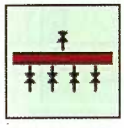
33.6836
150x150mm

Fixed Water fire extinguishing bottle in protected area

33.6837
150x150mm

High expansion Foam supply tank

33.6838
150x150mm



Water spray system valves

33.6027
150x150mm

Inert gas installation

33.6073
150x150mm

Foam monitor

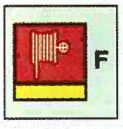
33.6841
150x150mm

Powder monitor

33.6842
150x150mm

Water monitor

33.6843
150x150mm



Foam fire hose and nozzle

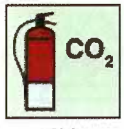
33.6844
150x150mm

Powder fire hose and nozzle

33.6845
150x150mm

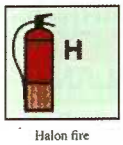
Water fire hose and nozzle

33.6846
150x150mm



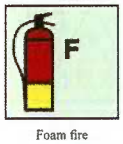
CO2 fire extinguisher

33.6847
150x150mm



Halon fire extinguisher

33.6848
150x150mm



Foam fire extinguisher

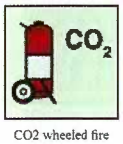
33.6849
150x150mm

Powder fire extinguisher

33.6850
150x150mm

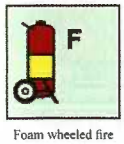
Water fire extinguisher

33.6851
150x150mm



CO2 wheeled fire extinguisher

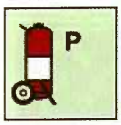
33.6852
150x150mm



Foam wheeled fire extinguisher

33.6854
150x150mm

Fire control symbols (ISO 17631), on self adhesive photoluminescent vinyl



Powder wheeled fire extinguisher

33.6855
150x150mm

Water wheeled fire extinguisher

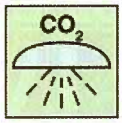
33.6856
150x150mm

Portable Foam applicator unit

33.6857
150x150mm

Fire fighters outfit Locker

33.6858
150x150mm



Space protected by CO2 fire extinguishing system

33.6859
150x150mm

Space protected by Nitrogen fire extinguishing system

33.6877
150x150mm

Space protected by halon equivalent fire extinguishing system

33.6860
150x150mm

Space protected by Foam fire extinguishing system

33.6861
150x150mm

Space protected by Powder fire extinguishing system

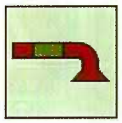
33.6862
150x150mm

Space protected by Water fire extinguishing system

33.6863
150x150mm

Space protected by sprinkler system

33.6864
150x150mm



Water fog applicator

33.6865
150x150mm

Emergency source of electrical power (generator)

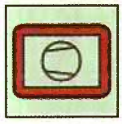
33.6076
150x150mm

Emergency source of electrical power (battery)

33.6867
150x150mm

Emergency switch board

33.6077
150x150mm



Breathing device air compressor

33.6869
150x150mm

Fire alarm control panel

33.6043
150x150mm

Push - button/switch for fire alarm

33.6002
150x150mm

Manually operated call point

33.6872
150x150mm

Space protected by smoke detector(s)

33.6056
150x150mm

Space protected by heat detector(s)

33.6061
150x150mm

Space protected by flame detector(s)

33.6875
150x150mm

Space protected by gas detector(s)

33.6876
150x150mm

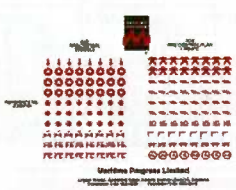
Fire Blanket

33.6878
150x150mm

Fire Control & Life Saving Appliance Plan Modification

Fire Plan Pictograms to Resolution A654

Each 8mm square printed on self adhesive gloss paper for updating fire plans.



Fire Control Symbols in nine sheets each comprising 160 pictograms, totalling 1440.

33.2600
A5 Sheets

Fire Plan Pictograms to ISO 17631

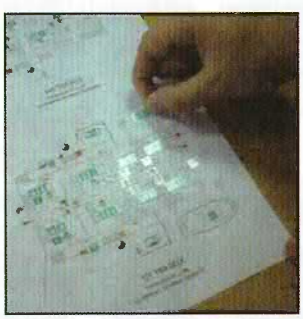
Each 10mm square printed on self adhesive gloss paper for updating fire plans.

Fire Control Symbols totalling over 3500 pictograms with a legend and Fire Plan title.

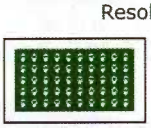
33.2603
A5 Booklet

Life Saving Appliance Symbols totalling over 500 pictograms with a legend and Fire Plan title.

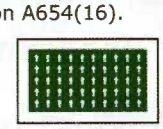
33.2604
A5 Booklet



With the change in regulations requiring vessels to carry EEBD's and additional Immersion Suits we are able to offer these sets of pictos for updating existing Safety Plans. Complies with ISO 17631:2002 but can be used in conjunction with Resolution A654(16).



50 x EEBD pictos per sheet
33.2605



50 x Immersion suit pictos per sheet
33.2606

Regulations:

SOLAS Consolidated Edition Chapter II - 2, Regulation 15.2.4.1 details the requirements for Fire Control Plans which can be combined with the Life - Saving Plan. IMO have issued a circular, MSC/1050, dated November 2003, urging member states to use ISO standard 17631:2002 for all new builds and where existing plans are being redrawn due to significant changes made to the vessel's fire fighting arrangements.

Fire Signs, on self adhesive photoluminescent vinyl

33.6100
150x150mm

33.6101
150x150mm

33.6102
150x150mm

33.6103
150x150mm

33.6104
150x150mm

33.6200
100x100mm
33.6250
150x150mm

33.6201
100x100mm
33.6251
150x150mm

33.6202
100x100mm
33.6252
150x150mm

33.6203
100x100mm
33.6253
150x150mm

33.6120
200x150mm

33.6121
200x150mm

33.6122
200x150mm

33.6123
200x150mm

33.6124
200x150mm

33.6204
100x100mm
33.6254
150x150mm

33.6205
100x100mm
33.6255
150x150mm

33.6206
100x100mm
33.6256
150x150mm

33.6207
100x100mm
33.6257
150x150mm

33.6430
200x100mm

33.6431
200x100mm

33.6432
200x100mm

33.6433
200x100mm

33.6435
200x100mm

33.6434
200x100mm

33.6208
100x100mm
33.6258
150x150mm

33.6209
100x100mm
33.6259
150x150mm

33.6260
100x100mm
33.6210
150x150mm

33.6261
100x100mm
33.6211
150x150mm

33.6300
150x150mm

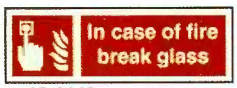
33.2702
150x100mm
Fire extinguisher maintenance sticker

33.6301
300x100mm

33.6140 100x300mm

33.6141 100x300mm

33.6142 100x300mm



33.6143 100x300mm

33.6144 100x300mm

33.6145 100x300mm

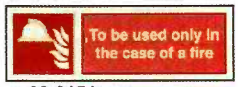
33.6146 100x300mm

33.6147 100x300mm

33.6148 100x300mm

33.6149 100x300mm

33.6150 100x300mm



33.6151 100x300mm

Reduced size of rigid photoluminescent PVC

33.6100
50x50mm

33.6101
50x50mm

33.6102
50x50mm

33.6152 100x300mm

33.6153 100x300mm

33.6154 100x300mm

33.6155 100x300mm

33.6157 100x300mm

33.6158 100x300mm

33.6159 100x300mm

33.6160 100x300mm

33.6163 100x300mm

33.6164 100x300mm

33.6165 100x300mm

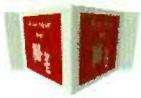
Panoramic Fire Signs, on rigid profiled photoluminescent PVC

33.6500
200x200mm
each face

33.6501
150x150mm
each face

33.6502
200x200mm
each face

33.6503
150x150mm
each face


33.6504
200x200mm
each face

33.6505
150x150mm
each face

33.6506
200x200mm
each face

33.6507
150x150mm
each face

Mandatory Signs, on self adhesive photoluminescent vinyl

33.5641
150x150mm

33.5642
150x150mm

33.5643
150x150mm

33.5644
150x150mm

33.5645
150x150mm

33.5646
150x150mm

33.5647
150x150mm

33.5648
150x150mm

33.5649
150x150mm

33.5650
150x150mm

33.5651
150x150mm

33.5652
150x150mm

33.5653
150x150mm

33.5654
150x150mm

33.5655
150x150mm

33.5656
150x150mm

33.5870
200x150mm

33.5871
200x150mm

33.5872
200x150mm

33.5873
200x150mm

33.5874
200x150mm

33.5875
200x150mm

33.5876
200x150mm

33.5837
200x150mm

33.5709
200x150mm

33.5710
200x150mm

33.5733
200x150mm

33.5782
200x150mm

33.5712
200x150mm

33.5734
200x150mm

33.5730
200x150mm

33.5715
200x150mm

33.5716
200x150mm

33.5732
200x150mm

33.5735
200x150mm

33.5719
200x150mm

33.5731
200x150mm

33.5721
200x150mm

33.5722
200x150mm

33.5723
200x150mm

33.5724
200x150mm

33.5725
200x150mm

33.5726
200x150mm

33.5727
200x150mm

33.5743
200x150mm

33.5728
200x150mm

33.5737
200x150mm

33.5729
200x150mm

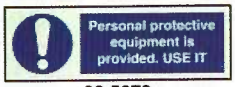
33.5742
200x150mm

33.5744
200x150mm

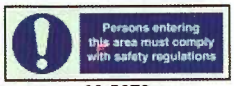
33.5838
200x150mm

33.5675
100x300mm

33.5677
100x300mm



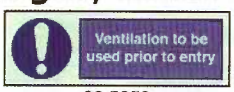
33.5678
100x300mm



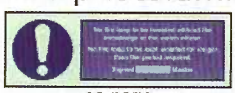
33.5679
100x300mm

Mandatory Signs, on self adhesive photoluminescent vinyl

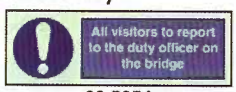
33.5851
100x300mm



33.5852
100x300mm



33.5853
100x300mm



33.5854
100x300mm

33.5830
150x500mm

33.5831
150x500mm

33.5800
150x150mm

33.5801
150x150mm

33.5802
150x150mm

33.5803
150x150mm

33.5804
150x150mm

33.5805
150x150mm

33.5806
150x150mm

33.5807
150x150mm

33.5808
150x150mm

33.5809
150x150mm

33.5811
150x150mm

33.5812
150x150mm

33.5814
150x150mm

33.5815
150x150mm

33.5816
150x150mm

33.5817
150x150mm

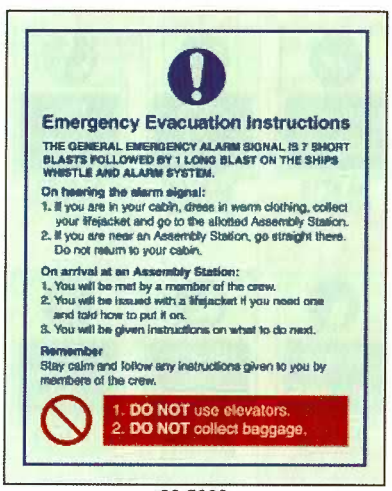
33.5818
150x150mm

33.5819
150x150mm

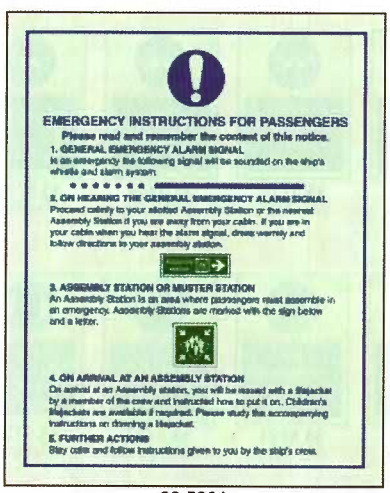
33.5820
150x150mm

33.5821
150x150mm

33.5822
150x150mm



33.5900
250x200mm

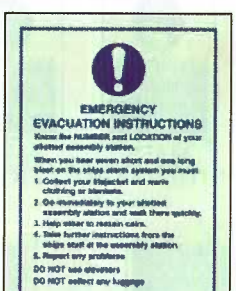


33.5901
250x200mm

33.5110
150x200mm

33.5111
150x200mm

33.5902
200x150mm



33.5903
200x150mm

33.5112
150x200mm

Hazard Signs, on self adhesive photoluminescent vinyl

33.7500
150x150mm

33.7501
150x150mm

33.7502
150x150mm

33.7503
150x150mm

33.7504
150x150mm

33.7505
150x150mm

33.7506
150x150mm

33.7507
150x150mm

33.7508
150x150mm

33.7509
150x150mm

33.7510
150x150mm

33.7511
150x150mm

33.7514
150x150mm

33.7515
150x150mm

33.7516
150x150mm

33.7578 100x300mm

33.7569 100x300mm

33.7577 100x300mm

33.7579 100x300mm

33.7540
200x150mm

33.7541
200x150mm

33.7542
200x150mm

33.7543
200x150mm

33.7544
200x150mm

33.7545
200x150mm

33.7546
200x150mm

33.7547
200x150mm

33.7548
200x150mm

33.7566
200x150mm

33.7567
200x150mm

33.7549
200x150mm

33.7551
200x150mm

33.7554
200x150mm

33.7557
200x150mm

33.7560
200x150mm

33.7561
200x150mm

33.7643
200x150mm

33.7624
200x150mm

33.7579
200x150mm

33.7569
200x150mm

33.7664
200x150mm

33.7572
200x150mm

33.7573
200x150mm

33.7574
200x150mm

33.7570
200x150mm

33.7571
200x150mm

33.7580
200x150mm

33.7581
200x150mm

33.7582
200x150mm

33.7583
200x150mm

33.7584
200x150mm

33.7585
200x150mm

33.7590
200x150mm

33.7591
200x150mm

33.7596
200x150mm

Hazard Signs, on self adhesive photoluminescent vinyl

33.7597
200x150mm

33.7555
200x150mm

33.7600
200x150mm

33.7601
200x150mm

33.7604
200x150mm

33.7605
200x150mm

33.7586
200x150mm

33.7610
200x150mm

33.7611
200x150mm

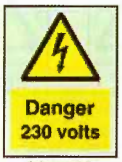
33.7613
200x150mm

33.7587
200x150mm

33.7619
200x150mm

33.7618
200x150mm

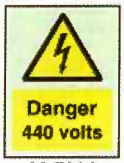
33.7617
200x150mm



33.7588
200x150mm

33.7616
200x150mm

33.7615
200x150mm



33.7614
200x150mm

33.7625
200x150mm

33.7626
200x150mm

33.7627
200x150mm

33.7628
200x150mm

33.7620
200x150mm

33.7550
200x150mm

33.7623
200x150mm

33.7629
200x150mm

33.7631
200x150mm

33.7635
200x150mm

33.7630
200x150mm

33.7632
200x150mm

33.7633
200x150mm

33.7634
200x150mm

33.7636
200x150mm

33.7650
200x150mm

33.7660
200x150mm

33.7670
200x150mm

33.7680
200x150mm

33.7681
200x150mm

33.7673
200x150mm

33.7668
200x150mm

33.7000 100x300mm

33.7700 100x300mm

33.7701 100x300mm

33.2761
200x75mm

33.2762
200x75mm

33.2763
200x75mm

33.2760
200x75mm

Prohibition Signs, on self adhesive photoluminescent or white vinyl

33.8500
150x150mm

33.8501
150x150mm

33.8502
150x150mm

33.8503
150x150mm

33.8504
150x150mm

33.8505
150x150mm

33.8506
150x150mm

33.8508
150x150mm

33.8509
150x150mm

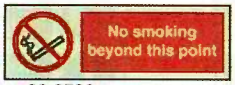
33.8510
150x150mm

33.8511
150x150mm

33.8530 100x300mm

33.8531 100x300mm

33.8532 100x300mm


33.8533 100x300mm

33.8575 100x300mm

33.8534 100x300mm

33.8536 100x300mm

33.8537 100x300mm

33.8539 100x300mm

33.8540 100x300mm

33.8541 100x300mm

33.8542 100x300mm

33.8544 100x300mm

33.8545 100x300mm

33.8546 100x300mm

33.8549 100x300mm

33.8547 100x300mm

33.8559 100x300mm

33.8690 100x300mm

33.8691 100x300mm

33.8557 100x300mm

33.8684 100x300mm

33.8548 100x300mm

33.8550 100x300mm

33.8553 100x300mm

33.8563 100x300mm

33.8658 100x300mm

33.8570 100x300mm

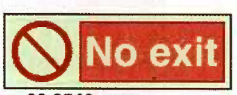
33.8585 100x300mm

33.8587 100x300mm

33.8551 100x300mm

33.8552 100x300mm

33.8576 100x300mm


33.8543 100x300mm

33.8555 100x300mm

33.8556 100x300mm

33.8560 100x300mm

33.8561 100x300mm

33.8565 100x300mm

33.8567 100x300mm

33.8522
200x300mm

33.8526
200x300mm

33.8568 100x300mm

33.8569 100x300mm

7TH
33

Combination Signs, on self adhesive white vinyl

33.3122
300x300mm

33.3128
300x300mm

33.3129
300x300mm

33.3136
300x300mm

33.3137
300x300mm

33.3111
300x300mm

33.3123
300x300mm

33.3125
300x300mm

33.3126
300x300mm

33.3141
300x300mm

33.3127
300x300mm

33.3135
300x300mm

33.3108
300x300mm

33.3124
300x300mm

33.3139
300x300mm

33.3138
400x300mm

Combination Signs, on self adhesive white vinyl

33.3100
200x300mm

33.3101
200x300mm

33.3102
200x300mm

33.3103
200x300mm

33.3109
200x300mm

33.3112
200x300mm

33.3116
200x300mm

33.3117
200x300mm

33.3118
200x300mm

33.3115
200x300mm

33.3114
200x300mm

33.3113
200x300mm

33.3106
200x300mm

33.3107
200x300mm

33.3104
200x300mm

33.3119
200x300mm

33.3120
200x300mm

33.3110
200x300mm

33.3105
200x300mm

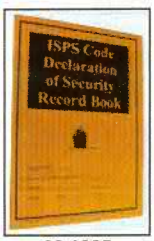
33.3014
1000x600mm

ISPS Code Signs & Security Signs

33.8690
100x300mm

33.8691
100x300mm

33.8692
100x300mm



33.1205
210x297mm
ISPS Code Declaration of Security Record Book. Complies with ISPS Code

33.2895
100x300mm

33.2907
100x300mm

33.2909
100x300mm

33.5824
100x300mm

33.5825
100x300mm

33.5855
100x300mm

33.2924
300x300mm

33.2894
300x300mm

33.2532
140x75mm

33.2540
140x75mm

Sold in packs of 10 complete with wired 'twists' for fixing.

33.8695
250x500mm

33.8696
200x300mm

Conforming to ABS requirements

33.2703
150x300mm
Rigid PVC sign with printed insert that can be oriented to show one of three security levels through a window in the front face.

33.2700
30x150mm
Security seal manufactured from a special plastic which tears when attempts to peel it off are made. Ideal for securing bonds etc. Sold in sheets of 10.

33.2890
50x25mm

33.2891
50x25mm

33.2892
50x25mm

33.2893
50x25mm

These signs can be placed beside the lock on a door to indicate the correct status at specific security levels. Sold only in sheets of 10.

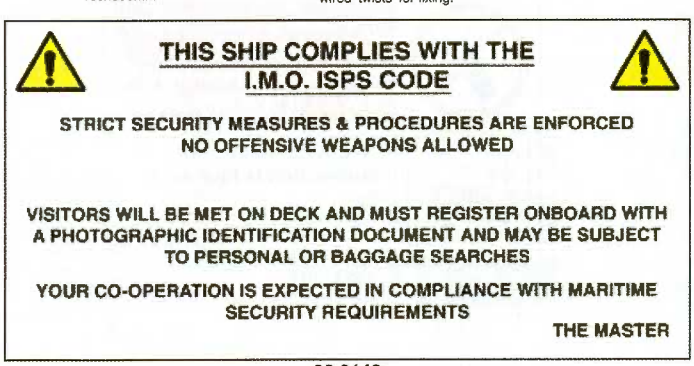
33.2896
350x300mm

33.2889
150x150mm

33.2974
150x150mm

33.3138
400x300mm

33.3139
300x300mm



33.3140
450x900mm

Regulations:

ISPS Code Part B Section 9 requires the identification of restricted areas, access notices and forms of declaration. Part B 16.23 also requires that port facilities show similar identification.

33.2419
150x150mm

ISPS Code 2003 edition SOLAS amendments came into force in July 2004 and require certain areas to have restricted access and be identified as such.

Deck and Engine Room Signs

33.3116
200x300mm

33.7545
200x150mm

33.5876
200x150mm

33.5881
200x150mm

33.5873
200x150mm

33.5874
200x150mm

33.5728
200x150mm

33.8574
100x300mm

33.8530
100x300mm

33.8539
100x300mm

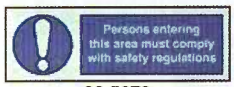
33.8565
100x300mm

33.4180
100x300mm

33.4185
100x300mm

33.7700
100x300mm

33.7701
100x300mm



33.5679
100x300mm

33.5851
100x300mm

33.5852
100x300mm

33.5853
100x300mm

33.3103
200x300mm

33.5872
200x150mm

33.5875
200x150mm

33.5902
200x150mm

33.7541
200x150mm

33.3110
200x300mm

33.5782
300x400mm

33.4181
100x300mm

33.8546
100x300mm

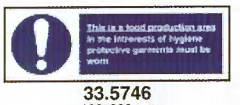
33.3014
1000x600mm

33.7578
100x300mm

33.8547
100x300mm

Galley Signs

33.5745
100x300mm



33.5746
100x300mm

33.5747
100x300mm

33.5748
100x300mm

33.5728
200x150mm

33.5750
100x300mm

33.5751
100x300mm

33.5752
100x300mm

33.5753
100x300mm

33.5737
200x150mm

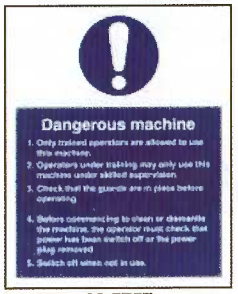
33.5754
100x300mm

33.5755
100x300mm

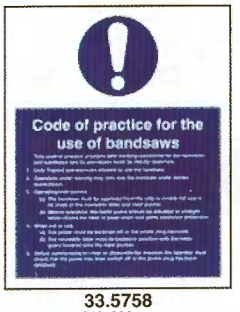
33.5756
100x300mm

33.8619
100x300mm

33.5738
200x150mm



33.5757
250x200mm



33.5758
250x200mm

33.5762
250x200mm

33.5761
250x200mm

33.5783
200x150mm

33.5759
250x200mm

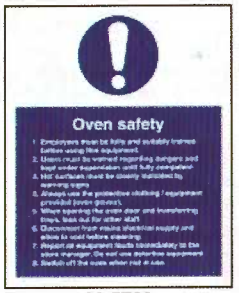
33.5760
250x200mm

33.5763
250x200mm

33.5764
250x200mm

33.5779
200x150mm

33.5765
250x200mm



33.5766
250x200mm

33.7573
200x150mm

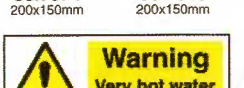
33.7572
200x150mm

33.7574
200x150mm

33.7623
200x150mm

33.5739
200x150mm

33.7569
100x300mm



33.7577
100x300mm

33.5740
200x150mm

Galley Signs

33.7598
100x300mm

33.7579
100x300mm

33.8567
100x300mm

33.8533
100x300mm

33.5736
200x150mm

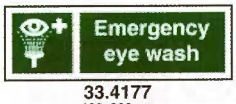
33.8550
100x300mm

33.8530
100x300mm

33.8532
100x300mm

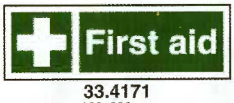
33.4180
100x300mm

33.5768
200x150mm



33.4177
100x300mm

33.4193
100x300mm



33.4171
100x300mm

33.4173
100x300mm

33.7664
200x150mm

33.3522
150x300mm

33.5690
75x200mm

33.5691
75x200mm

33.5692
75x200mm

33.7611
200x150mm

33.5694
75x200mm

33.5695
75x200mm

33.5696
75x200mm

33.5693
75x200mm

33.5654
100x100mm

33.5774
100x100mm

33.5775
100x100mm

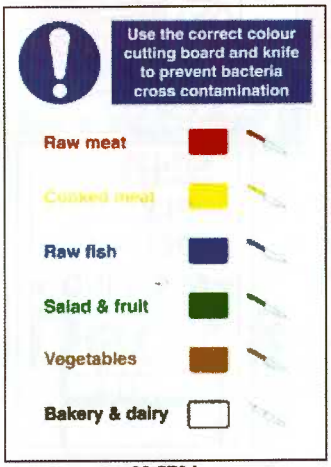
33.5776
100x100mm

33.5777
100x100mm

33.5778
100x100mm

33.2884
100x100mm

33.2885
100x100mm

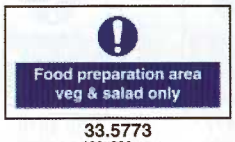


33.5784
297x210mm

33.3124
300x300mm

33.5771
100x200mm

33.5772
100x200mm



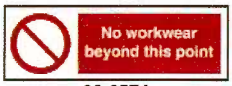
33.5773
100x200mm

Accommodation Signs

33.2874
100x300mm

33.2909
100x300mm

33.2908
100x300mm



33.8574
100x300mm

33.8500
150x150mm

33.2877
100x300mm

33.2878
100x300mm

33.2879
100x300mm

33.8619
100x300mm

33.8505
150x150mm

33.1713
297x210mm

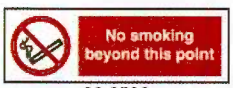
33.4197
150x200mm

33.4198
150x150mm

33.8530
100x300mm

33.8531
100x300mm

33.8532
100x300mm



33.8533
100x300mm

33.4186
100x300mm

33.8526
200x300mm

33.8525
200x300mm

33.4180
100x300mm

33.1714
297x210mm

33.4185
100x300mm

33.8550
100x300mm

33.8658
100x300mm

33.8529
100x300mm

33.8582
100x300mm

33.8570
100x300mm

33.8520
75x200mm

33.8524
150x150mm

33.5822
150x150mm

33.5811
150x150mm

33.1712
297x210mm

33.5877
200x150mm

33.5878
200x150mm

33.5803
150x150mm

33.5804
150x150mm

33.5809
150x150mm

Accommodation Signs

33.2918
100x300mm

33.2919
100x300mm

33.2941
150x100mm

33.2942
150x100mm

33.2940
150x150mm

33.2932
150x200mm

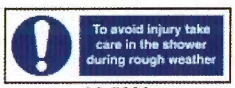
33.2931
150x200mm

33.2920
100x300mm

33.2876
100x300mm

33.8000
75x140mm

33.7000
100x300mm



33.5680
100x300mm

33.5769
200x150mm

33.5728
200x150mm

33.8002
200x150mm

33.8003
200x150mm

33.8001
100x150mm

33.2938
50x100mm

33.2939
50x100mm

33.7623
200x150mm

33.7624
200x150mm

33.2760
200x75mm

33.2761
200x75mm

33.2762
200x75mm

33.2763
200x75mm

33.7572
200x150mm

33.7573
200x150mm

33.7574
200x150mm

33.4470
150x400mm

33.4210
150x75mm

33.4211
150x75mm

33.4212
150x75mm

33.4213
150x75mm

33.4214
150x75mm

33.4215
150x75mm

33.4420
150x150mm

33.4471
150x400mm

33.4201
150x75mm

33.4202
150x75mm

33.4203
150x75mm

33.4204
150x75mm

33.4205
150x75mm

33.4206
150x75mm

33.4421
150x150mm

33.4472
150x400mm

33.4473
150x400mm

33.4171
100x300mm

33.4187
100x300mm

33.4176
100x300mm

33.4177
100x300mm

Temporary Tie Tags

Installation:

Tie tags are required wherever a need occurs to temporarily mark items and areas for safety reasons, usually during maintenance and in connection with the permit to work system. These tags are printed on a semi - rigid PVC with a matt finish to allow an authorisation signature and the date to be added in pen. The tags are supplied in packs of ten and come complete with cable ties for easy fixing.

33.2501
140x75mm

33.2502
140x75mm

33.2503
140x75mm

33.2504
140x75mm

33.2505
140x75mm

33.2506
140x75mm

33.2507
140x75mm

33.2508
140x75mm

33.2509
140x75mm

33.2510
140x75mm

33.2541
140x75mm

33.2542
140x75mm

33.2520
140x75mm

33.2521
140x75mm

33.2522
140x75mm

33.2523
140x75mm

33.2524
140x75mm

33.2525
140x75mm

33.2526
140x75mm

33.2527
140x75mm

33.2528
140x75mm

33.2529
140x75mm

33.2530
140x75mm

33.2531
140x75mm

33.2532
140x75mm

33.2540
140x75mm

7TH
33

Sign Fixing Components

Magnetic Sticky Strips
For fixing signs to metal doors and bulkheads. Useful where signs need only be temporarily displayed. 300mm long and can be cut to length.
Sold in packs of 10 33.2800

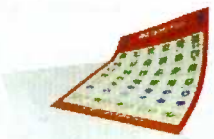
Double Sided Sticky Pads
For fixing signs to all surfaces. Acrylic adhesive pad offers a strong, permanent bond.
Sold in sheets of 50 33.2801

Sign Adhesive System
A solvent based gunning adhesive offering the strongest fixing to all types of surface.

Adhesive	**33.2802**
Applicator Gun	**33.2803**

Deckhead Fixing Kit
Two fixings are clipped to the top of the sign and the whole assembly stuck to the deckhead with the pre - fitted sticky pads. The fixing can grip either one or two signs allowing double sided signs to be displayed.
Sold in packs of 10 33.2804

Deckhead Suspension Kit
Employed where the deckhead fixing places the sign too high. The kit is assembled in a similar way to the deckhead fixing but the clear PVC strip can be cut to length to suit the application.
Sold in packs of 10 33.2805



Poster Display Unit
Enables a selection of posters to be displayed in a permanent position & changed on a regular basis.

W size (480x330mm)	**33.1098**
Y size (297x210mm)	**33.1099**

Passenger Vessel and Terminal Building Signs

Regulations:

The joint ICAO & IMO publication, Document 9636 details international signs to provide guidance to persons at airports and marine terminals. These signs should be used without text wherever possible.

Disabled access
33.2401
150x150mm

Elevators
33.2402
150x150mm

Foot passengers
33.2403
150x150mm

Cars
33.2404
150x150mm

Lorries
33.2405
150x150mm

Sea arrivals
33.2406
150x150mm

Sea departures
33.2407
150x150mm

Toilets, both
33.2408
150x150mm

Toilets, ladies
33.2409
150x150mm

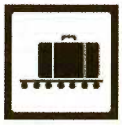
Toilets, men's
33.2410
150x150mm

Drinking water
33.2411
150x150mm

Nursery
33.2412
150x150mm

First aid (DP)
33.2413
150x150mm

Pharmacy
33.2414
150x150mm



Baggage claim
33.2415
150x150mm

Baggage cart
33.2416
150x150mm

Baggage store
33.2417
150x150mm

Baggage lockers
33.2418
150x150mm

No weapons
33.2419
150x150mm

No smoking
33.2420
150x150mm

No entry
33.2421
150x150mm

Bar
33.2422
150x150mm

Coffee shop
33.2423
150x150mm

Restaurant
33.2424
150x150mm

Shopping area
33.2425
150x150mm

Information
33.2426
150x150mm

Hotel reservations
33.2427
150x150mm

Lost and found
33.2428
150x150mm

Telephones
33.2429
150x150mm

Cables and faxes
33.2430
150x150mm

Postal facility
33.2431
150x150mm

Banking facility
33.2432
150x150mm

Taxis
33.2433
150x150mm

Buses
33.2434
150x150mm

Trains
33.2435
150x150mm

Car rental
33.2436
150x150mm

Air arrivals
33.2437
150x150mm

Air departures
33.2438
150x150mm

Connecting flights
33.2439
150x150mm

Helicopters
33.2440
150x150mm

Horizontal arrow
33.2441
150x150mm

Diagonal arrow
33.2442
150x150mm

Baby Change
33.2443
150x150mm

Hazard Diamonds, on self adhesive white vinyl

Hazard Warning Diamonds with Class Numbers

33.2203 250x250mm
33.2222 250x250mm
33.2223 250x250mm
33.2224 250x250mm
33.2225 250x250mm
33.2226 250x250mm
33.2227 250x250mm
33.2228 250x250mm
33.2229 250x250mm
33.2248 250x250mm
33.2249 250x250mm
33.2251 250x250mm
33.2252 250x250mm
33.2207 250x250mm
33.2294 250x250mm
33.2208 250x250mm
33.2295 250x250mm
33.2209 250x250mm
33.2202 250x250mm
33.2296 250x250mm
33.2210 250x250mm
33.2211 250x250mm
33.2212 250x250mm
33.2297 250x250mm
33.2213 250x250mm
33.2275 250x250mm
33.2276 250x250mm
33.2215 250x250mm
33.2216 250x250mm
33.2217 250x250mm
33.2218 250x250mm
33.2219 250x250mm
33.2253 250x250mm
33.2220 250x250mm
33.2298 250x250mm
33.2221 250x250mm

Hazard Warning Diamonds with Panel for UN Numbers

33.2231 250x250mm
33.2254 250x250mm
33.2233 250x250mm
33.2255 250x250mm
33.2234 250x250mm
33.2232 250x250mm
33.2256 250x250mm
33.2235 250x250mm
33.2236 250x250mm
33.2237 250x250mm
33.2288 250x250mm
33.2238 250x250mm
33.2277 250x250mm
33.2278 250x250mm
33.2240 250x250mm
33.2241 250x250mm
33.2242 250x250mm
33.2243 250x250mm
33.2244 250x250mm
33.2230 250x250mm
33.2299 120x300mm Please specify UN number when ordering

Marking of Packages

33.2289 250x250mm
33.2290 250x250mm
33.2291 250x250mm
33.2292 250x250mm
33.2300 250x200mm
33.2301 250x200mm
33.2293 250x250mm
33.2279 250x250mm
33.2201 250x300mm

Hazardous Substance symbols

33.2280 100x100mm
33.2281 100x100mm
33.2282 100x100mm
33.2284 100x100mm
33.2285 100x100mm
33.2286 100x100mm
33.2287 100x100mm

Training, Safety and Environmental Posters

33.1501 Lifeboat Launching
475x330mm procedures for launching open/semi - enclosed lifeboats.

33.1502 Liferaft Launching
475x330mm procedures for launching inflatable liferafts.

33.1503 Liferafts Inflatable
475x330mm "vital actions" after launching.

33.1504 Lifeboat Launching Fully Enclosed
475x330mm procedures for launching a fully enclosed lifeboat.

33.1505 Lifeboat Launching in a Dangerous Atmosphere
475x330mm procedures for launching an enclosed lifeboat in a dangerous atmosphere.

33.1506 Enclosed Space Entry
475x330mm safety procedures for entering enclosed spaces.

33.1507 Enclosed Space Entry Safety Signs
475x330mm safety signs used to identify hazardous spaces.

33.1508 Oil Spill Prevention
475x330mm procedures to reduce the likelihood of oil spills.

33.1509 Electric Shock, Drowning, Serious Inj W.H.O
475x330mm "vital actions" on discovery of an electric shock, drowning or serious injury casualty.

33.1510 Wheel House Poster (Two Sheets)
420x297mm as required by IMO Res. A. 601(15) (Pen included)

33.1511 Wheel House - Pilot Card
420x297mm as required by IMO Res. A. 601(15) (Pen included)

33.1512 Emergency Muster List
420x297mm as required by IMO Chap. III Reg. 8. (Pen included)

33.1513 Accommodation Ladders
475x330mm safe rigging and use of accommodation ladders.

33.1514 Gangways
475x330mm safe rigging and use of gangways.

33.1515 Man Overboard
475x330mm "vital actions" on discovery of a man overboard.

33.1516 Abandon Ship
475x330mm "vital actions" preparing to abandon ship

33.1517 Enclosed Space and Tank Rescue
475x330mm safety procedures for recovering a casualty from a hazardous atmosphere.

33.1520 Lifeboat Launching Free Fall
475x330mm procedures for launching a free fall lifeboat.

33.1521 Towing
475x330mm recommended procedures for safe towing operations.

33.1522 Bunkering
475x330mm safety procedures before, during and after bunkering.

33.1523 Oil Spill Actions
475x330mm recommended procedures to minimize the effect of an oil spill.

33.1524 Hot Work
475x330mm recommended safety preparation for hot work.

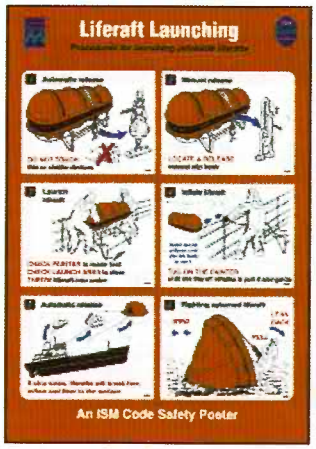
33.1525 Working Aloft or Outboard
475x330mm be aware of the risks when working outboard and aloft.

33.1526 Pilot - Boarding Arrangement
420x297mm in accordance with IMO requirements and IMPA recommendations.

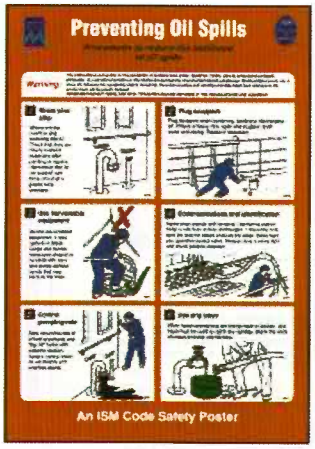
33.1527 Fire Extinguisher Types
297x210mm popular types of fire extinguishers and types of fire which they are suited to.

33.1528 Personal Protective Equipment
475x330mm choosing the correct equipment for your safety.

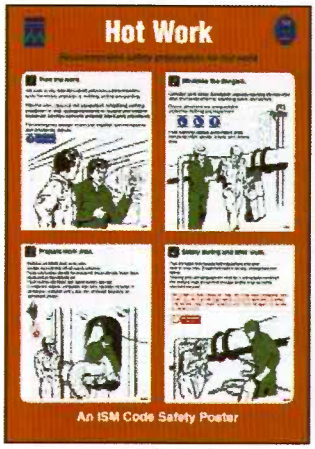
33.1529 Garbage Disposal Plan
420x297mm MARPOL 73/78 Annex V



33.1502



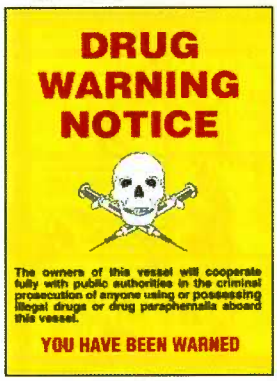
33.1508



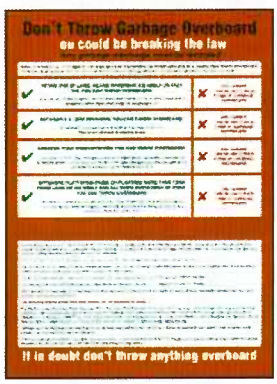
33.1524

Training, Safety and Environmental Posters

33.1527



33.1537



33.1542

33.1530 475x330mm — **Craneage Safety**
Craneage hand signals and safe working practices.

33.1531 475x330mm — **Fire & Explosion Actions**
"vital actions" following a fire or explosion.

33.1532 475x330mm — **Gas Bottle Safety**
safe handling, storage and working practices.

33.1533 475x330mm — **Welding & Flamecutting**
safety procedures during welding operations.

33.1534 475x330mm — **Light, Shape & Sound Signals**
international communication signals.

33.1535 475x330mm — **Engine & Machinery Room Safety**
procedures for safe working practice.

33.1536 475x330mm — **IMO Safety Signs**
IMO safety signs and their various meanings.

33.1537 297x210mm — **Drugs Warning Notice**
advises owners will assist in prosecuting users and traffickers.

33.1538 150x105mm — **Drugs Warning Notice**
advises owners will assist in prosecuting users and traffickers.

33.1539 297x210mm — **Drugs & Alcohol Warning Notice**
advises prohibition of drugs & alcohol and warns owners will prosecute users and traffickers.

33.1540 150x105mm — **Drugs & Alcohol Warning Notice**
advises prohibition of drugs & alcohol and warns owners will prosecute users and traffickers.

33.1541 297x210mm — **Drugs & Trafficking Warning**
advises of the consequences of drug use and trafficking.

33.1542 297x210mm — **Garbage Don't Throw Overboard**
complies with MARPOL Annex V.

33.1543 297x210mm — **Oil Discharge Prohibited**
(CFR151,15 153.203 & 155,450) extract from CFRs regarding oil pollution.

33.1544 475x330mm — **Food Hygiene**
recommended procedures for health and safety in pantries, galleys and freezers.

33.1545 475x330mm — **Liferafts Davit Launched**
procedures for davit launched inflatable liferafts.

33.1546 475x330mm — **Evacuation Chutes & Slides**
abandon ship procedures using vertical chutes or angled slides.

33.1547 475x330mm — **Self Contained Breathing Apparatus**
safety procedures for using apparatus in hazardous conditions.

33.1548 297x210mm — **Hazard Diamonds**
for the carriage of dangerous goods.

33.1549 297x210mm — **Hazardous Substance Symbols**

33.1550 475x330mm — **Hazchem Sign Guide**

33.1557 475x330mm — **IMO Fire Control Symbols**
to IMO resolution A.654(16)

33.1558 475x330mm — **SOLAS Poster Life Saving Signals**
international search and rescue communication signals based on SOLAS requirements.

33.1559 210x180mm — **SOLAS CARD (double sided)**
international search and rescue communication signals based on SOLAS requirements.

33.1564 475x330mm — **Mooring**
procedures for mooring/unmooring

33.1565 475x330mm — **Williamson Turn**
as required by IMO Res. A. 601(15) (Pen included)

33.1566 475x330mm — **Pipe Identification**
in accordance with ISO 14726:2008

Training, Safety and Environmental Posters

33.1567 420x297mm
IMO Fire Control Symbols - ISO 17631:2002(E).
IMO fire control symbols in accordance with ISO 17631:2002(E).

33.1568 297x210mm
Know Your Signs
meanings, colours and examples of graphics used for signage.

33.1569 475x330mm
Electric Shock & Serious Injury CoSTRA
Basic life support (COSTRA)

33.1570 475x330mm
Drowning Hypothermia CoSTRA
Basic life support (COSTRA)

33.1571 475x330mm
Precautions Against Piracy (ISPS)
SOLAS Chapter X 1 - 2

33.1572 475x330mm
Control of Noise
reference IMO code of noise levels on board ships (exceptions can apply).

33.1573 475x330mm
Fast Rescue Boat Operation
SOLAS chapter III / MSC circular 1161

33.1574 475x330mm
Ro-Ro Vessels
Vehicle deck safety operations

33.1576 475x330mm
Port Security

33.1577 475x330mm
Helicopter Operations
winching

33.1578 475x330mm
Helicopter Operations
landing on.

33.1579 475x330mm
International Signalling Flags
single letter signals

33.1580 475x330mm
Dedicated rescue boat operation
SOLAS chapter III

33.1581 475x330mm
Vessel Induction & Familiarisation
a requirement of the STCW95 convention.

33.1582 297x210mm
Hand wash technique

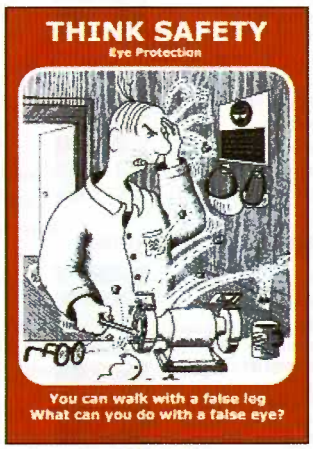
33.1583 475x330mm
Radio Distress Transmitting Procedure inc. Interco Procedure

33.1585 475x330mm
Immersion, Survival or Anti-exposure Suits
SOLAS 74 Chapter III (as amended) and LSA code

33.1587 475x330mm
Slips, Trips and Falls

33.1573

33.1585



33.1700

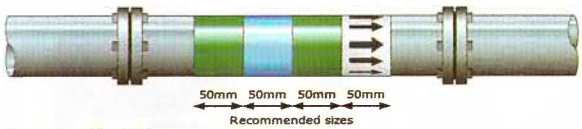
Think Safety Posters

33.1700 475x330mm	**Eye Protection**	**33.1706** 475x330mm	**Follow Correct Procedures**
33.1701 475x330mm	**Fire Prevention**	**33.1707** 475x330mm	**Seek Medical Attention**
33.1702 475x330mm	**Housekeeping**	**33.1708** 475x330mm	**Confined Spaces**
33.1703 475x330mm	**Hazardous Materials**	**33.1709** 475x330mm	**Personal Protective Equipment (PPE)**
33.1704 475x330mm	**Lift Correctly**	**33.1710** 475x330mm	**Electrical Safety**
33.1705 475x330mm	**Slips and Falls**	**33.1711** 475x330mm	**Noise Protection**

For on-going new poster titles, contact IMPA

N.B. Unlawful copies of ISM posters endanger crew and passenger safety

Pipe Identification Tape, in accordance with ISO 14726



Installation

Pipelines should be marked at least once in each room; at each penetration point in bulkheads and decks, close to each valve and within a distance of 3 - 5m along the length of the pipeline. Local conditions may require more marking due to pipe bends or the close proximity of pipes for different services.

Prior to application, pipes should be dust and oil free. The tape should overlap by at least 20mm on the 'blind side' of the pipe, however on pipes with an external circumference of over 200mm the tape only needs to cover half the circumference of the pipe.

Waste Media	Ref. Nos.
Black water	33.2140 - 33.2141 - 33.2140
Waste oil/Used oil	33.2140 - 33.2142 - 33.2140
Bilge water	33.2140 - 33.2143 - 33.2140
Exhaust gas	33.2140 - 33.2144 - 33.2140
Grey water	33.2140 - 33.2150 - 33.2140
Sewage - contaminated	33.2140 - 33.2151 - 33.2140

Fresh Water	Ref. Nos.
Fresh water, sanitary	33.2141 - 33.2142 - 33.2141
Potable water	33.2141 - 33.2143 - 33.2141
Distillate	33.2141 - 33.2144 - 33.2141
Gas turbine wash water	33.2141 - 33.2146 - 33.2141
Feed water	33.2141 - 33.2147 - 33.2141
Cooling fresh water	33.2141 - 33.2149 - 33.2141
Chilled water	33.2141 - 33.2150 - 33.2141
Condensate	33.2141 - 33.2151 - 33.2141

Sea Water	Ref. Nos.
Decontamination water	33.2143 - 33.2141 - 33.2143
Sea water, sanitary	33.2143 - 33.2142 - 33.2143
Ballast water	33.2143 - 33.2149 - 33.2143
Cooling sea water	33.2143 - 33.2151 - 33.2143

Fuel	Ref. Nos.
HFO (Heavy fuel oil)	33.2142 - 33.2140 - 33.2142
Aviation fuel	33.2142 - 33.2141 - 33.2142
Biological fuel	33.2142 - 33.2149 - 33.2142
Gas turbine fuel	33.2142 - 33.2150 - 33.2142
MDO (Marine diesel fuel)	33.2142 - 33.2151 - 33.2142

Non - flammable gases	Ref. Nos.
Oxygen	33.2144 - 33.2141 - 33.2144
Inert gas	33.2144 - 33.2142 - 33.2144
Nitrogen	33.2144 - 33.2143 - 33.2144
Refrigerant	33.2144 - 33.2145 - 33.2144
Compressed air - low pressure	33.2144 - 33.2146 - 33.2144
Compressed air - high pressure	33.2144 - 33.2148 - 33.2144
Control air/Regulating air	33.2144 - 33.2149 - 33.2144
Breathing air*	33.2144 - 33.2150 - 33.2144
Breathing gas*	33.2144 - 33.2151 - 33.2144

Oil other than fuel	Ref. Nos.
Thermal fluid	33.2146 - 33.2141 - 33.2146
Lub. oil for gas turbines	33.2146 - 33.2143 - 33.2146
Hydraulic fluid	33.2146 - 33.2144 - 33.2146
Lubrication oil for steam turbines	33.2146 - 33.2147 - 33.2146
Lubrication oil for gears	33.2146 - 33.2149 - 33.2146
Lub. oil for int. combustion engines	33.2146 - 33.2151 - 33.2146

Steam	Ref. Nos.
Steam for heating	33.2147 - 33.2140 - 33.2147
Exhaust steam	33.2147 - 33.2150 - 33.2147
Supply steam	33.2147 - 33.2151 - 33.2147

Air in ventilation systems	Ref. Nos.
Discharge air	33.2150 - 33.2140 - 33.2150
Mech. supply air - cold	33.2150 - 33.2141 - 33.2150
Natural exhaust air	33.2150 - 33.2142 - 33.2150
Atmospheric air	33.2150 - 33.2143 - 33.2150
Mech. exhaust air	33.2150 - 33.2144 - 33.2150
Decontaminated supply air	33.2150 - 33.2145 - 33.2150
Mech. recirculated air	33.2150 - 33.2146 - 33.2150
Mech. supply air - warm	33.2150 - 33.2147 - 33.2150
Smoke clearance	33.2150 - 33.2148 - 33.2150
Conditioned supply air	33.2150 - 33.2149 - 33.2150
Natural supply air	33.2150 - 33.2151 - 33.2150

Fire fighting/fire protection	Ref. Nos.
Fire - fighting water	33.2148 - 33.2143 - 33.2148
Fire - fighting gas	33.2148 - 33.2144 - 33.2148
Sprinkler water	33.2148 - 33.2146 - 33.2148
Spray water	33.2148 - 33.2149 - 33.2148
Fire - fighting powder	33.2148 - 33.2150 - 33.2148
Fire - fighting foam	33.2148 - 33.2151 - 33.2148

Flammable gases	Ref. Nos.
Hydrogen	33.2151 - 33.2141 - 33.2151
Acetylene	33.2151 - 33.2144 - 33.2151
Liquid gas	33.2151 - 33.2149 - 33.2151

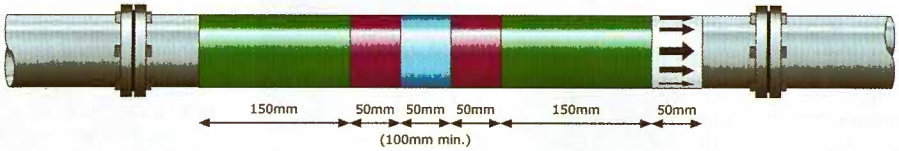
Air and sounding pipes	Ref. Nos.
Waste media	33.2145 - 33.2140 - 33.2145
Fresh water	33.2145 - 33.2141 - 33.2145
Fuel	33.2145 - 33.2142 - 33.2145
Sea water	33.2145 - 33.2143 - 33.2145
Non - flammable gases	33.2145 - 33.2144 - 33.2145
Oil other than fuels	33.2145 - 33.2146 - 33.2145
Steam	33.2145 - 33.2147 - 33.2145
Fire fighting	33.2145 - 33.2148 - 33.2145
Acids & Alkalis	33.2145 - 33.2149 - 33.2145
Ventilation system	33.2145 - 33.2150 - 33.2145
Flammable gases	33.2145 - 33.2151 - 33.2145

Flow arrows	Ref. Nos.
Flow arrows	33.2130

All pipe tapes on this page are offered as self adhesive rolls 50mm wide by 30m long.

Black	33.2140	Orange	33.2146
Blue	33.2141	Silver	33.2147
Brown	33.2142	Red	33.2148
Green	33.2143	Violet	33.2149
Grey	33.2144	White	33.2150
Maroon	33.2145	Yellow-ochre	33.2151

Pipe Identification Tape, in accordance with BS 1710



		Use tapes in this sequence:
Water		
Sea, river or untreated		33.2101- 33.2101- 33.2101
Fire mains		33.2101 - 33.2111 - 33.2111 - 33.2101
Drinking		33.2101 - 33.2113 - 33.2113 - 33.2101
Cooling (primary)		33.2101 - 33.2117 - 33.2117 - 33.2101
Hydraulic power		33.2101 - 33.2116 - 33.2116 - 33.2101
Boiler feed		33.2101 - 33.2114 - 33.2117 - 33.2114 - 33.2101
Condensate		33.2101 - 33.2114 - 33.2115 - 33.2114 - 33.2101
Chilled		33.2101 - 33.2117 - 33.2115 - 33.2117 - 33.2101
Heating over 100°C		33.2101 - 33.2118 - 33.2114 - 33.2118 - 33.2101
Heating under 100°C		33.2101 - 33.2114 - 33.2118 - 33.2114 - 33.2101
Hot		33.2101 - 33.2117 - 33.2114 - 33.2117 - 33.2101
Cold		33.2101 - 33.2117 - 33.2118 - 33.2117 - 33.2101
Oils		
Furnace		33.2103 - 33.2103 - 33.2103
Diesel		33.2103 - 33.2117 - 33.2117 - 33.2103
Lubricating		33.2103 - 33.2115 - 33.2115 - 33.2103
Hydraulic power		33.2103 - 33.2116 - 33.2116 - 33.2103
Transformer		33.2103 - 33.2114 - 33.2114 - 33.2103
Gases		
Compressed air		33.2106 - 33.2106 - 33.2106
Vacuum		33.2106 - 33.2117 - 33.2117 - 33.2106
Steam		33.2102 - 33.2102 - 33.2102
Refrigerant 12		33.2104 - 33.2118 - 33.2118 - 33.2104
Refrigerant 22		33.2104 - 33.2119 - 33.2119 - 33.2104
Refrigerant 502		33.2104 - 33.2120 - 33.2120 - 33.2104
Anhydrous ammonia		33.2104 - 33.2121 - 33.2121 - 33.2104
Other refrigerants		33.2104 - 33.2115 - 33.2115 - 33.2104
Natural gas		33.2104 - 33.2112 - 33.2112 - 33.2104
Others		
Drainage		33.2107 - 33.2107 - 33.2107
Elec. conduits and vent. ducts		33.2108 - 33.2108 - 33.2108
Acids and alkalis		33.2105 - 33.2105 - 33.2105
Flow direction arrows		33.2130

150mm Tape	Reference
Green	33.2101
Silver/Grey	33.2102
Brown	33.2103
Yellow ochre	33.2104
Violet	33.2105
Light blue	33.2106
Black	33.2107
Orange	33.2108

50mm Tape	Reference
Red	33.2111
Primrose	33.2112
Auxiliary blue	33.2113
Crimson	33.2114
Emerald green	33.2115
Salmon pink	33.2116
White	33.2117
Blue	33.2118

50mm Tape	Reference
Sea green	33.2119
Golden brown	33.2120
Dark mauve	33.2121
Flow arrows	33.2130

All pipe tapes on this page are offered as self adhesive rolls 30m long.

Training Manuals and Log Books

These manuals are written in an easily understood format which is ideal for seafarers whose first language may not be English. Offered in ring binders, the manuals can be easily updated by ship's staff in the event of regulation changes.

Product code	Title	Compliance
33.2615	Fire Training Manual	For compliance with SOLAS, Chapter II-2, Regulation 15.2.3.1/4. Covering the basic training requirements of SOLAS and has sections arranged for inclusion of ship specific information allowing the manual to be tailored to specific vessels.
33.2631	SOLAS Training Manual	For compliance with SOLAS, Chapter III, Part B, Regulation 35. Covering the basic training requirements of SOLAS and has sections arranged for inclusion of ship specific information allowing the manual to be tailored to specific vessels.
33.2638	SOPEP (Shipboard Oil Pollution Emergency Plan)	For compliance with MARPOL 73/78, Annex 1, Regulation 37 which requires every oil tanker of 150 tons gross and above, and every ship of 400 tons gross and above to carry a SOPEP, approved by the Administration. The plan contains useful check lists covering various oil spill and pollution scenarios. Requires basic ship specific information to be inserted by ships staff in order to satisfy the above MARPOL regulations.
33.2637	SMPEP (Shipboard Marine Pollution Emergency Plan)	For compliance with MARPOL 73/78, Annex II, Regulation 17 requiring any ship of 150 tons gross and above, certified for the carriage of noxious liquid substances to have a SMPEP approved by the administration. In the case where Annex 1, Regulation 37 also applies it may be combined with the SOPEP. The plan contains useful check lists covering various oil spill and pollution scenarios. Requires basic ship specific information to be inserted by ships staff in order to satisfy the above MARPOL regulations.
33.2636	Garbage Management Plan & Record book	For compliance with MARPOL 73/78, Annex V, Regulation 9 and Polar Code. The plan is generic in nature, but provision is made for inclusion of ship specific information thereby customising the plan to individual vessels as required by the above regulations.
33.2641	Garbage Record Book	Complies with MARPOL 73/78, Annex V, Regulation 9 and Polar Code.
33.2642	Water Ballast Record Book	Complies with IMO Resolution A868(20)
33.1205	ISPS Code Declaration of Security Record Book	Complies with International Ship and Port Facility Security Code
33.2639	Welcome-on-Board booklet	The booklet offers basic safety information to personnel joining a vessel and requires that they fill in ship specific information that can be retained for future reference. A detachable slip in each booklet provides Safety Officer's with a signed record that basic safety training has been received by each crew member.
33.2640	Survival booklet	Complies with SOLAS, Chapter III part B, Regulation 34 and the LSA Code, Chapter IV, Regulation 4.1.5.1.22 and 4.4.8.4. Suitable for both lifeboats and liferafts. Printed on water resistant card.

Vynalast Engraved Text Signs

A make-to-order Vynalast sign board with engraved free text according to customer's requirements. When ordering provide text content and sign dimensions (vertical x horizontal in mm). The amount of text and sign size will determine the font size.

Vinalast Engraved Text Signs

Unit Per Pc.

CODE	Colour of Text	Colour of Sign Board
33 89 01	Red	White
02	Blue	White
03	Black	White
04	Green	White
05	Yellow	Black
33 89 11	White	Red
12	White	Blue
13	White	Black
14	White	Green
15	Black	Yellow

Vynalast Photoluminescent Engraved Text Signs

Unit Per Pc.

CODE	Colour of Text	Colour of Sign Board
33 89 21	White	Red
22	White	Blue
23	White	Black
24	White	Green
25	Black	Yellow

How to order : 33 - 89 - XX

TEXT CONTENT,
DIMENSIONS of BOARD in mm

Safety Signs - Maritime Progress & JALITE Cross Reference

CODE	Page	Maritime Progress	JALITE
33 10 98	33-34	1098Z	
33 10 99	33-34	1099Z	
33 12 05	33-28/42	1205Y	
33 15 01	33-37	1001W	ISM-J01
33 15 02	33-37	1002W	ISM-J02
33 15 03	33-37	1003W	ISM-J03
33 15 04	33-37	1004W	ISM-J04
33 15 05	33-37	1005W	ISM-J05
33 15 06	33-37	1006W	ISM-J06
33 15 07	33-37	1007W	ISM-J07
33 15 08	33-37	1008W	ISM-J08
33 15 09	33-37	1009W	ISM-J09
33 15 10	33-37	1010X	ISM-J10
33 15 11	33-37	1011X	ISM-J11
33 15 12	33-37	1012X	ISM-J12
33 15 13	33-37	1013W	ISM-J13
33 15 14	33-37	1014W	ISM-J14
33 15 15	33-37	1015W	ISM-J15
33 15 16	33-37	1016W	ISM-J16
33 15 17	33-37	1017W	ISM-J17
33 15 20	33-37	1020W	ISM-J20
33 15 21	33-37	1021W	ISM-J21
33 15 22	33-37	1022W	ISM-J22
33 15 23	33-37	1023W	ISM-J23
33 15 24	33-37	1024W	ISM-J24
33 15 25	33-37	1025W	ISM-J25
33 15 26	33-37	1026X	ISM-J26
33 15 27	33-37	1027Y	ISM-J27
33 15 28	33-37	1028W	ISM-J28
33 15 29	33-37	1029X	
33 15 30	33-38	1030W	ISM-J30
33 15 31	33-38	1031W	ISM-J31
33 15 32	33-38	1032W	ISM-J32
33 15 33	33-38	1033W	ISM-J33
33 15 34	33-38	1034W	ISM-J34
33 15 35	33-38	1035W	ISM-J35
33 15 36	33-38	1036W	ISM-J36
33 15 37	33-38	1037Y	ISM-J37
33 15 38	33-38	1038Z	ISM-J38
33 15 39	33-38	1039Y	ISM-J39
33 15 40	33-38	1040Z	ISM-J40
33 15 41	33-38	1041Y	ISM-J41
33 15 42	33-38	1042Y	ISM-J42
33 15 43	33-38	1043Y	ISM-J43
33 15 44	33-38	1044W	ISM-J44
33 15 45	33-38	1045W	ISM-J45
33 15 46	33-38	1046W	ISM-J46
33 15 47	33-38	1047W	ISM-J47
33 15 48	33-38	1048Y	
33 15 49	33-38	1049Y	
33 15 50	33-38	1050Y	
33 15 57	33-38	1057X	
33 15 58	33-38	1058W	ISM-J18
33 15 59	33-38	1059Z	ISM-J19
33 15 64	33-38	1064W	
33 15 65	33-38	1065X	ISM-J29
33 15 66	33-38	1066W	
33 15 67	33-39	1067W	
33 15 68	33-39	1068Y	
33 15 69	33-39	1069W	ISM-J69
33 15 70	33-39	1070W	
33 15 71	33-39	1071W	
33 15 72	33-39	1072W	
33 15 73	33-39	1073W	
33 15 74	33-39	1074W	
33 15 76	33-39	1076W	
33 15 77	33-39	1077W	
33 15 78	33-39	1078W	
33 15 79	33-39	1079W	
33 15 80	33-39	1080W	
33 15 81	33-39	1081W	
33 15 82	33-39	1082W	
33 15 83	33-39	1083W	
33 15 85	33-39	1085W	
33 15 87	33-39	1087W	
33 17 00	33-39	1100W	
33 17 01	33-39	1101W	
33 17 02	33-39	1102W	
33 17 03	33-39	1103W	
33 17 04	33-39	1104W	
33 17 05	33-39	1105W	
33 17 06	33-39	1106W	
33 17 07	33-39	1107W	
33 17 08	33-39	1108W	
33 17 09	33-39	1109W	
33 17 10	33-39	1110W	
33 17 11	33-39	1111W	
33 17 12	33-32	1502Y	
33 17 13	33-32	1503Y	
33 17 14	33-32	1507Y	

INTERNATIONAL MARINE PURCHASING ASSOCIATION

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33 20 14	33-13	2014	VT1004
33 20 18	33-13	2018	VT1008
33 20 24	33-13	2024	AT1004
33 20 28	33-13	2028	AT1008
33 20 34	33-13	2034	GT1004
33 20 38	33-13	2038	GT1008
33 20 44	33-13	2044	WT1004
33 20 48	33-13	2048	WT1008
33 20 54	33-13	2054	SG1004
33 20 58	33-13	2058	SG1008
33 20 86	33-13	2086	TMG008
33 20 88	33-13	2088	TMG008
33 20 96	33-13	2096	TMP008
33 20 98	33-13	2098	TMP008
33 21 01	33-41	2101	
33 21 02	33-41	2102	
33 21 03	33-41	2103	
33 21 04	33-41	2104	
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33 21 06	33-41	2106	
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33 21 18	33-41	2118	
33 21 19	33-41	2119	
33 21 20	33-41	2120	
33 21 21	33-41	2121	
33 21 30	33-40/41	2130	MTFA50
33 21 40	33-40	2140	MTBK50
33 21 41	33-40	2141	MTBU50
33 21 42	33-40	2142	MTBN50
33 21 43	33-40	2143	MTGN50
33 21 44	33-40	2144	MTGY50
33 21 45	33-40	2145	MTMN50
33 21 46	33-40	2146	MTOR50
33 21 47	33-40	2147	MTSR50
33 21 48	33-40	2148	MTRD50
33 21 49	33-40	2149	MTVT50
33 21 50	33-40	2150	MTWH50
33 21 51	33-40	2151	MTYEO50
33 22 01	33-36	2201LM	
33 22 02	33-36	2202LL	HAZ 02
33 22 03	33-36	2203LL	HAZ 38
33 22 07	33-36	2207LL	HAZ 16
33 22 08	33-36	2208LL	HAZ 43
33 22 09	33-36	2209LL	HAZ 45
33 22 10	33-36	2210LL	HAZ 20
33 22 11	33-36	2211LL	HAZ 06
33 22 12	33-36	2212LL	HAZ 41
33 22 13	33-36	2213LL	HAZ 22
33 22 15	33-36	2215LL	HAZ 10
33 22 16	33-36	2216LL	HAZ 49
33 22 17	33-36	2217LL	HAZ 12
33 22 18	33-36	2218LL	HAZ 18
33 22 19	33-36	2219LL	HAZ 28
33 22 20	33-36	2220LL	HAZ 34
33 22 21	33-36	2221LL	HAZ 50
33 22 22	33-36	2222LL	

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33 22 23	33-36	2223LL	
33 22 24	33-36	2224LL	
33 22 25	33-36	2225LL	
33 22 26	33-36	2226LL	HAZ 58
33 22 27	33-36	2227LL	HAZ 59
33 22 28	33-36	2228LL	HAZ 51
33 22 29	33-36	2229LL	HAZ 52
33 22 30	33-36	2230LL	
33 22 31	33-36	2231LL	
33 22 32	33-36	2232LL	
33 22 33	33-36	2233LL	
33 22 34	33-36	2234LL	
33 22 35	33-36	2235LL	
33 22 36	33-36	2236LL	
33 22 37	33-36	2237LL	
33 22 38	33-36	2238LL	
33 22 40	33-36	2240LL	
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33 22 42	33-36	2242LL	
33 22 43	33-36	2243LL	
33 22 44	33-36	2244LL	
33 22 48	33-36	2248LL	HAZ 53
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33 22 56	33-36	2256LL	
33 22 75	33-36	2275LL	HAZ 08
33 22 76	33-36	2276LL	
33 22 77	33-36	2277LL	
33 22 78	33-36	2278LL	
33 22 79	33-36	2279LL	HAZ 57
33 22 80	33-36	2280GG	HAZ131
33 22 81	33-36	2281GG	HAZ133
33 22 82	33-36	2282GG	HAZ127
33 22 84	33-36	2284GG	HAZ135
33 22 85	33-36	2285GG	HAZ137
33 22 86	33-36	2286GG	HAZ143
33 22 87	33-36	2287GG	HAZ139
33 22 88	33-36	2288LL	
33 22 89	33-36	2289LL	
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33 22 92	33-36	2292LL	
33 22 93	33-36	2293LL	
33 22 94	33-36	2294LL	HAZ 75
33 22 95	33-36	2295LL	HAZ 81
33 22 96	33-36	2296LL	HAZ 71
33 22 97	33-36	2297LL	HAZ 77
33 22 98	33-36	2298LL	
33 22 99	33-36	2299Z	
33 23 00	33-36	2300LK	
33 23 01	33-36	2301LK	
33 23 27	33-12	2327	
33 23 28	33-12	2328	
33 23 29	33-12	2329	
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33 23 81	33-13	2381EG	LBD3738
33 23 82	33-13	2382EG	LBD4343
33 23 83	33-13	2383EG	LBD4344
33 23 84	33-13	2384EG	LBD3750
33 23 85	33-13	2385EG	LLL42
33 23 86	33-13	2386JE	LLL40
33 23 87	33-13	2387JE	LLL41
33 23 89	33-13	2389	
33 23 94	33-12	2394Z	
33 23 95	33-12	2395Z	
33 23 96	33-13	2396	
33 24 01	33-35	2401JJ	W9275C
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33 24 06	33-35	2406JJ	
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33 24 09	33-35	2409JJ	W9065C
33 24 10	33-35	2410JJ	W9080C
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33 24 17	33-35	2417JJ	
33 24 18	33-35	2418JJ	
33 24 19	33-28/35	2419JJ	8311C
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33 24 21	33-35	2421JJ	8181C
33 24 22	33-35	2422JJ	
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33 24 24	33-35	2424JJ	W9071C
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33 24 29	33-35	2429JJ	W9072C
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33 24 42	33-35	2442JJ	
33 24 43	33-35	2443JJ	W9069C
33 25 01	33-34	2501HF	TIE016P
33 25 02	33-34	2502HF	
33 25 03	33-34	2503HF	TIE018P
33 25 04	33-34	2504HF	TIE025P
33 25 05	33-34	2505HF	TIE028P
33 25 06	33-34	2506HF	TIE029P
33 25 07	33-34	2507HF	TIE023P

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33 25 20	33-34	2520HF	TIE001P
33 25 21	33-34	2521HF	TIE002P
33 25 22	33-34	2522HF	TIE003P
33 25 23	33-34	2523HF	TIE004P
33 25 24	33-34	2524HF	TIE009P
33 25 25	33-34	2525HF	TIE005P
33 25 26	33-34	2526HF	TIE007P
33 25 27	33-34	2527HF	TIE006P
33 25 28	33-34	2528HF	TIE008P
33 25 29	33-34	2529HF	TIE010P
33 25 30	33-34	2530HF	TIE011P
33 25 31	33-34	2531HF	TIE012P
33 25 32	33-28/34	2532HF	TIE015P
33 25 40	33-28/34	2540HF	TIE026P
33 25 41	33-34	2541HF	TIE020P
33 25 42	33-34	2542HF	TIE024P
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33 26 06	33-19	2606	
33 26 15	33-42	1258Z	
33 26 31	33-42	1250Z	
33 26 36	33-42	1256Z	
33 26 37	33-42	1252Z	
33 26 38	33-42	1254Z	
33 26 39	33-42	1280Z	
33 26 40	33-42	1201Z	
33 26 41	33-42	1203Y	
33 26 42	33-42	1204Y	
33 27 00	33-28	2700CJ	
33 27 02	33-20	2702JG	
33 27 03	33-28	2703JM	W9017M(L1) W9018M(L2) W9019M(L3)
33 27 60	33-24/33	2760KF	
33 27 61	33-24/33	2761KF	
33 27 62	33-24/33	2762KF	
33 27 63	33-24/33	2763KF	
33 28 00	33-34	2800Z	
33 28 01	33-34	2801Z	
33 28 02	33-34	2802Z	
33 28 03	33-34	2803Z	
33 28 04	33-34	2804Z	
33 28 05	33-34	2805Z	
33 28 74	33-32	2874GM	W9036PT
33 28 76	33-33	2876GM	
33 28 77	33-32	2877GM	W9039PT
33 28 78	33-32	2878GM	W9040PT
33 28 79	33-32	2879GM	W9041PT
33 28 84	33-31	2884GG	
33 28 85	33-31	2885GG	
33 28 89	33-28	2889JJ	W7030C
33 28 90	33-28	2890Z	LB3963
33 28 91	33-28	2891Z	LB3963
33 28 92	33-28	2892Z	LB3963
33 28 93	33-28	2893Z	LB3963
33 28 94	33-28	2894MM	W9248Q
33 28 95	33-28	2895GM	W9253PT
33 28 96	33-28	2896Z	WX9249Q
33 29 07	33-28	2907GM	W9252PT

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33 29 19	33-33	2919GM	
33 29 20	33-33	2920GM	
33 29 24	33-28	2924MM	W9247Q
33 29 31	33-33	2931JK	
33 29 32	33-33	2932JK	W9069C
33 29 38	33-33	2938EG	
33 29 39	33-33	2939EG	
33 29 40	33-33	2940JJ	W9275C
33 29 41	33-33	2941JG	W9065C
33 29 42	33-33	2942JG	W9080C
33 29 74	33-28	2974JJ	WX9250DD
33 30 14	33-27	3014VR	W7614S
33 31 00	33-27	3100KM	W7386F
33 31 01	33-27	3101KM	W7385F
33 31 02	33-27	3102KM	W7566F
33 31 03	33-27/29	3103KM	W7567F
33 31 04	33-27	3104KM	7338F
33 31 05	33-27	3105KM	W7389Q
33 31 06	33-27	3106KM	W7610S
33 31 07	33-27	3107KM	7572F
33 31 08	33-26	3108MM	W7615Q
33 31 09	33-27	3109KM	W7605S
33 31 10	33-27/29	3110KM	W7611S
33 31 11	33-26	3111MM	W7008Q
33 31 12	33-27	3112KM	W7606S
33 31 13	33-27	3113KM	W7612S
33 31 14	33-27/29	3114KM	W7613S
33 31 15	33-27	3115KM	W8017S
33 31 16	33-27/29	3116KM	W7607S
33 31 17	33-27	3117KM	
33 31 18	33-27	3118KM	
33 31 19	33-27	3119KM	
33 31 20	33-27	3120KM	W7584F
33 31 22	33-26	3122MM	W7016Q
33 31 23	33-26	3123MM	W7001Q
33 31 24	33-26/31	3124MM	W800Q
33 31 25	33-26	3125MM	W7010Q
33 31 26	33-26	3126MM	W7005Q
33 31 27	33-26	3127MM	W7012Q
33 31 28	33-26	3128MM	W7006Q
33 31 29	33-26	3129MM	W7017Q
33 31 35	33-26	3135MM	W7021Q
33 31 36	33-26	3136MM	W7020Q
33 31 37	33-26	3137MM	W7007Q
33 31 38	33-26/28	3138PM	8326Q
33 31 39	33-26/28	3139MM	8227Q
33 31 40	33-28	3140Z	
33 31 41	33-26	3141MM	W7600Q
33 35 22	33-31	3522JM	
33 40 50	33-8	4050JJ	4410C
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33 40 51	33-8	4051JJ	4017C
33 X0 51	33-8	4051JJ	4186C
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33 X0 52	33-8	4052JJ	4234C
33 40 53	33-8	4053JJ	4002C
33 X0 53	33-8	4053JJ	4235C
33 40 54	33-8	4054JJ	4003C
33 X0 54	33-8	4054JJ	4246C
33 40 55	33-8	4055JJ	4006C
33 X0 55	33-8	4055JJ	4247C

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33 X0 65	33-8	4065JJ	4218C
33 40 66	33-8	4066JJ	4018C
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33 40 67	33-8	4067JJ	4427C
33 X0 67	33-8	4067JJ	4242C
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33 41 14	33-9	4114JJ	4514C
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33 X1 15	33-9	4115JJ	4515C
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33 41 18	33-9	4118JJ	4518C
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33 41 19	33-9	4119JJ	4519C
33 X1 19	33-9/11	4119JJ	4519C
33 41 20	33-9	4120JJ	4604C
33 X1 20	33-9/11	4120JJ	4604C
33 41 21	33-9	4121JJ	4386D
33 41 23	33-9	4123MM	4500Q
33 X1 23	33-9	4123MM	4500Q
33 41 24	33-9	4124MM	4519Q
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33 41 25	33-9	4125JJ	4579C
33 41 26	33-9	4126JJ	4421C
33 X1 26	33-9	4126JJ	4421C
33 41 27	33-9	4127JJ	4362C
33 41 28	33-9	4128JJ	
33 X1 28	33-9	4128JJ	
33 41 29	33-9	4129JJ	4523C
33 41 30	33-10	4130LJ	4000D
33 41 31	33-9	4131JJ	4369D
33 41 32	33-10	4132JJ	FCS306
33 41 33	33-10	4133JJ	FCS307
33 41 34	33-9	4134JJ	4013C
33 X1 34	33-9	4134JJ	4013C
33 41 35	33-10	4135JJ	4131C
33 41 37	33-10	4137JJ	4347C
33 41 39	33-10	4139JJ	4175C
33 41 41	33-9	4141JJ	4519C
33 X1 41	33-9	4141JJ	4519C
33 41 42	33-9	4142JJ	4143C
33 41 43	33-9	4143JJ	4145C
33 41 46	33-9	4146JJ	4397C
33 41 50	33-8	4150JJ	4175C
33 41 51	33-10	4151JJ	4389C
33 41 52	33-10	4152JJ	4388C
33 41 53	33-10	4153JJ	4392C
33 41 54	33-10	4154JJ	4182C
33 41 55	33-10	4155JJ	4155C
33 41 56	33-10	4156JJ	4231C
33 41 57	33-10	4157JJ	4139C
33 41 70	33-10	4170KJ	4236D
33 41 71	33-10/31/33	4171GM	4236PT
33 41 72	33-10	4172GM	4386D
33 41 73	33-10/31	4173GM	4362PT
33 41 74	33-10	4174GM	5514PT
33 41 75	33-10	4175GM	
33 41 76	33-10/33	4176GM	4367D
33 41 77	33-10/31/33	4177GM	4366D
33 41 78	33-10	4178GM	4369D
33 41 79	33-10	4179GM	4237M
33 41 80	33-10/29/31/32	4180GM	4382PT
33 41 81	33-10/29	4181GM	4656PT
33 41 82	33-10	4182GM	4379PT
33 41 83	33-10	4183GM	4566C
33 41 84	33-10	4184GM	4857PT
33 41 85	33-10/29/32	4185GM	4363PT
33 41 86	33-10/32	4186GM	
33 41 87	33-10/33	4187GM	4324D

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33 41 89	33-10	4189GM	4350C
33 41 93	33-10/31	4193GM	4986M
33 41 97	33-32	4197JK	4363D
33 41 98	33-32	4198JJ	4381C
33 42 00	33-10	4200JF	4620P
33 42 01	33-10/33	4201JF	4621P
33 42 02	33-10/33	4202JF	4622P
33 42 03	33-10/33	4203JF	4623P
33 42 04	33-10/33	4204JF	4624P
33 42 05	33-10/33	4205JF	4625P
33 42 06	33-10/33	4206JF	4626P
33 42 07	33-10	4207JF	4627P
33 42 08	33-10	4208JF	4628P
33 42 09	33-10	4209JF	4629P
33 42 10	33-10/33	4210JF	4871P
33 42 11	33-10/33	4211JF	4872P
33 42 12	33-10/33	4212JF	4873P
33 42 13	33-10/33	4213JF	4874P
33 42 14	33-10/33	4214JF	4875P
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33 42 40	33-10	4200MJ	4620G
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33 42 43	33-10	4203MJ	4623G
33 42 44	33-10	4204MJ	4624G
33 42 45	33-10	4205MJ	4625G
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33 42 53	33-10	4213MJ	4874G
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33 43 25	33-11	4325GM	4680G
33 43 26	33-11	4326GM	4685G
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33 43 36	33-11	4336GM	
33 43 37	33-11	4337GM	
33 43 39	33-11	4339GM	
33 43 40	33-11	4340JP	4132PT
33 43 41	33-11	4341JP	4157PT
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33 44 02	33-11	4402JP	444K
33 44 03	33-11	4403JP	449K
33 44 04	33-11	4404JP	409K
33 44 05	33-11	4405JP	405K
33 44 06	33-11	4406JP	443K
33 44 07	33-11	4407JP	448K
33 44 09	33-11	4409JP	447K
33 44 10	33-11	4410JP	401K
33 44 11	33-11	4411JP	401K
33 44 13	33-11	4413JP	460K
33 44 15	33-11	4415JM	401K
33 44 17	33-11	4417JM	460K
33 44 20	33-8/10/11/33	4420JJ	4860C
33 44 21	33-8/10/11/33	4421JJ	4870C
33 44 22	33-11	4422JJ	488C
33 44 23	33-11	4423JJ	487C
33 44 24	33-11	4424JJ	4060C
33 44 25	33-11	4425JJ	496C
33 44 26	33-10	4426FL	
33 44 27	33-10	4427JM	
33 44 54	33-11	4454JJ	
33 44 55	33-11	4455JJ	
33 44 70	33-33	4470JP	4217G
33 44 71	33-33	4471JP	4216G
33 44 72	33-33	4472JP	
33 44 73	33-33	4473JP	
33 44 80	33-11	4480GM	4226PT
33 44 81	33-11	4481GM	4227PT
33 44 82	33-11	4482GM	4228PT
33 44 83	33-11	4483GM	4303PT
33 48 20	33-11	4820JJ	4654C
33 48 21	33-11	4821JP	
33 48 24	33-11	4824GK	4653H
33 48 25	33-11	4825GK	4652H
33 51 00	33-10	5100JJ	5501C
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33 51 07	33-10	5107JJ	5508C
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33 51 12	33-22	5112JK	5062D
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33 56 42	33-21	5642JJ	5039C
33 56 43	33-21	5643JJ	5602C
33 56 44	33-21	5644JJ	5049C
33 56 45	33-21	5645JJ	5074C
33 56 46	33-21	5646JJ	5584C
33 56 47	33-21	5647JJ	5271C
33 56 48	33-21	5648JJ	5094C
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33 56 50	33-21	5650JJ	5034C
33 56 51	33-21	5651JJ	5476C
33 56 52	33-21	5652JJ	5203C
33 56 53	33-21	5653JJ	5586C

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33 56 54	33-21/31	5654GG	5146C
33 56 55	33-21	5655JJ	5087C
33 56 56	33-21	5656JJ	5603C
33 56 75	33-21	5675GM	5234PT
33 56 77	33-21	5677GM	5235PT
33 56 78	33-21	5678GM	5232PT
33 56 79	33-21/29	5679GM	5236PT
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33 56 90	33-31	5690FK	W5571M
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33 57 75	33-31	5775GG	W5212M
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33 57 77	33-31	5777GG	W5067C
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33 58 74	33-21/29	5874KJ	
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33 59 02	33-22/29	5902KJ	5521D
33 59 03	33-22	5903KJ	
33 60 01	33-15/17	6001JJ	FCS211
33 60 02	33-15	6002JJ	FCS300

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33 60 19	33-15/18	6800JJ	FCS215
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33 60 27	33-15/18	6839JJ	FCS253
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33 60 64	33-16	6064JJ	FCS196
33 60 65	33-16	6065JJ	FCS065

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33 60 73	33-16/18	6840JJ	FCS254
33 60 74	33-16	6074JJ	FCS252
33 60 75	33-16	6075JJ	FCS075
33 60 76	33-16/19	6866JJ	FCS295
33 60 77	33-16/19	6868JJ	FCS297
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33 76 19	33-24	7619KJ	
33 76 20	33-24	7620KJ	7043D
33 76 23	33-24/30/33	7623KJ	7528D
33 76 24	33-23/33	7624KJ	7531D
33 76 25	33-24	7625KJ	
33 76 26	33-24	7626KJ	
33 76 27	33-24	7627KJ	
33 76 28	33-24	7628KJ	
33 76 29	33-24	7629KJ	7043D
33 76 30	33-24	7630KJ	
33 76 31	33-24	7631KJ	7061D
33 76 32	33-24	7632KJ	7590D
33 76 33	33-24	7633KJ	7590D
33 76 34	33-24	7634KJ	
33 76 35	33-24	7635KJ	7422D
33 76 36	33-24	7636KJ	
33 76 43	33-23	7643KJ	7509D
33 76 50	33-24	7650KJ	7284D
33 76 60	33-24	7660KJ	7270D
33 76 64	33-23/31	7664KJ	7526D
33 76 68	33-24	7668KJ	7587D
33 76 70	33-24	7670KJ	
33 76 73	33-24	7673KJ	7018D
33 76 80	33-24	7680KJ	7454D
33 76 81	33-24	7681KJ	7454D
33 77 00	33-24/29	7700GM	7335PT
33 77 01	33-24/29	7701GM	7336D
33 80 00	33-33	8000FH	
33 80 01	33-33	8001GJ	
33 80 02	33-33	8002KJ	
33 80 03	33-33	8003KJ	

CODE	Page	Maritime Progress	JALITE
33 85 00	33-25/32	8500JJ	8024C
33 85 01	33-25	8501JJ	8119C
33 85 02	33-25	8502JJ	8181C
33 85 03	33-25	8503JJ	8040C
33 85 04	33-25	8504JJ	8042C
33 85 05	33-25/32	8505JJ	8287C
33 85 06	33-25	8506JJ	8104C
33 85 08	33-25	8508JJ	
33 85 09	33-25	8509JJ	8121C
33 85 10	33-25	8510JJ	8269C
33 85 11	33-25	8511JJ	8304D
33 85 20	33-32	8520FK	8257M
33 85 22	33-25	8522KM	
33 85 24	33-32	8524JJ	
33 85 25	33-32	8525KM	
33 85 26	33-25/32	8526KM	
33 85 29	33-32	8529GM	8090PT
33 85 30	33-25/29/31/32	8530GM	8067PT
33 85 31	33-25/32	8531GM	8014PT
33 85 32	33-25/31/32	8532GM	8067PT
33 85 33	33-25/31/32	8533GM	8025PT
33 85 34	33-25	8534GM	8103PT
33 85 36	33-25	8536GM	8108PT
33 85 37	33-25	8537GM	8109PT
33 85 39	33-25/29	8539GM	8285PT
33 85 40	33-25	8540GM	8001PT
33 85 41	33-25	8541GM	8283PT
33 85 42	33-25	8542GM	8180PT
33 85 43	33-25	8543GM	8120PT
33 85 44	33-25	8544GM	8116PT
33 85 45	33-25	8545GM	8138PT
33 85 46	33-25/29	8546GM	8253G
33 85 47	33-25/29	8547GM	8254G
33 85 48	33-25	8548GM	8016PT
33 85 49	33-25	8549GM	8115PT
33 85 50	33-25/31/32	8550GM	8086PT
33 85 51	33-25	8551GM	8057PT
33 85 52	33-25	8552GM	8152PT
33 85 53	33-25	8553GM	8056PT
33 85 55	33-25	8555GM	8137PT
33 85 56	33-25	8556GM	8169PT
33 85 57	33-25	8557GM	8172PT
33 85 59	33-25	8559GM	
33 85 60	33-25	8560GM	8092PT
33 85 61	33-25	8561GM	8094PT
33 85 63	33-25	8563GM	
33 85 65	33-25/29	8565GM	
33 85 67	33-25/31	8567GM	8277PT
33 85 68	33-25	8568GM	8080PT
33 85 69	33-25	8569GM	
33 85 70	33-25/32	8570GM	
33 85 74	33-29/32	8574GM	
33 85 75	33-25	8575FK	
33 85 76	33-25	8576GM	
33 85 82	33-32	8582GM	8091PT
33 85 85	33-25	8585GM	
33 85 87	33-25	8587GM	
33 86 19	33-30/32	8619GM	
33 86 58	33-25/32	8658GM	8272PT
33 86 84	33-25	8684GM	8138PT
33 86 90	33-25/28	8690GM	8690PT
33 86 91	33-25/28	8691GM	8317PT
33 86 92	33-28	8692GM	8315PT
33 86 95	33-28	8695LQ	8690PT

CODE	Page	Maritime Progress	JALITE
33 86 96	33-28	8696KM	8690PT
33 89 01	33-43	8901Z	
33 89 02	33-43	8902Z	
33 89 03	33-43	8903Z	
33 89 04	33-43	8904Z	
33 89 05	33-43	8905Z	
33 89 11	33-43	8911Z	
33 89 12	33-43	8912Z	
33 89 13	33-43	8913Z	
33 89 14	33-43	8914Z	
33 89 15	33-43	8915Z	
33 89 21	33-43	8921Z	
33 89 22	33-43	8922Z	
33 89 23	33-43	8923Z	
33 89 24	33-43	8924Z	
33 89 25	33-43	8925Z	

Remark:
The suffix letter to JALITE products number denotes:

A = 100 x 100mm, C =150 x 150mm,
D = 150 x 200mm, G =150 x 300mm,
K = 150 x 400mm, M = 80 x 200mm,
P = 75 x 150mm, PT =100 x 300mm,
Q = 300 x 300mm

Fire Plan Holders

This UPVC holder with weatherproof screw end cap comes complete with fixings and has been specifically designed to comply with the requirements of the SOLAS regulations. It has a length of 1m and OD of 110mm enabling Fire Plans up to size A0 to be accommodated without the need to fold the plan.

33 26 13	Fire Plan Holder 110mm dia x 1 mtr length	Pc.

SOLAS Check List

As required by SOLAS Chapter III Regulation 20.7 and 36.1 (96/98 amendments), all vessels constructed before, on or after 1 July 1998, should carry SOLAS Check List to provide a record of monthly inspections of all lifesaving appliances.

Contents

I. Weekly Inspections
Lifeboats/Rescue Boats/Liferafts/General Alarm

II. Monthly Inspections
Lifejackets/Immersion Suits/Thermal Protective Aids / Illumination in Launching Area/Lifeboats/Rescue Boats/ Liferafts/EPIRBs, SARTs, & Radios/Pyrotechnics/ Lifebuoys & Attachments

33 26 33	SOLAS check list	Vol.

Pyrotechnics

Required Quantities of Distress Flares for Vessels, Lifeboats and Liferafts by the 1983 amendment to SOLAS 1974

I) For Vessels

Regulation	Description	Required Quantity
17 & 49	Line throwing applicances 救命索引発射器	Includes no less than 4 projectiles, each capable of carrying the line at least 230 mtr.
6 - 3	Rocket parchute flares 落下傘付き信号	No less than 12 pcs must be stowed on or near the navigation bridge
7-1.3	Self-igniting lights 自己点火灯 Ship's length under 100 mtr 100 - 149 mtr 150 - 199 mtr 200 mtr and over	No less than one half of the total number of lifebuoys Quantity 4 pcs. 5 pcs. 6 pcs. 7 pcs.
	Self-activatiing smoke signals 自己発煙信号	No less than two of the total numbers of lifebuoys
	Manoverboards マノーバーボード	Substitute for above self-activating smoke signals, combined with self-igniting light
	Rocket star signals 火せん	6 pcs

II) For Lifeboats and Liferafts

Regulation	Description	Required Quantity
38 - 5.1 and 41 - 8	Rocket parachute flares 落下傘付き信号	4 pcs.
	Hand flares 手用信号炎	6 pcs.
	Buoyant smoke signals 発煙浮信号	2 pcs.

Major Pyrotechnics Comparison Table

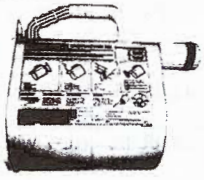
A full range of distress signals are available from several manufacturers as listed below, under the SOLAS '83 regulations which conform to maritime approval authorities throughout the world.

When ordering, please specify the following points:

1. CODE number..... 33 03 01
2. Description..... Line throwing apparatus
3. Name of Mfr..... PainsWessex
4. Brand..... Linethrower 250
5. Classification..... M.E.D
6. Quantity..... Set

Description	PainsWessex (Germany)	Comet (Germany)	Nammo Liab AB (Sweden)	Koryo Pyrotechnics (South Korea)	Koa (Japan)	Kokusai (Japan)
Approval classification society	All major classification	All major classification	MED/U.S.C.G. B.V./D.N.V.	KR HELLAS	H.K.	H.K./MED/Z.C.
CODE (Unit)	**33 03 01** (Set)	**33 13 51** (Set)	**33 13 01** (Set)	**33 13 02** (Set)	**33 03 51** (Set) KM-2S **33 13 47** (Set) KM-5E	**33 03 74** (Set)
Line throwing apparatus 救命索発射器	Linethrower 250 No. 9502000	Linethrower 250 No. 9160400	IKAROS-LINE throwing unit No. 346100	Line-throwing appliance K-19	Line-throwing appliance	Line-throwing appliance RL-2
CODE (Unit)	**33 03 11** (Pc.)	**33 13 61** (Pc.)	**33 13 11** (Pc.)	**33 13 12** (Pc.)	**33 03 54** (6's) **33 03 55** (4's) **33 03 56** (2's)	**33 03 76** (2's) **33 03 77** (4's) **33 03 78** (6's)
Rocket parachute flares 落下傘付き信号	Red parachute signal rocket MK8A No. 9507550	Red parachute signal rocket No. 9163100	IKAROS parachute rocket red No. 340100	Rocket parachute flare K-31	Rocket parachute flare KM-55/KMA59	Rocket parachute flare KP-16
CODE (Unit)	**33 03 14** (Pc.)	**33 13 64** (Pc.)	**33 13 14** (Pc.)	**33 13 15** (Pc.)	**33 03 58** (4's) **33 03 59** (6's)	**33 03 79** (4's) **33 03 80** (6's)
Hand flares 手用信号炎	Red hand flare MK8 No. 9529000	Red hand flare No. 9162800	IKAROs hand flare red No. 341500	Red hand flare K-33	Hand flare KM35	Red hand flare KF-8
CODE (Unit)			**33 13 16** (Pc.)		**33 03 60** (2's) **33 03 61** (4's) **33 03 62** (6's)	**33 03 82** (2's) **33 03 83** (4's) **33 03 84** (6's)
Rocker star signals 火せん	-	-	IKAROS two-star rocket red No. 340700		Rocket star signal KM-25	Rocket star signal KR-10
CODE (Unit)	**33 03 21** (Set)	**33 13 71** (Pc.)	**33 13 21** (Pc.)	**33 13 22** (Pc.)		
Manoverboards マノーバーボード	Manoverboard lifebuoy marker MK9 No. 9537800	Manoverboard light and smoke signal No. 9181600	Manoverboard combined light smoke marker No. 345105	Light-smoke signal K-52	-	-
CODE (Unit)	**33 03 23** (Set) **33 03 24** (Pc.)	**33 13 73** (Pc.)	**33 13 23** (Pc.)	**33 13 24** (Pc.)	**33 03 64** (Pc.)	**33 03 89** (Pc.)
Self-activating smoke signals 自己発煙信号	Buoyant lifebuoy markers Buoysmoke MK9 No. 9358350	Smoke signal No. 9161700	Lifebuoy smoke marker No. 345205	Self-activating smoke signal K-34	Self-activating smoke signal KM83	Self-activating smoke signal KS-6
CODE (Unit)			**33 13 28** (Pc.)	**33 13 29** (Pc.)	**33 03 63** (Pc.) **33 03 70** (Pc.)	**33 03 86** (Set) **33 03 87** (Pc.)
Self-igniting lights 自己点火灯	-	-	Lifebuoy light No. 344110	Self-igniting light K-36	Self-igniting light KM76S, KM79	Self-igniting light KL-7
CODE (Unit)	**33 03 31** (Pc.)	**33 13 81** (Pc.)	**33 13 31** (Pc.)	**33 13 32** (Pc.)	**33 03 66** (2's)	**33 03 91** (Pc.)
Buoyant smoke signals 発煙浮信号	Lifesmoke MK9 No. 9537000	Smoke signal orange No. 9192000	Buoyant orange smoke signal No. 342130	Buoyant smoke signal K-45	Buoyant smoke signal KM46S	Buoyant smoke signal KB-8

Line Throwing Apparatuses



Self-contained rocket-powered line-throwing unit designed for ship-to-ship and ship-to-shore operations as well as for the rescue of people in distress at sea.

One line throwing apparatus is required to be equipped, which includes not less than 4 projectiles each capable of carrying the line to a nominal range of 250 mtr in calm weather.

Line Throwing Apparatus Complete

CODE	Brand	Model	Unit
33 03 01	PainsWessex Linethrower 250, comprising Linethrower 250 body + Line (9500700) and Linethrower rocket (9500800)	9502000	Pc.
33 03 09	PainsWessex with 4 unit complete		Set
33 03 51	Koa, with 4 projectiles	KM-2S	Set
33 13 47	Koa, with 4 projectiles, Electric ignition type	KM-5E	Set
33 03 74	Kokusai, with 4 projectiles	RL-2	Set
33 13 01	Nammo LIAB AB with 4 projectiles	346100	Set
33 13 02	Koryo Pyrotechnics with 4 projectiles	K-19	Set
33 13 51	Comet Linethrower 250, with 4 projectiles	9160400	Set
33 13 41	Seiwa, with 4 projectiles	S-II	Set

CODE	Description	Model	Unit
Spare Kits for **PainsWessex** Linethrower 250			
33 03 12	Linethrower 250 body + line	9500700	Set
13	Linethrower rocket	9500800	Pc.
Spare Kits for **Comet** Linethrower 250			
33 13 52	Linethrower 250 body + line	9160500	Set
53	Linethrower rocket	9162700	Pc.
Spare Kits for **Koa** Line Throwing Apparatus			
33 03 52	Spare 4 rockets & 5 cartridges for KM2S		Set
33 13 48	Spare 4 rockets & 1 ignitor for KM5E		Set

Rocket Parachute Flares

For use in day and night long range distress signal situations.

1) Colour of light	Red
2) Duration of burn time	40 seconds minimum
3) Light intensity	30,000 candela minimum
4) Height	300 mtr
5) Ignition	Base pull-wire igniter
6) Temperature operating range	-30°C to 65°C
7) Temperature storage	-30°C to 75°C
8) Weight	270 grm

CODE	Model	Brand	Unit
33 03 11	MK8A (9507550)	PainsWessex	Pc.

(to be continued)

CODE	Model	Brand	Unit
33 03 54	KM55	Koa (HK)	6's/set
55			4's/set
56			2's/set
33 03 57	KMA59	Koa (MED)	Pc.
33 03 76	KP-16	Kokusai	2's/set
77			4's/set
78			6's/set
33 13 11	340100	Nammo LIAB AB	Pc.
33 13 12	K-31	Koryo Pyrotechnics	"
33 13 61	9163100	Comet	"

Hand Flares

For use in day and night. Short range distress signal used to pinpoint position.

1) Colour of light	Red
2) Duration of burn time	60 seconds minimum
3) Light intensity	15,000 candela minimum
4) Ignition	Top pull-wire igniter
5) Temperature operating range	-30°C to 65°C
6) Temperature storage range	-30°C to 75°C
7) Weight	160 grm

CODE	Model	Brand	Unit
33 03 14	MK8 (9529000)	PainsWessex	Pc.
33 03 58	KM35	Koa (HK)	4's/set
59			6's/set
33 03 65	KMA33	Koa (MED)	Pc.
33 03 79	KF-8	Kokusai	4's/set
80			6's/set
33 13 14	IKAROS 341500	Nammo LIAB AB	Pc.
33 13 15	K-13	Koryo Pyrotechnics	6's/set
33 13 64	9162800	Comet	Pc.

Rocket Star Signals

Complementary distress signal to the parachute rocket.

CODE	Model	Brand	Unit
33 03 60	KM-25	Koa	2's/set
61			4's/set
62			6's/set
33 03 82	KR-10	Kokusai	2's/set
83			4's/set
84			6's/set
33 13 16	Two Star Red 340700	Nammo LIAB AB	Pc.

Manoverboards

Combined light and smoke lifebuoy marker. Day and night signal which is attached to a lifebuoy (not supplied) and used in an emergency to mark position of a manoverboard.

1) Colour of smoke	Dense orange smoke
2) Duration of burn time	15 minutes
3) Light intensity and duration	Minimum 2 candela for 2 hours

4) Ignition — Pull-wire igniter
5) Temperature operation range — -1°C to 30°C
6) Temperature storage range — -30°C to 75°C
7) Weight — 3.5kgs

CODE	Model	Brand	Bracket	Unit
33 03 21	MK9 (9537800)	PainsWessex	with	Pc.
33 13 21	345105	Nammo LIAB AB	with	Set
33 13 22	K-52	Koryo Pyrotechnics	without	Pc.
33 13 71	9181600	Comet	with	Set

Lifebuoy Self-activating Smoke Signals

A daylight smoke marker attached to the lifebuoy by means of a lanyard. Identical to manoverboard, but without the lighting system.

1) Colour of smoke — Dense orange smoke
2) Duration of burn time — 15 minutes
3) Light intensity and duration — Minimum 2 candela for 2 hours
4) Ignition — Pull-wire igniter
5) Temperature operation range — -1°C to 30°C
6) Temperature storage range — -30°C to 75°C
7) Weight — 3.5kgs

CODE	Model	Brand	Bracket	Unit
33 03 23 **24**	Buoysmoke MK9 (9358350)	PainsWessex	with without	Set Pc.
33 03 64	KM-83	Koa		Pc.
33 03 89	KS-6	Kokusai		Pc.
33 13 23	345205	Nammo LIAB AB	with	Pc.
33 13 24	K-34	Koryo Pyrotechics	wihtout	Pc.
33 13 73	91617000	Comet	with	Set

Lifebuoy Self-igniting Lights

For use with all externally mounted lifebuoys. All lights provide the 2 cd output called for by IMO and meet the SOLAS'83 amendments requirement of 2 hours duration.

L160

L161

L90

CODE	Model	Brand	Unit
33 03 29	Lifebuoy light L160 (Lithium battery)	Daniamant	Pc.
33 03 30	Lifebuoy light L161 Intrinsically safe		Pc.
33 13 78	Lifebuoy light L90 with battery, 63-B300		Pc.
33 13 79	Lifebuoy light L90 without battery, 63-B301		Pc.
33 13 80	Bracket for lifebuoy light L90, 63-4003		Pc.

(to be continued)

CODE	Model	Brand	Unit
33 03 63 **67** **70**	KM-76S HK/MED approved SL-5 HK approved KM79 HK/MED approved	Koa	Pc.
33 03 69 **75**	KM78E Intrinsically safe KM80E Intrinsically safe	Koa	Pc.
33 03 86 **87**	KL-7 with bracket KL-7 without bracket	Kokusai	Set Pc.
33 13 28	344110	Nammo LIAB AB	Pc.
33 13 29	K-36	Koryo Pyrotechnics	Pc.

Buoyant Smoke Signals

For use in day distress signal situations and to mark the position during a rescue operation.

1) Colour of light — Dense orange smoke
2) Duration of burn time — 3 minutes minimum
3) Ignition — Pull-wire igniter with a 2 second safety delay
4) Temperature operation range — -1°C to 30°C
5) Temperature storage range — -30°C to 75°C
6) Weight — 370 grm

CODE	Model	Brand	Unit
33 03 31	MK9 (9537000)	PainsWessex	Pc.
33 03 66	KM46S	Koa (HK)	2's/Set
33 03 68	KMA45	Koa (MED)	Pc.
33 03 91	KB-8	Kokusai	"
33 13 31	342130	Nammo LIAB AB	"
33 13 32	K-45	Koryo Pyrotechnics	"
33 13 81	9162000	Comet	"

Ship's Lifeboat and Liferaft Distress Kits

Designed to be carried on a ship's lifeboats and liferafts. Consists of 4 pcs of rocket parachute flares, 6 pcs of hand flares and 2 pcs of buoyant smoke signals are contained in a watertight bottle.

Unit Per Set

CODE	Brand	CODE	Brand
33 03 36 **71** **96**	PainsWessex Koa Kokusai	**33 13 36** **86**	Nammo LIAB AB Comet

Ship's Bridge Distress Kits

Designed to be carried on a ship's bridge. Kits consists of 12 pcs of rocket parachute flares contained in a watertight bottle.

Unit Per Set

CODE	Brand	CODE	Brand
33 03 37	PainsWessex	**33 13 37**	Nammo LIAB AB
33 03 98	Kokusai	**33 13 87**	Comet

Pneumatic Line Thrower

Rescue 230

Air operated firing and propellant line thrower along with the wide range of projectiles. A stand-by tool for rescue purposes. The training projectile allows easy live training at no cost. Base unit with air cylinder holds sufficient air for 4 - 6 shots before refilling from a high pressure compressor (200 - 300 bars) or a diving cylinder. Meets the demands of SOLAS 74/83, and EU approval no. MED-B-187, NATO no.1095-25-142-3704.

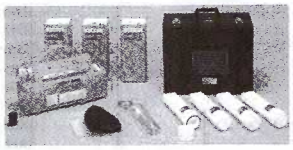
Technical Data		Contents
Range	: Min. 230 mtr	4 Rescue projectiles
Line strength	: Min. 2,000N	1 Training projectile
Recoil	: Max. 5,400N	1 Loading device
Flight time	: 4 sec.	1 Users manual, video/CD

33 13 45	Line thrower, pneumatic, Rescue 230	Set

Name of Mfr.: Restech Norway AS

Line Throwing Appliance

Electric Ignition Type



Designed for portable, compact, safe and ease of operation, and projects a line to a normal range 230 mtr in calm weather condition, conforms to LSA code and IMO Resolution M.S.C. 81 (70).

It provides a new ignition system which can be fired by a self-contained electric ignition mechanism. The line-throwing device can be used from ship to ship or ship to sea shore and also is suitable for rescue operation at sea and on land. Effective period of rockets and igniter: 3 years and 6 months. The spares (Rockets, igniter and liners) are available on request.

Composition
1 Plastic casing with an igniter
4 Rockets
4 Lines
1 Container for rocket and lines

33 13 47	Line throwing appliance, electric ignition type, Koa Kako KM5E	Set
48	Spre 4 rockets & 1 ignitor for KM5E	Set

Portable Oxygen Apparatus

Installation required by the Medical First Aid Guide (MFAG) for use in accidents involving noxious gases. These units may be used as a resuscitator, aspirator and oxygen inhaler. Oxygen capacity for resuscitator: 50 % – 40 minutes (for adult) per 2 ltr cylinder. Cylinders are of a 2 ltr capacity. 1 or 2 cylinder units are available.

Oxygen Consumption for Inhaler

Flow/Hour	1 Cylinder	2 Cylinders
0.5 ltr	8 H 30'	17H 00'
1.0 "	4 H 20'	8H 40'
2.0 "	2 H 10'	4H 20'
3.0 "	1 H 25'	2H 50'
4.0 "	1 H 00'	2H 00'
5.0 "	50'	1H 40'

Unit Per Set

CODE	Capacity	Gross Weight
33 04 01	2 ltr x 1 cylinder, complete set	14 kgs
02	Spare cylinder, 2 ltr	-
33 04 03	2 ltr x 2 cylinders, complete set	15.5 kgs

Self-contained Breathing Apparatus

Required by the Medical First Aid Guide (MFAG) for use in accidents involving dangerous gases where a portable oxygen apparatus is not available. A self-contained breathing apparatus is also required by 1983 SOLAS amendments Chapter III Regulation 17. Suitable for fire fighting, rescue work, inspection and maintenance of equipment and other related activities, especially on board a ship.

Unit Per Set

CODE	33 04 16	33 04 21	33 04 25	33 04 23
Model	KS-8C	FireHAWK M7 Air Mask	AirGofix Com	PSS 3000
Effective Duration	30 min.	30 min.	45 min.	45 min.
Cylinder Volume	8 ltr	8.4 ltr	6.8 ltr	6.8 ltr
Pressure	14.7 MPa	316 kgf/cm²	300 bar	300 bar
Air Capacity	1,200 ltr	1,260 ltr	1,860 ltr	1,860 ltr
Total Weight	15.6 kgs	10.0 kgs	10.5 kgs	10.3 kgs
Approvals	-	NFPA 1981 and 1982 – 2007 edition, NIOSH 42 CFR, Part 84 CBRN certified	MED Certified EN 137:2006, type 2 requirements (incl. flame engulfment test) Directive 94/9/EC [ATEX] BVS 05 H 027 I M1 II 1G IIC T6 -30°C < Ta <+60°C II 1D	MED Certified; EN 137 2006 Type 2
Part No.	-	Request Assemble-To-Order Matrix	10086572 + D4080801 + 39B2368UL	3358906+ 3352653+ R52972
Name of Mfr.	Air Water Safety Service	MSA The Safety Company		Draeger

Air Capacity= Cylinder volume x Charging pressure
= 8 ltr x 150 kgf/cm²

Air Filled Spare Cylinders

Unit Per Pc.

CODE	33 04 17	33 04 22	33 04 26	33 04 24
For Model	KS-8C	FireHAWK M7 Air Mask	AirGofix Com	PSS3000
Cylinder Volume	8 ltr	8.4 ltr	6.8 ltr	6.8 ltr
Pressure	14.7 MPa	150 kgf/cm^2	300 bar	300 bar
Part No.	-	10128111-SP	10175092	3352653

Communication Systems for SCBA

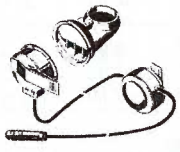
By simultaneous use of a SCBA and a radio, communication is getting difficult in a noisiness area.

Communication system exist of a combined microphone – speaker, wired to a radio connector with a PTT(Push to Talk) knob, connected to the full face mask by a radio-exhalation valve adapter. Or to be used without full face mask.

Loud and clear communication is possible, even in combination with a full face mask. Other option is to use it in a gastight suit.

Connection with a wide range of brand and types of radios is possible.

Positive Pressure Version



Normal Pressure Version

Note: Please specify brand and type of radio in use.

Unit Per Set

CODE	Description	Manufacturer	Part No.
33 04 28	Draeger FPS COM without FPS Mask	Draeger	R56800
33 04 29	Radio-exhalation valve, positive pressure version	MSA	D2055720
33 04 30	Radio-exhalation valve, normal pressure version	MSA	D2055761

Emergency Escape Breathing Devices

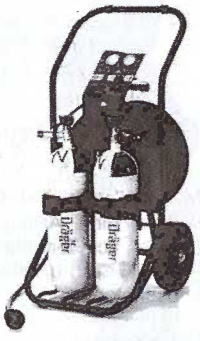
Required by SOLAS 1974 in regulation 13 revised in 2000, all ships shall carry at least two Emergency Escape Breathing Devices (E.E.B.D.) within accommodation spaces for providing respiratory protection in toxic and oxygen deficient atmospheres. On all ships, within the machinery spaces, E.E.B.D. shall be situated ready for use at easily visible places, which can be reached quickly and easily at any time in the event of fire. The location of E.E.B.D. shall take into account the layout of the machinery space and the number of persons normally working in the spaces. The E.E.B.D. should have at least a duration of service of 10 minutes and should include a hood or full face piece to protect the eyes, nose and mouth during escape, complying with the Fire Safety Systems (F.S.S.) Code. Hoods and face pieces should be considered flame resistant and include a clear window for viewing. An unactivated E.E.B.D. should be capable of being carried hands-free.

Specifications

Mfr.	MSA The Safety Company	Interspiro (Survitec)	Draeger		Scott Safety
Duration of Service	15 min.	15 min.	10 min.	15 min.	15 min.
Model	S-Cap Air	Spiroscape	CF-10	CF-15	ELSA 15-B
Part No.	10032181 (with filled cylinder)	731491 (with filled cylinder)	3359734 (Air flow: Hood 35-37 ltr/min.)	3359735 (Air flow: Hood 35-37 ltr/min.)	1047372 (with filled cylinder)
Approval	EN 1146	EU: 89/686/ EEC/PPE 97/23/ EEC/PED 96/98/ EEC/MED EN 1146 ISO23269-1 US: NIOSH 42 CFR Part 84	EN1146:2005, ISO 23269-1:2008, ISO 23269-4:2011, SOLAS Chapter II-2, the Marine Equipment Directive and the Pressure Equipment Directive. The Dräger Saver CF hard case and anti-static soft bag versions are suitable for use in explosive atmospheres (ATEX zone 0).		EC Type examination (BSI/A.1/3.41/71236), Product Quality Assurance(BSI/MED/ PC/90907), EN1146:2005, ISO 23269-1:2008, ISO SOLAS 74/2014 Reg. II-2/13 FSS code3 IMO Res.MSC.98(73) IMO MSC/Circ.849	

CODE	Description	Unit
Emergency Escape Breathing Device w/Air Cylinder		
33 04 35	Duration of Service 10 min.	Set
38	" 15 min	"
Spare Cylinder for E.E.B.D.		
33 04 36	Duration of Service 10 min.	Pc.
39	" 15 min	"

Airline Trolley



Uninterrupted air supply is provided by the trolley-mounted cylinder(s) to the wearer via a hose reel. As the air-trolley can be easily re-located and therefore positioned in a safe zone which is in close proximity to working area, the user need only wear a lightweight harness during operation. This allows the wearer a greater freedom of movement, and less stress and fatigue than they would be subjected to if wearing a conventional self contained breathing apparatus unit.

The air-trolley is able to accommodate up to four compressed air cylinders of up to 12 litres in capacity and is constructed from an anti-static powder coated steel material. The trolley hose reel connector is protected with a cover to minimize inadvertent damage being caused. The system incorporates a safety pressure relief valve and the pressure reducer is shrouded in a protective plate for additional safety.

Application: Chemical tank cleaning, toxic spillages or certain tasks when working on offshore installations

Dräger PAS AirPack 1
Trolley, Reducer Hose Reel & Hose

Unit Per Set

CODE	33 04 41
Model	33 52 228
Input Pressure Cylinder	200 or 300 bar
Input Pressure Airline	6 – 10 bar
Normal 1st Stage Output Pressure	8 bar
1st Stage Output Flow	>600 ltr/min
Whistle Sound Level	>90 dBA
Standard Length of air Hose	50 meters (extended to 100mtr)
Size, excluding cylinder (HxWxD)	1,019 x 465 x 60 mm
Weight	40.5 kgs

Name of Mfr. : Draeger

Breathing Air Quality Tester

Used to determine the quality of respiratory air in high-pressure compressor or a compressed air cylinder. The application of the test system ensures the reliable testing in accordance with the purification standard EN 12021. This quick check guarantees an exact measuring result and provides information regarding the level of contamination after only five minutes.

Unit Per Set

CODE	33 04 46
Model	Aerotest Simultant HP
Pressure Reducer Inlet	External threads G5/8 – 300 bar (hand-tightened connection)
Max. Pressure	300 bar
Pressure Gauge Outlet	0 – 400 bar 9 mm plug-in connector for measuring device
Over Pressure Value	Set to 10 bar
Adapter (Inlet & Outlet)	Internal threads G 5/8 – 200&300 bar for pressure reducer
Measuring Device Flow	0.2 L/min and 4.0 L/min
Size L x W x H mm	350 x 300 x 85
Weight kgs	Approx. 3.0

Name of Mfr.: Draeger

Dräger Detection Tube holder included

Dräger Tubes	Standard Range of Measurement	Order Code
Description	(20 Deg C, 1,013 hPa)	
Carbon Dioxide 100/a-P	100-3,000 ppm	6728521
Carbon Monoxide 5/a-P	5-50 ppm	6728511
Adapter for the Oil-Impactor		8103557
Water Vapour 20/a-P	20-100 mg H_2O/m^3	8103061

Breathing Air Compressors

Used to fill the air cylinders of breathing apparatuses.

Unit Per Set

CODE	33 04 67	33 04 68	33 04 69
Model	MCH6/ET	MCH8/EM	MCH13/ET
Charging Rate	100 ltr/min. (6m³/h, 3.5 cfm)	135 ltr/min. (8 m³/h, 4.7 cfm)	235 ltr/min. (14.1 m³/h, 8.3 cfm)
Filling Time Cylinder 10 ltr - 0 - 200 bar	20 mn.	15 min.	8 min. 30 sec.
Working Pressure	225 bar - 3,300 psi		
Rpm Pumping Unit	2,800	1,350	1,370
Power	3 kW	3 kW	4 kW
Full Load Amps	6.7A (400V 50/60 Hz)	18A (230V 50/60 Hz)	15A (230V 50/60 Hz) 17A(400V 50/60Hz)
Noise	95 dB	76 dB	77 dB
Breathing Air	DIN3188EN 12021CGA E		
Switch Board	Built-in	Option	Option
Filling Valve	1	2	2
Dimensions L x H x W	25.5"x13.7" x15.3"	36.2"x34.6" x24"	34.6"x25" x18.9"
Weight	39 kgs	107 kgs	117 kgs

Name of Mfr.: Aerotecnica Coltri S.r.l.

7TH
33

Unit Per Set

CODE	33 04 65
Model	Junior II-E
Drive	3 phase
Free Air Delivery	100 ltr/min.
RPM	2,300
Drive	2.2 KW (3HP)
Power Source	AC 220V/440V 50/60 Hz
Dimensions	L66 x W36 x H42 cm
Weight	46 kgs
Name of Mfr.	Bauer Kompressoren GmbH

Oxygen Indicators

For measuring concentrations of oxygen within the rate of 0 to 25 % by volume. Dependable instrument for preventing a threat in areas with an oxygen shortage.

Also for preventing accidents of fire or explosion caused by oxygen leakage.

Unit Per Set

CODE	33 05 06
Model	OX-08
Gas Detected	Oxygen in air
Detection principle	Galvanic cell
Detection Range	0 - 40.0%vol. (0.1%vol.)
Alarm Set Point	Low : 19.5%vol. High : 23.5%vol. Over : 40.0%vol.
Trouble Alarm	Sensor disconnection, low battery, calibration range error, system error

(to be continued)

Unit Per Set

CODE	33 05 06
Alarm Types	Gas alarm : Flashing light, intermittent buzzer and flashing gas value, pulsing vibration
Display	Digital display
Power Source	Alkaline dry cells (2-AA) 2 pcs
Continuous Operation	Maximum 20,000 hours
Safety Design	Intrinsically safe (ExiaIICT4GA)
Approval	JML (Japanese Ministry of Labor)
Special Functions	Manual backlight for LCD / Peak hold
Dimensions & Weight	Approx. 69 (W) x 150 (H) x 53 (D) mm / Approx. 330 grm
Standard Accessories	69, Hand Strap
Name of mfr.	Riken Keiki

Unit Per Set.

CODE	33 05 16
Model	Cosmotector XP-3180
Range	0-25%
Sampling Method	Extracive
Alarm Preset	Factory preset at 18% O_2
Readout	LCD digital (with backlight)
Power Source	4xAA alkaline dry cell batteries
Size WxHxD mm	82 x 162 x 36
Weight	450 grm
Approved	Ex ib IIB T3(Explosion Proof) H.K.
Name of Mfr.	New Cosmos Electric

Unit Per Set.

CODE	33 05 19	33 05 17	33 05 18
Model	XO-326IIsC	XO-326IIsA	XO-326IIsB
Detection Range (Service Range)	0 – 25% vol.% O_2 (25.1- 40% vol.%)		
Sampling Method	Diffusion Type		
Sensor Cable	10 mtr	5 mtr	1 mtr
Alarm Preset	1st stage : 19.5 vol% 2nd stage: 18.0 vol%		
Protection	IP20 or equivalent		
Readout	Liquid crystal diode digital meter		
Continuous Use	Approx. 15,000 hours		
Power Source	2xAA alkaline batteries		
Size WxHxD mm	66x200x29	66x170x29	66x120x29
Weight	410 grm	340 grm	265 grm
Approved	Ex ia II CT3 X(Explosion Proof) H.K.		
Name of Mfr.	New Cosmos Electric		

Unit Per Set.

CODE	33 05 04	33 05 05
Model	TIP-OXF	TIP-OXP
Measuring Gas	Oxygen	
Sensing Principle	Galvanic cell method	

(to be continued)

Unit Per Set.

CODE	33 05 04	33 05 05
Gas Collection Method	Diffusion type (Direct Sensing) with remote cable	Suction type by built-in pump with sampling tube
Measuring Range	0 – 25%O_2	
Accuracy	Within ± 0.7%O_2	
Response	90% response within 20 sec.	
Display	Digital display by LCD panel, Power lamp, Alarm lamp, Peak hold mode lamp	
Alarm Level	Two user – adjustable alarm level AL1: 18%O_2 at Oxygen decrease mode AL2 : 8%O_2 at Oxygen increase mode	
Alarm Display	Alarm lamp and buzzer	
Power Source	Manganese dry cell (R20P) x 2 pcs	
Dimensions	W:163 × H:137 × D:67 mm	
Weight	1.6 kgs (with sensor and 5m cable)	1.5 kgs (without sampling tube)
Safety Approval	Intrinsically safe: i3aG4	
Ability Approval	Type approved by NK *HK examination available on request	
Accessories	Leather case, Sensor with remote cable (5m~max 20m)	Air Filter, Leather case, Sampling tube (5m~max 20m)
Name of Mfr.	Toka Seiki Co., Ltd.	

Multi-Toxic Gas Monitor

A four gas personal monitor with advanced features including large LCD which can display 4-gas concentrations, current time, and battery indicator simultaneously. Extra loud alarm buzzer, three bright LED lamps and IP67 water and dust proof construction with built in impact resistant protective cover. All controls and features are operated by 2 buttons.

* Simultaneously and read-time detection of 4 gases LEL, O_2 (Oxygen), H_2S (Hydrogen Sulfide) and CO (Carbon Monoxide).
* Rechargeable Ni-MH battery pack.
* Continuous operation for up to 20 hours.
* Data logging standard.
* STEL (Short Term Exposure Limit) and TWA (Time Weighted Average) readout.

Application:

Confined space / Refineries and Petrochemical / Utilities / Chemical plants / Hazardous material / Water and wastewater treatment / Fire services

Unit Per Set

CODE	33 05 20
Model	GX-2009
Detection Principle and range	Combustible gases: Catalytic combustion 0 -100%LEL (1%LEL) O_2: Galvanic cell 0-40%VOL (0.1%VOL) H_2S: Electro-chemical cell 0-100.0ppm (0.5ppm) CO: Electro-chemical cell 0-500ppm (1ppm)
Sampling Method	Diffusion
Display	Simultaneous display. Digital LCD with segments, auto backlight at alarm display
Preset Alarms (User Adjustable)	Combustible gases: 1st 10%LEL, 2nd 50% LEL, Over 100% LEL O_2: Low 19.5%Vol, High 23.5%Vol, Over 40.0%Vol H_2S: 1st 5.0 ppm, 2nd 30.0 ppm, TWA 10.0 ppm, STEL 15.0 ppm, Over 100.0 ppm CO: 1st 25.0 ppm, 2nd 50.0 ppm, TWA 25.0 ppm, STEL 200 ppm, Over 500 ppm
Types of Alarm	Gas alarms: 2 preset alarms, STEL, TWA, overscale alarm Trouble alarms: Sensor disconnection, low battery, circuit error, calibration range error
Display of Alarm	Gas alarms: Flashing LEDs, intermittent buzzer, flashing gas value, vibration Trouble alarms: Flashing LEDs, intermittent buzzer, display of error message
Functions	Manual back light LCD (Automatic at alarm) / Data logging / STEL, TWA / Peak hold / Alarm trend / Direct charging / Continuous display of current time / Autocalibration
Power Source	Direct charging Ni-MH battery pack
Ingress Proof Rating	IP67
Safety Design / Approvals	ATEX Ex II 1G Ex ia IIC T4 / IECEx Zone 0 Ex ia IIC T4 / CSA Intrinsically safe, class I, Division I, Group A,B,C and D / CE / TIIS Ex ia IIC T4
Dimensions	Approx. 70 (H) x 75 (L) x 25 (D) mm
Weight	Approx. 130 grm
Standard Accessories	(1) Wrist strap, (2) Alligator clip, (3) Battery charger
Name of Mfr	Riken Keiki Co., Ltd.

Combination Gas Detectors

Designed for detecting oxygen, combustible gas and toxic gas in the atmosphere. Providing full-function capability in a personal monitoring device.

Portable Type

Unit Per Set

CODE	33 05 21
Model	GX-8000
Detection Principle and range	Combustible gases (CH_4, i-C_4H_{10}, H_2, others): Thermal conductivity: 0-100vol% (1vol%) Catalytic combustion: 0-100%LEL (1%LEL) O_2: Galvanic cell 0-40%VOL (0.1%) H_2S: Electro-chemical cell 0-100.0ppm (0.5ppm) CO: Electro-chemical cell 0-500ppm (1ppm)

(to be continued)

Unit Per Set

CODE	33 05 21
Sampling Method	Sample draw, minimum 0.75 l/min
Display	Digital LCD with auto backlight Digital display (7 segments) and digital bargraph (25 segments)
Gas Alarm	Combustible gases: Thermal conductivity: N/A Catalytic combustion: 1st 10%LEL, 2nd 50%LEL O_2: Low 19.5%Vol, High 23.5%Vol H_2S: 1st 5.0ppm, 2nd 30.0ppm, TWA 10.0ppm, STEL 15.0ppm CO: 1st 25.0 ppm, 2nd 50.0 ppm, TWA 25.0 ppm, STEL 200 ppm,
Types of Alarm	Gas alarm : latching, 2 alarms Failure alarms : Flow failure, sensor failure, battery failure, circuit failure, calibration failure
Display of Alarm	LED: LED's flash Buzzer: Buzzer sounds alternating between a low and high pitch Visual indication: Indication value flashes. Alarm message displays and flashes.
Power Source	Lithium-ion battery, standard (3 hours for a full charge) AA Alkaline battery (3 pcs), option
Continuous Operation	Lithium-ion battery : more than 12 hours AA Alkaline battery : more than 6 hours
Ingress Proof Rating	Equivalent to IP67
Explosion Proof	Intrinsically safe Exia II CT4
Approvals	IECEx , ATEX, TIIS, MED, HK, CE mark, Complying to IEC60079-29-1
Additional Features	Indication to show energizing (pilot indicator and pump driving indicator), "Activating confirmation beep and LED's flash (every one min)" Pump stop function, Bump test function, IrDA communication, Data logger, Password protection
Dimensions	Approx. 154 (W) x 81 (H) x 130(D) mm
Weight	Approx. 1.1 kgs
Standard Accessories	• AC powered charger (Input: AC100V-AC240V, 50/60Hz, Output: DC12V, 1.25A) • Gas sampling probe • Gas sampling hose (Spiral 1mtr) • Lithium-ion battery unit BUL-8000 • Neck/shoulder strap • Instruction manual
Name of Mfr	Riken Keiki Co., Ltd.

Pocketable Type

Built around high-quality micro-sensor technology, this is smallest personal 5 sensor gas monitor with a built in sample pump. Weighing only 360grm. This can be also measure 100% volume Methane and dynamically display either % LEL, or % volume with its auto-ranging ability.

GX-2012

Two operating modes : Normal (for confined spaces) and bar hole. GX-2012 can monitor the standard confined space gases (LEL combustibles, Oxygen content, Carbon

Monoxide and Hydrogen Sulfide). The GX-2012 can be used for gas line purge testing as well as standard safety testing.

GX-2012GT

It can monitor the standard gas safety hazards for gas/pipeline operations, (LEL combustibles, oxygen content and Carbon Monoxide), and it has a high-sensitivity ppm CH_4 leak tracker mode which reads down to 10ppm.

Gas Combination

Sensors	GX-2012		GX-2012GT	
Five Sensor	Type A	LEL/% Vol/O_2 / CO/H_2S	Type A	PPM/LEL/% Vol / O_2/CO
Four Sensor	Type B	LEL/O_2/H_2S/CO	Type B	PPM/LEL/O_2/CO
	-	-	Type C	PPM/LEL/% Vol/O_2
Three Sensor	Type C	LEL/O_2/H_2S	-	-
	Type D	LEL/O_2/CO	Type D	PPM/LEL/O_2
	Type E	LEL/ % Vol/O_2	-	-
Two Sensor	Type F	LEL/O_2	-	-

Specifications

GX-2012

Unit Per Set

CODE	33 05 27				
Gas Detected	Combustible gases (Methane as standard)	% Volume Methane	Oxygen (O_2)	Hydrogen sulfide (H_2S)	Carbon monoxide (CO)
Detection principle	Catalytic combustion	Thermal conduc-tivity	Galvanic cell	Electro-chemical cell	
Detection Range	0-100% LEL	0-100% Vol	0-40% Vol	0-100 ppm	0-500 ppm
Sampling Method	Internal sample pump. Flow rate nominal 0.5 LPM, includes hydrophobic filter				
Display	Digital LCD with 7 segments, auto backlight during alarm				
Preset Alarm (User Adjustable)	1st alarm 10% LEL 2nd alarm 50% LEL Over alarm 100% LEL	No alarms for % Vol CH_4	Low alarm 19.5% High alarm 23.5% Over alarm 40.0%	1st 5 ppm 2nd 30 ppm TWA 10 ppm STEL 15 ppm Over 100 ppm	1st 25 ppm 2nd 50 ppm TWA 25 ppm STEL 200 ppm Over 500 ppm
Alarm Types	Gas alarms: 1st and 2nd, STEL, TWA (user adjustable) and OVER Trouble alarms: Sensor connection, low battery, low flow, circuit trouble and calibration error				
Alarm Methods	Gas alarms : Flashing lights, two tone buzzer, and vibration Trouble alarms : Flashing lights, trouble displayed, intermittent buzzer, and vibration				
Response Time	Within 30 seconds (T90)				
Continuous Operation	Alkaline battery : 15 hours Li-Ion battery : 10 hours				
Power Source	Li-Ion battery pack, or 3 "AA" alkaline battery pack; interchangeable				
Safety Rating	ATEX Ex II 1G Ex ia IIC T4 / IECEx II 1G Ex ia IIC T4 / TIIS / MED / HK / CE				
Size & Weight	Approx. 173 (H) x 71 (W) x 43 (D) mm, 360 grm (include 3 "AA" alkaline batteries)				
Standard Accessories	Belt clip / Rubber nozzles / Wrist strap / Manual / Alkaline battery pack				

Name of Mfr.: Riken Keiki Co., Ltd.

GX-2012GT

Unit Per Set

CODE	33 05 28				
Gas Detected	Combustible gases (Methane as standard)	% Volume Methane	PPM Methane	Oxygen (O_2)	Carbon mon-oxide (CO)
Detection principle	Catalytic combustion	Thermal conduc-tivity	MOS/ Catalytic	Galvanic cell	
Detection Range	0-100% LEL	0-100% Vol	0-5,000 ppm	0-40% Vol	0-500 ppm
Sampling Method	Internal sample pump. Flow rate nominal 0.5 LPM, includes hydrophobic filter				
Display	Digital LCD with 7 segments, auto backlight during alarm				
Preset Alarm (User Adjustable)	1st alarm 10% LEL 2nd alarm 50% LEL Over alarm 100% LEL	No alarms for % Vol CH_4	Increas-ing tone/ light pulse as concen-tration increases	Low alarm 19.5% High alarm 23.5% Over alarm 40.0%	1st 25 ppm 2nd 50 ppm TWA 25 ppm STEL 200 ppm Over 500 ppm
Alarm Types	Leak tracker mode: Escalating audible / visual alarm, changes with gas level (audible can be turned off) Gas alarms: 1st and 2nd, STEL, TWA (user adjustable) and OVER Trouble alarms: Sensor connection, low battery, low flow, circuit trouble and calibration error				
Alarm Methods	Gas alarms: Flashing lights, two tone buzzer, and vibration Trouble alarms: Flashing lights, trouble displayed, intermittent buzzer, and vibration				
Response Time	Within 30 seconds (T90)				
Continuous Operation	Alkaline battery: 15 hours Li-Ion battery: 10 hours				
Power Source	Li-Ion battery pack, or 3 "AA" alkaline battery pack; interchangeable				
Safety Rating	ATEX Ex II 1G Ex ia IIC T4 / IECEx II 1G Ex ia IIC T4 / TIIS / MED / HK / CE				
Size & Weight	Approx. 173 (H) x 71 (W) x 43 (D) mm, 360 grm (include 3 "AA" alkaline batteries)				
Standard Accessories	Belt clip / Rubber nozzles / Wrist strap / Manual / Alkaline battery pack				

Name of Mfr.: Riken Keiki Co., Ltd.

Unit Per Set

CODE	33 05 81
Model	XP-3118
Detection Method	Oxygen (O_2): Galvanic cell Combustible gas and Vapors (specify gas detected): Catalytic combustion
Measuring Range	Oxygen: 0-25.0VOL% Combustible gas: 0-100% LEL
Accuracy	Oxygen: ±0.3 vol % (Complies to JIS T8201) Combustible gas: ±5% of full scale
Alarm Preset Point	Oxygen: 18.0 vol % Combustible gas: 20% LEL

(to be continued)

Unit Per Set

CODE	33 05 81
Alarm Method	Gas alarm: Intermittent buzzer, Red lamp flashing Error alarm: Buzzer, Red lamp flashing LCD display
Sampling Method	Extractive
Power Source	4 x AA alkaline dry batteries
Aproval	N.K.
Dimensions	W:82 x H:162 x D:36 mm
Weight	450 grm
Accessories	Soft case, 4 x AA alkaline dry batteries, gas sampling hose(1mtr), probe with filter/ moisture trap
Name of Mfr	New Cosmos Electric

Multi Gas Detectors

GasAlertQuattro

A four-gas detector combines a comprehensive range of features with simple one-button operation, suited to a wide range of industrial applications including confined space entry. The graphic LCD displays easy to identify icons that indicate operational information, such as bump test and calibration status for simplified onsite auditing. Interchangeable power options with extended battery runtimes for longer shifts. Full function self-test of sensor(s), battery status, circuit integrity and audible / visual alarms on start up and continuous testing on sensor(s). Multi-language support in English, French, German, Spanish and Portuguese.

Sensor Specifications

Gas	Measuring Range	Resolution
Hydrogen sulfide (H_2S)	0-200 ppm	0.1 ppm
Carbon monoxide (CO)	0-1,000 ppm	1 ppm
Oxygen (O_2)	0-30.0%	0.1%
Combustible gases (%LEL)	0-100% LEL	1%
	0-5.0% v/v	0.1%

Unit Per Pc.

CODE	33 05 85
Model	Gas Alert Quattro
Tests	Sensor integrity
Alarms	Visual (six, red LEDs), vibrating, audible (95 dB) Low, High, STEL (Threshold Limit Value), TWA (Time Weighted Value), OL (Over Limit)
Pump	Compatible with the Sampler motorized sampling pump
Battery Life	AA alkaline: 14 hrs Rechargeable: more than 18 hrs
Certifications and Approvals	Class II, Div. 1, Gr. A, B, C, D ATEX : CE Ex II 1 G Ga Ex ia II C T4 IECEx : ga Ex ia II C T4 BR-Exia II C T4, MED [0098xx]
Warranty	Full two year warranty including all sensors
Size	13.0 x 8.1 x 4.7 cm
Weight	316 grm (with rechargeable battery pack)

Name of Mfr. : BW Technologies

Combination Gas Detectors

Designed for detecting, combustible gas in the atmosphere. Providing full-function capability in a personal monitoring device.

MSA ALTAIR 5X/ALTAIR 5X-IR

The rugged, multi-featured MSA ALTAIR 5X Gas Detector provides maximum safety and make it easy to use in even the most demanding situations. It features large buttons for easy use, and its polycarbonate housing protects the detector for drops of up to 10 feet. The detector also boasts the exclusive MotionAlert™, which lets others know if the user has become immobile, and InstantAlert™, a manual alarm that alerts others if a dangerous situation has arisen, while the large buttons and bright display makes operation possible even when the user is wearing gloves.

Approvals:

USA/NRTL [Intrinsic Safety, Non-Mining] / Canada / CSA [Intrinsic Safety, Combustible Performance, Non-Mining]/ Australia [Intrinsic Safety, Industrial Mining–Test Safe]/ European Union ATEX–FTZU [Intrinsic Safety, Industrial and Mining]/IECEx [Intrinsic Safety, Industrial and Mining-Test Safe]/Wheelmark 213.050 Complying with SOLAS 74/78 Chapter II-2/4 and VI/3, as amended IMO Resolution MSC.98 (73) - (FSS-code) 15.

- Rugged detector tests levels of LEL.
- Rapid bump test gives results in under 15 seconds .
- Versatile MSA Link™ allows user to transmit data to a computer.
- Durable XCell sensor last longer than 3 years.
- Exclusive end-of-sensor warning cautions user when unit's sensor needs to be changed.
- Polycarbonate housing is both dust-tight and water-tight.

MSA ALTAIR 4X

The ALTAIR 4X Multigas Detector surpasses industry standards in several crucial areas. Its four-year sensor life is 60% longer than the industry average, while its 24-hour run time exceeds the industry average by 71%. This versatile portable detector is a perfect match for industries ranging from firefighting to welding, and its digital sensor output makes it less likely to suffer from RF interference. The unit features exclusive MotionAlert™, which lets others know if the user has become immobile, and InstantAlert™, a manual alarm that alerts others of potentially dangerous situations. This rugged unit is designed to withstand a drop of up to 20 feet and uses less than half as much calibration gas as the industry average.

Approvals:

USA: ETL Class I, Div. 1, Groups A,B,C&D , Tamb=-40°C to +54°C, ETL Class II, Div.1, Groups E,F&G, Class III, Div. 1, Tamb=-40°C to +54°C; T4 / CANADA : CSA Class I, Div. 1, Groups A,B,C&D, CAN/CSA C22.2 152; 12.13.01-2000, ETL Class II, Div.1, Groups E,F&G, Class III, Div. 1, Tamb=-40°C to +54°C; T4 / Australia/New Zealand TestSafe Australia/European Union ATEX – FTZU [Intrinsic Safety, Industrial and Mining]/Wheelmark 213.048: Complying with SOLAS 74/78 Chapter II-2/4 and VI/3, as amended IMO Resolution MSC.98(73)-(FSS-code) 15.

- Dependable multigas detector tests for LEL.

- Economical construction saves users more than 50% on calibration gas, replacement sensor and maintenance.
- Unit uses 50% less calibration gas per minute than the average detectors within the industry.
- Large buttons and high-contrast screen make operation easy in low-light conditions.
- Ribbed rubber housing provides secure grip and high durability.
- Unit features 95+ db alarm and ultra-bright LEDs.
- Exclusive end-of-sensor warning cautions user when unit's sensor needs to be changed.

Unit Per Pc.

CODE	33 05 96	33 05 97	33 05 98
Model	ALTAIR 5X	ALTAIR 5X-IR	ALTAIR 4X
Measurement of Combustible	0 ...100 %LEL	0 ...100 %LEL and/or 0 ... 100 Vol% [Methane]	0 ...100 %LEL or 0... 5 Vol% [Methane]
Measuring principle Combustible	Catalytic Combustion	Catalytic Combustion and/or IR light wavelength absorption	Catalytic Combustion
Resolution Combustible	1 %LEL	1 %LEL and/ or 1 Vol% Methane	1 %LEL
T90 Combustible	[time needed to reach 90% of final reading and to recover] < 10 seconds		
Measuring Method	Integral pump		Diffusion, or, by an external to connect electrical pump
Dimensions Weight	H 170.0 mm W 88.7 mm D 45.5 mm < 450 Grams	H 170.0 mm W 89.4 mm D 48.8 mm < 520 Grams	H 112 mm W 76 mm D 35 mm < 210 Grams
Display	Colour or Monochrome, showing actual measuring value, time, battery status, check mark*, Motion sensor* and Sensor End-Of-Life Indicator*	Colour	-
Housing	Armoured Rubber		
Alarms	Optica - two super bright LED's with 320° view Akoustic - 95 dB Typical, Vibration		
Alarm thresholds	Adjustable Low and High		
Safety LED	Indicator flashes every 15 seconds to show the user that the instrument is functioning normally		
Operation Signal	Sounds every 30 second and the alarm LED's flashes simultaneously		
Bump Check Mark	24 hour check mark for confidence in good working of sensors		
End-Of-Life	Indication for preventive replacement of sensor, to avoid unnecessary and unexpected break down of the instrument		
Motion Alert	Man-Down Alarm / Automatic alarm when wearer doesn't move anymore		
Instant Alert	Man-In-Trouble Alarm / Manually activated Alarm, when wearer can't move anymore		
Data logging	Standard, 1,000 events		Standard, 500 events
Energy Supply	Rechargeable Lithium Ion Battery		Rechargeable Lithium Polymer Battery
Operation time	> 18 hours at 25°C	> 14 hours at 25°C	> 24 hours at 25°C

(to be continued)

Unit Per Pc.

CODE	33 05 96	33 05 97	33 05 98
Charging time	< 6 hours		< 4 hours
Temperature range	0°C ... +40°C - 20°C ... +50°C - 40°C ... +50°C [short period] +10°C ... +35°C [during charging of battery] +18°C ... +30°C [during storage of instrument]		-10°C...+50°C -20°C...+50°C [short period] +10°C... +35°C [during charging of battery] +18°C..+30°C [during storage of instrument]
Humidity range	15 % – 90 % relative, non-condensing 5 % – 95 % relative, intermittent		
Ingress Protection	IP65, Certified by 3rd party		IP67, Certified by 3rd party
Warranty	4 years on sensor, rechargeable battery-pack, case and electronics	4 years on sensor, 1 year on IR sensor, rechargeable battery-pack, case and electronics	4 years on sensor, rechargeable battery-pack, case and electronics

* When applicable

Name of Mfr.: MSA The Safety Company

Personal Multi Gas Detection Devices

Designed to be a compact, robust, easy to use instrument for either flammable gas detection, or flammable and oxygen detection.

With a large LCD display, loud acoustic and bright optical alarm with vibrating battery option, the X-am 2500 gives clear warning of a hazardous atmosphere and is, therefore, suitable for a wide range of personal monitoring and confined space entry tasks.

With EEx iad IIC T4 and IP67 approval, the X-am 2500 is suitable for the most demanding of environments.

Unit Per Set

CODE	33 05 82
Model	X-am 2500
Measuring Range	Ex-measurement: 0 to 100% LEL, resolution 1%-LEL 0 to 5 vol.-% CH_4, resolution 0.1vol.-% Oxygen measurement: 0 to 25 vol.-%, resolution 0.1 vol.-%
Display	LCD, backlight
Alarm	Optic, acoustic and vibrating alarm, 2 adjustable alarm thresholds for LEL range and oxygen measurement. Ex-measurement: Default A1: 10%-LEL Default A2: 20%-LEL Oxygen measurement: Default A1: 19 Vol.-% Default A2: 23 Vol.-%
Sound Volume of Horn	>90 dB(A), at 30 cm distance
Power Supply	NiMH battery (rechargeable), Alkaline
Operation Time	>12 hours

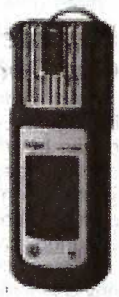
(to be continued)

Unit Per Set

CODE	33 05 82
Charging Time	<4 hours
Ingress Protection	IP67
Intrinsic Safety	EEx iad IIC T4
Approvals	Europe: CE mark, IM 2 EEx iad I; II2G EEx iad IIC T4/T3 USA: UL Class 1 Group A,B,C,D; Div. 1 Temp code T4/T3 Canada: CSA Class 1 Group A,B,C,D; Div. 1 Temp code T4/T3 Shipping: Steering Wheel Certification
Response Time	t50 < 7seconds (methane)
Dimension	48 x 130 x 44 mm (W x H x D)
Weight	220 - 250 grm

Name of Mfr.: Draeger

Multi-Gas Detector
Draeger X-am® 5000



This 1- to 5- gas detector reliably measures combustible gases and vapors as well as O_2 and harmful concentrations of toxic gases, organic vapors, Odorant and Amine. It is easy to exchange, upgrade or calibrate the sensors to other gases. The X-am 5000 provides dependable warnings in the event of explosive atmospheres thanks to the high level of sensitivity of the innovative catalytic Ex sensor. The optional external pump, which operates with a hose up to 30 (98 feet) meters long, makes it possible to use the detector for pre-entry measurements into confined spaces such as tanks, shafts, etc. Consisting of basic instrument with an integrated data logger and manufacturer's and calibration certificates

Unit Per Set

CODE	33 06 74
Model	X-am 5000
Item No.	83 20 000
Ingress Protection	IP 67
Data Logger	Can be read out via Infrared > 1,000 hours with 5 gases and a recording interval of 1 value per minute
Dimensions (W x H x D)	48 x 130 x 44 mm
Weight	250 grm
Approvals	
ATEX	I M1 Ex ia I Ma, II 1G Ex ia IIC T3 Ga, I M2 Ex d ia I Mb, II 2G Ex d ia IIC T4 / T3 Gb
Performance approval to:	EN 50104 (2002) + A1 (2004): O_2 EN 45544: CO & H_2S EN 60079-29-1:2007: Methane to nonane EN 50271:2010: Software and documentation
CSA	Class I, Div. 1 Group A, B, C, D T.-Code T4 / T3
IECEx	Ex ia I, Ex ia IIC T3, Ex d ia I, Ex d ia IIC T4/T3
CE-mark	Electromagnetic compatibility Directive 2004 / 108 / EG; EN 50270:2006

(to be continued)

Unit Per Set

CODE	33 06 74
MED	Marine Equipment Directive 96 / 98 / EC
Sensors	4 sensors preferred from the separate list of sensors

Name of Mfr. : Draeger

Multi-Gas Detection Device
Draeger X-am® 5600

The smallest gas detection instrument for the measurement of up to 6 gases. This detector reliably detects explosive, combustible and harmful concentrations of O_2, Cl_2, CO, CO_2, H_2, H_2S, HCN, NH_3, NO, NO_2, PH_3, SO_2, O_3, Amine, Odorant, $COCl_2$ and organic vapors. Draeger infrared sensors can generally be used for up to eight years. This advanced technology reduces the cost of ownership considerably because less replacement sensors are needed. In addition, a sensor calibration is only necessary every 12 months which reduces maintenance costs. An optional external pump which can be operated with hoses up to 30 m or 98 ft. in length is the perfect solution for pre-entry measurements in tanks or pipelines. The small and reliable gas detector is suitable for use in areas classified as zone 0, which are areas where explosive atmospheres are always to be expected.

Consisting of basic instrument with an integrated data logger, support CD, manufacturer's and calibration certificates.

Unit Per Set

CODE	33 06 75
Model	X-am 5600
Item No.	83 21 050
Ingress Protection	IP 67
Data Logger	Can be read out via Infrared > 1,000 hours with 6 gases and a recording interval of 1 value per minute
Dimensions (W x H x D)	47 x 130 x 44 mm
Weight	250 grm
Approvals	
ATEX	I M1 Ex ia I Ma, II 1G Ex ia IIC T4/T3 Ga
Measurement Performance Certificate	EN 50104 (2002) + A1 (2004): O_2 EN 45544: CO, CO_2 & H_2S EN 60079-29-1:2007: Methane, Propane, Nonane EN 50271:2001: Software and documentation
IEC	Ex ia I Ma Ex ia IIC T4/T3 Ga for MQG 01**
MED	Marine Equipment Directive 96/98/EC
CSA C US	Div.1, Class I, Groups A,B,C,D T4/T3 A/Ex ia IIC T4/T3 /Ga
Sensors	4 sensors preferred from the separate list of sensors

Name of Mfr. : Draeger

Multi-Gas Detectors

X-am® 8000

Measures up to seven toxic as well as flammable gases, vapours and oxygen all at once—either in pump or diffusion mode. Innovative signaling design and handy assistant functions ensure complete safety throughout the process. It can be connected with hoses of up to 45 mtr in length. An optional Bluetooth® module in the X-am 8000 enables measured values to be transferred automatically to the CSE Connect app. You can also use the app to create measurement reports.

In case of an alarm, the X-am 8000 alerts you with colourful alarm LEDs, a loud horn (100 dB (A) at a distance of 30 cm), and clearly palpable vibration.

Specification:

* Dimensions (H x W x D): 179 x 77 x 42 mm.
* Weight: Approx. 495 grm depending on sensor configuration, without strap and pump.
* Ingress protection class: IP67.
* Energy supply: Lithium-ion battery, rechargeable, inductive charging.

Approvals:

ATEX/IECEx: I M1, II 1G / Ex da ia I Ma, Ex da ia IIC T4 Ga
EAC : PO Ex da ia I Ma X / Ex da ia IIC T4 Ga X

cCSAus (Please contact Draeger regarding availability.):
Class I, Zone 0, AEx da ia IIC T4 Ga / Class II, Div 1, Gr. E, F, G T4 / C22.2 No. 152, ANSI-ISA 12.13.01:2000

CE labeling
MED/DNV GL (Please contact,Draeger regarding availability.)

Selectable device options when ordering;

* Integrated pump with pump adapter
* Bluetooth® module
* RFID transponder

Please contact your local supplier more about sensors and accessories of your necessary jobs.

33 05 83	Multi Gas Detector, Draeger X-am 8000	Set

Name of Mfr. Draeger

Single-Gas Detectors

Pac® 8500

A reliable and precise instrument even under the toughest conditions. The device can be equipped with a hydrogen-compensated CO sensor or a dual sensor. This gives you the option of measuring two gases at once: either H_2S with CO or O_2 with CO, and detect of even low concentrations – and all in one and the same handy device. You can take vol.% measurements of oxygen and ppm measurements of carbon monoxide simultaneously using just one sensor. The Pac 8500 also provides a data and event logger for logging concentrations. Data can be loaded on a PC via an interface and processed further there.

The shock-proof, chemical-resistant housing meets the requirements specified in the IP68 standard rating. In case of an alarm, it sets off an audible, visual and perceptible vibrating alarm. All of the versions of the Pac 8500 are equipped with extremely durable DraegerSensors® and a powerful battery.

Please contact your local supplier more about sensors and accessories of your necessary jobs.

Unit Per Set

CODE	33 05 84		
Model	Pac 8500		
Measuring Range	H_2S/CO 0–100 ppm H_2S 0-2,000 ppm CO	O_2/CO 0–25 Vol.% O_2 0–2,000 ppm CO	CO-H_2CP 0– 2,000 ppm
Alarm Thresholds A1/A2	5/10 ppm H_2S 30/60 ppm CO	19/23 Vol.% O_2 30/60 ppm CO	30/60 ppm
Battery Service Life	1 year (O_2 sensors min. 10 months)		
Approval	cCSAus, IECEx, ATEX, CE		
Dimension (WxHxD)	64 x 84 x 20 mm		
Weight	106 grm		

Name of Mfr.: Draeger

Bumptest and Calibration Station for Gas Detectors

An automated test system provides simple and intelligent testing and calibration of multigas detectors, driven by the most advanced technology available in any portable gas detector. The gas provided by the Bump Test Station flows through the dust and water filter to the sensor(s) confirming correct functionality of the gas detector ensuring compliance with country-specific requirements and regulations, standards, recommendations, etc. Once any gas detector is placed in this system, it can be tested, calibrated automatically.

MSA

Draeger

MSA GALAXY GX2 Automated Test System

Unit Per Set

Galaxy GX2 with EU plug for	No-Charging		Charging	
	CODE	Part No.	CODE	Part No.
ALTAIR, ALTAIR Pro, ALTAIR 2X	-	-	**33 06 06**	10128653
ALTAIR 4X	**33 06 04**	10128651	**33 06 15**	10128639
ALTAIR 5X, 5X-IR, 5X-PID	**33 06 05**	10128637	**33 06 36**	10128635

Name of Mfr.: MSA The Safety Company

Calibration Gas

* Type Model RP with RFID Tag.
* 58 Liter - 500 psig/34.5 Bar.
* Approval: EN12205, U.S. DOT-39 and Canadian TC-39M.
* Content: 1.45 Vol% Methane, 15.0 Vol% Oxygen, 60 ppm Carbon Monoxide, 20 ppm Hydrogen Sulfide .
* Balance: Nitrogen.

Unit Per Pc.

CODE	Description	Part No.	
		USA	Europe
33 06 39	Calibration gas, model RP, with RFID tag, 58 ltr for MSA Altair gas detector	10045035	10053022

Name of Mfr.: MSA The Safety Company

Draeger Bump Test Station X-am 1/2/5x00

Unit Per Pc.

CODE	Description	Item No.
33 06 60	Bump test station, Draeger X-am 1/2/5x00, without gas cylinder	8319131
33 06 67	Bump test station, Draeger X-am 1/2/5x00, including test gas cylinder 58 ltr	8319130

Note: Gas and concentration are freely selectable.
Name of Mfr.: Draeger

Calibration and Bump Testing

Draeger X-dock® 5300/6300/6600

The X-dock 5300 includes a master station including a module for a gas detection instrument from the X-am 1/2/5x00 or Pac family. It is immediately ready to use.

The X-dock 6300 and 6600 versions can be configured freely. They consist of a master station and can be expanded with up to 10 modules for X-am 1/2/5x00 and/or Pac gas detection instruments.

Insert the device, close the lid and remove it when the indicator goes "green" – a test with the X-dock is just that simple. It immediately detects all sensor combinations. Furthermore, the X-dock automatically tests and adjusts when all required test gases are connected.

The X-dock stores all of the relevant data and reads the collected information from the gas detection instruments for subsequent evaluations. All Draeger test gas cylinders are already stored in the database – entering the part number will automatically fill in the fields required for the gas configuration.

<X-dock Master Technical Data>

Protection Class	IP20
Power Supply	Via 24V (8321849 & 8321850) power supply or car adapter
Approvals	CE marking
Weight	1,500 grm
Dimensions	120 x 130 x 250 mm

Name of Mfr.: Draeger

Ready-to-use Versions

Unit Per Set

CODE	Type	Contents	Item No.
33 06 68	X-dock 5300 X-am 125	X-dock Master including X-am 125 module and power supply. 3 test gas connections. Limited to one module.	8321880
33 06 69	X-dock 5300 Pac	X-dock Master with Pac module and power supply. 3 test gas connections. Limited to one module.	8321881

Master Versions

Unit Per Pc.

CODE	Type	Contents	Item No.
33 06 70	X-dock 6300 Master	3 test gas connections. Can be expanded to 10 modules	8321900
33 06 71	X-dock 6600 Master	6 test gas connections. Can be expanded to 10 modules	8321901

Modular Versions

Unit Per Pc.

CODE	Type	Contents	Item No.
33 06 72	X-dock Module X-am 125	-	8321890
33 06 73	X-dock Module X-am 125+	allows charging X-am 125 devices	8321891

External Pump for Multi-gas Detectors

Draeger X-am® Pump

An external pump for the portable gas detectors Draeger X-am® 2500, 5000, and 5600 – designed for clearance measurement, for example in tanks and shafts. The X-am pump can reach the ambient atmosphere in inaccessible places – up to a distance of 45 m, e.g. in channels, shafts, or tank systems. The pump has an explosion protection approval for Ex zone 0.

The battery capacity lasts for three workweeks at 8 measurements per day (i.e. up to 20 hours of continuous operation).

Unit Per Set

CODE	**33 06 76**
Model	X-am pump
Item No.	83 27 100
Max. Hose Length	45 mtr
Air Flow Volume	0.4 ltr/min.
IP Protection Class	IP67
Dimensions	67 x 175 x 38 mm (Without X-am)
Weight	200 grm
Approvals	c_CSA_us, ATEX/IECEx (Zone 0 T4 and M1), DNV-GL, CE label

Name of Mfr.: Draeger

Fumigation Test Set

An easy method for testing containers and other spaces for the presence of fumigation agents. A specially developed measuring strategy allows for the detection of fumigants even when the chemical is unknown. To prevent goods from being damaged by animals such as insects and other disease carriers, containers are flooded with toxic or suffocating gases.

Fumigants are highly toxic and harmful to the health in many ways and the concentration of the fumigants must be measured. Thereby, it is important to check the Oxygen concentration in the container or other spaces. In only a few minutes, the concentration of the fumigants within the container can be determined, and depending on the concentration measured, the decision can be made whether the container or space can be entered or ventilated.

All that is needed are the corresponding tubes, the Drager accuroR hand pump, and the Drager bar probe. By comparing the color change within the detector tube to the printed scale, an estimation of the concentration can be made.

If the fumigant is known, the corresponding Drager-Tube is chosen and the measurement carried out as instructed.

Fumigation test set is composed of the following equipments:

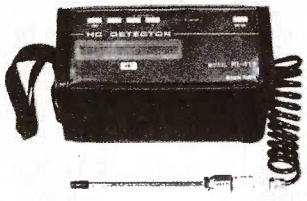
* Fumigation case #83 17 147.
* Gas detector pump #64 00 000.
* Bar probe 400 for the measurement of fumigants in the container #83 17 188.
* Extension hose for Draeger Accuro, I mtr #64 00 561.
* Adapter Draeger Simultest, consisting of cutting holder and adapter #64 00 090.
* Spare parts set for Draeger Accuro #64 00 220.

33 06 77	Fumigation test set, Draeger	Set

Name of Mfr.: Draeger

Combustible Gas Detectors

Required to be provided on board by SOLAS regulation 1983 amendments Chapter II, Part C, Regulation 53 and 62. For measuring and testing any area where combustible gases or vapors may have accumulated.



Portable Type

Unit Per Set

CODE	**33 05 37**		
Model	RX-8000		
Target Gas	Combustibles (i-C_4H_{10} or Ch_4 calibration)		Oxygen (O_2)
Detection principle	Non-Dispersive Infrared Ray		Galvanic cell
Detection Range (Increments)	0-100% LEL (0.5 vol%)	0-100vol% (0.5% LEL)	0-40% (0.1%)
Indication Accuracy	±5% vol%	±5% vol%	Range 0-25%: ±0.7% Range 26-40%: ±3.0%
Response Time	Within 30 seconds		Within 0 seconds
Sampling Method	Minimum 0.75L/min.		
Power Source	Lithium-ion battery (3 hours for a full charge) as standard AA Alkaline batteries x 3 pcs (as option)		
Sizes W×H×D	154 x 81 x 127 mm		
Weight	1 kgs		
Explosion Proof	Ex ia II C T4 Ga		
Approved	IECEx, ATEX, MED, complying to IEC60079-29-1, EN50104		
Name of Mfr.	Riken Keiki		

Unit Per Set

CODE	**33 05 57**	**33 05 58**
Model	P-508	P-510H
Measurable Gas	General combustible gas	
Principle	Catalytic combustion method	
Gas Sampling	Suction type by built in pump	
Measuring Range	0-20/0-100 % LEL	
Accuracy	Within ±5% of full scale	
Response	90% response Within 30 sec.	
Display	Analogue meter	
Alarm Level	20% LEL (Adjustable)	
Alarm Display	Buzzer	
Power Source	Manganese dry cell (R20P) x 2 pcs	Alkali dry cell (LR14) x 2 pcs
Dimensions	W:163 x H:137 x D:67 mm	
Weight (without sampling tube)	1.5 kgs	1.6 kgs
Safety Approval	id2G4	id3aG4 (Hydrogen explosion-proof)
Ability Approval	Explosion proof approved by NK *HK examination available on request	
Accessories	Sampling rod with W.S.filter, Leather case, Sampling tube (5m~max 20m)	
Name of Mfr.	Toka Seiki Co., Ltd.	

Halogen Gas Leak Detectors

A hand held detector able to detect all halogen refrigerants, CFC's(R-12),HCFC's(R-22), HFC's(R134a) enabling you to find leaks in your refrigeration system. Six-segment visual leak size indicator, audible alarm, cordless, and supplied in carrying case and spare sensing tip

Specifications

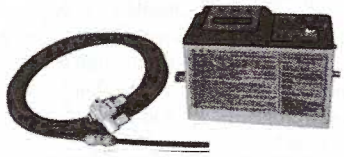
Model	Unirx-1A
Detection mode	Microprocessor controlled circuit with advanced digital signal processing.
Sensitivity	Better than 5ppm
Display	LED
Power Supply	3 V DC
Batteries	2 x C cell alkaline (LR-14/AM-2)
Battery Life	30 hrs normal operation
Size	229 x 57 x57 mm
Weight	560 grm
Approval	UL classified and CE approved
Name of Mfr.	Wilhelmsen Ships Service Co., Ltd.

33 05 35	Halogen gas leak detector Unirx-1A	Set

Portable Toxic Gas Meters

A portable toxic gas meter with the following features.

- Peak hold function enable to memorize maximum density.
- Alarm is two-staged type (AL1 and AL2).
- Auto-zero function can calibrate automatically at the time of power-on.
- Long-life sensor (2 years, 1 year warranty).



Measurable Gas

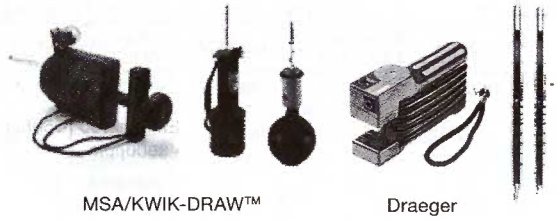
Model	TIP-HS	TIP-HY
Measurable Gas	H_2S (Hydrogen sulfide)	H_2 (Hydrogen gas)
Measuring range (ppm) Low/High range	0-20/0-100	0-400/0-2000
Resolution (ppm)	0.1	2
Alarm Level (ppm) AL1/AL2	5/25	100/500

Unit Per Set

CODE	33 05 55	33 05 56
Model	TIP-HS	TIP-HY
Measuring Gas	Hydrogen sulfide	Hydrogen gas
Sensing Principle	Potentiostatic electrolysis method	
Gas Collection Method	Suction type by built in pump	
Accuracy	Within ± 10% in full scale	
Response	90% response within 60 sec.	
Display	Digital display by LCD panel, Power lamp, Alarm lamp, Peak hold mode lamp	
Alarm Level	Two staged type (AL1/AL2: adjustable)	
Alarm Display	Alarm lamp and buzzer	
Power Source	Manganese dry cell (R20P) x 2 pcs	
Dimensions	W:163 x H:137 x D:67 mm	
Weight	1.3 kgs (without sampling tube)	
Safety Approval	Intrinsically safe: i3aG4	
Ability Approval	Explosion proof approved by NK	
Accessories	Air Filter, Leather case, Sampling tube (5m~max 20m)	
Name of Mfr.	Tokai Seiki Co., Ltd.	

Tube Type Gas Detectors

Measured value can be read-off directly and immediately via colour indication. It consists of sampler pump and tubes. A wide variety of tubes are available, applicable to the gas being tested. The most common tubes are discussed below.



MSA/KWIK-DRAW™ Draeger

Kitagawa Uniphos

33 05 40	Tube type gas detector, MSA/Kwik-Draw™ Model Kwik-Draw Deluxe	Pc.
33 05 53	Tube type gas detector, MSA/Kwik-Draw™ Model Gas Tester II H	Pc.
33 05 54	Tube type gas detector, MSA/Kwik-Draw™ Model Gas Tester I	Pc.
33 05 60	Tube type gas detector, Draeger Model Accuro	Pc.
33 16 51	Tube type gas detector, Kitagawa Model AP-20	Pc.
33 16 72	Tube type gas detector, Uniphos Model ASP-40	Pc.

Tubes for Gas Detectors

All tubes are sold 10 tubes each per pkt.

MSA/KWIK-DRAWTM tube gas detector

Unit Per Pkt.

CODE	Substance Measured	Applicable	Range of Measurement	Part No.
33 05 41	Nitrogen Dioxide	NO_2-0.5	0.5-50 ppm	D5085805
42	Ammonia	NH_3-2	2-6000 ppm	D5085845
43	Carbon Dioxide	CO_2-100	100-3,000 ppm	D5086814
33 16 02	Carbon Dioxide	CO_2-0.1%	0.1-0.7%	D5085817
33 05 44	Hydrogen Sulfide	H_2S-1	1-200ppm	D5085826
33 16 03	Hydrogen Sulfide	H_2S-100	100-4000 ppm	D5085827
33 38 09	Hydrogen Sulfide	H_2S-0.2%	0.2-7%	D7000003
33 05 45	Carbon Monoxide	CO-5	5-1.000ppm	D5085836
46	Chlorine	Cl_2-0.2	0.2-3ppm	D5085801
33 16 04	Petroleum Hydrocarbons	Hexane-20	20 - 1.000ppm	D5086832
33 05 47	Sulfur Dioxide	SO_2-1	0.5 - 25ppm	D5085803
33 16 05	Natural Gas	Natural Gas	From 0.5%	D5086846
33 05 48	Acetone	Acetone -100	100-1000ppm	D5086829
49	Trichloroethylene (Trichloroethene)	Tri-5	5-250ppm	D5085842
50	Toluene (Methyl benzene)	Tol.-5	5-1000ppm	D5085828

(to be continued)

Unit Per Pkt.

CODE	Substance Measured	Applicable	Range of Measurement	Part No.
33 16 06	Acetic Acid	Acetic-Acid-1	1 - 80 ppm	D5086821
07	Alcohol	Ethanol-100	Ethanol:100 - 3000ppm Methanol: 100-2350ppm Isopropanol: 200-5000ppm n-Propanol: 100-3000ppm	D5086818
08	Benzene	Benzene-0.25	0.25 - 10ppm	D5086852
09	Benzene	C_6H_6-1	1-100ppm	D5086835
10	Hexane	Hexane-20	20-3200ppm	D5086832
33 16 11	Mercaptans	Ethyl-Mercaptan-0.5	0.1 - 100ppm	D5086815
12	Methyl Bromide	Methyl-Bromide-2	2 - 100ppm	D5086845
13	Phenol	Phenol-1	1 - 25ppm	D5086838
14	Phosphine	PH3-0.1	0.1 - 100ppm	D5085830
15	Styrene	Styrene-10	10 - 300ppm	D5086819
33 16 16	Vinyl Chloride	VC-1	1-70ppm	D5085837
17	Xylene	Tol-5	5-2500ppm	D5085828
18	Hydrogen Cyanide	HCN-2	2 - 50ppm	D5085824
19	Hydrogen Chloride	HCL-1	1 - 50ppm	D5085846
20	Hydrogen Fluoride	HF-1	1 - 50ppm	D5086830
33 16 21	Phosgene	Phosgene-0.1	0.1-20ppm	D5085854
22	Chloroform	Trichloro-ethane-5	8-100ppm	D5086834
23	Carbon Disulfide	CS_2-2	2-300ppm	D5085834
24	Gasoline	Gasoline-30	30-6000ppm	D5085898
25	Propane	Propane-200	200-4200ppm	D5086831
33 16 85	Organic Gases	Qualitest	Qualitative	D5085810
33 38 10	Oxygen	Oxygen-3%	3-24%	D7086864

For Draeger tube gas detector

Sold 10 pieces per packet.

Unit Per Pkt.

CODE	Substance Measured	Range of Measurement	Part No.
33 05 61	Hydrocarbon 0.1%/c	0.1 to 1.3 Vol.-%	8103571
62	Ammonia 5/a	5 to 70 ppm	CH 20501
63	Carbon Dioxide 0.1%/a	0.5 to 6 Vol.-%	CH 23501
64	Carbon Dioxide 1%/a	1 to 20 Vol.-%	CH 25101
65	Carbon Monoxide 0.3%/b	0.3 to 7 Vol.-%	CH 29901
33 05 66	Natural Gas Test	Qualitative	CH 20001
67	Sulphur Dioxide 1/a	1 to 25 ppm	CH 31701
68	Carbon Monoxide 5/c	100 to 700 ppm	CH 25601
70	Carbon Dioxide 100/a	100 to 3,000 ppm	8101811
71	Carbon Dioxide 0.5%/a	0.5 to 10 Vol.-%	CH 31401

Other Test Tubes from Draeger

Sold 10 pieces per packet.

Unit Per Pkt.

CODE	Substance Measured	Range of Measurement	Part No.
33 16 26	Acetic Acid 5/a	5 to 80 ppm	6722101
27	Alcohol 25/a	Methanol–25 to 5000 ppm Ethanol-25 to 2000 ppm i-Propanol-50 to 4000 ppm n-Butanol-100 to 5000 ppm	8101631
28	Benzene 0.5/a	0.5 to 10 ppm	6728561
29	Benzene 0.5/c	0.5 to 10 ppm	8101841
30	Benzene 2/a	2 to 60 ppm	8101231
33 16 31	Carbon Monoxide 2/a	2 to 60 ppm	6733051
32	Carbon Monoxide 10/b	10 to 300 ppm/100 to 3000 ppm	CH20601
33	Hexane 100/a	100 to 3000 ppm	6728391
35	Hydrogen Sulphide 1/d	1 to 20 ppm/10 to 200 ppm	8101831
36	Hydrogen Sulphide 100/a	100 to 2000 ppm	CH29101
33 16 37	Mercaptan 0.1/a	0.1 to 2.5 ppm/3 to15 ppm	8103281
38	Mercaptan 0.5/a	0.5 to 5 ppm	6728981
39	Methyl Acrylate 5/a	5 to 200 ppm	6728161
40	Methyl Bromide 5/b	5 to 50 ppm	CH27301
41	Oxygen 5%/C	5 to 23 Vol.%	8103261
33 16 42	Petroleum Hydrocarbon 100/a	100 to 2500 ppm	6730201
43	Phenol1/b	1 to 20 ppm	8101641
44	Phosphine 0.1/a	0.1 to 4 ppm	CH31101
45	Styrene 10/b	10 to 250 ppm	6733141
46	Sulphuric Acid 1/a	1 to 5 mg/m³	6728781
33 16 47	Sulphur Dioxide 0.5/a	1 to 25 ppm	6728491
48	Vinyl Chloride 0.5/b	0.5 to 5 ppm/5 to 30 ppm	8101721
49	Toluene 5/b	5 to 80 ppm/50 to 300 ppm	8101661
50	Xylene 10/a	10 to 400 ppm	6733161

For Kitagawa tube gas detector

Unit Per Pkt.

CODE	Substance Measured	Range of Measurement	Part No.	Q'ty/ Pkt
33 16 52	Acetylene	50 to 1,000 ppm	101S	10
53	Ammonia	50 to 900 ppm	105SB	10
33 38 13	Benzene	0.2 to 15 ppm	118SD	10
12	Benzene	2 to 50 ppm	118SC	10
16	Carbon Dioxide	0.05 to 1.0%	126SB	10
33 16 54	Carbon Dioxide	0.1 to 2.6%	126SA	10
33 38 17	Carbon Dioxide	1 to 20%	126SH	10
33 16 55	Carbon Disulphide	30 to 500 ppm	141SA	2×5
33 38 11	Carbon Monoxide	1 to 50 ppm	106SC	10
33 16 56	Carbon Monoxide	20 to 1,000 ppm	106SA	10
33 16 57	Chlorine	0.5 to 10.0 ppm	109SB	10
58	Chloroform (Trichloromethane)	70 to 500 ppm	152S	2×5
59	Ethylene Oxide	0.01 to 1.8%	122SA	10
60	Hydrogen Chloride	2 to 20 ppm	173SB	2×5
61	Hydrogen Cyanide	2 to 100 ppm	112SB	10

(to be continued)

Unit Per Pkt.

CODE	Substance Measured	Range of Measurement	Part No.	Q'ty/ Pkt
33 16 62	Hydrogen Fluoride	0.5 to 30 ppm	156S	10
63	Hydrogen Selenide	5 to 600 ppm	167S	10
33 38 14	Hydrogen Sulphide	1 to 30 ppm	120SD	10
33 16 64	Hydrogen Sulphide	3 to 150 ppm	120SB	10
33 38 15	Hydrogen Sulphide	50 to 1000 ppm	120SF	10
33 16 65	Methyl Alcohol (Methanol)	0.05 to 6.0%	119SA	10
66	Methyl Amine	1 to 20 ppm	227S	10
67	Nitric Acid Vapour	2 to 20 ppm	233S	10
68	Nitrogen Oxide and Dioxide	NO:10to300 ppm NO_2:1to40 ppm	174A	5
69	Phosgene (Carbonyl Chloride)	0.5 to 20 ppm	146S	10
33 16 70	Sulphur Dioxide	1 to 60 ppm	103SD	10
71	Toluene (Methyl Benzene)	10 to 500 ppm	124SA	10
33 38 18	Vinyl Chloride	0.05 to 1.0%	132SA	10

For Uniphos tube gas detector

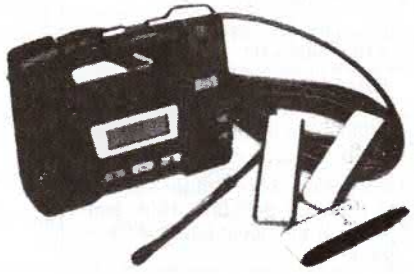
Unit Per Pkt.

CODE	Substance Measured	Range of Measurement	Part No.	Q'ty/ Pkt
33 38 04	Acetic Acid	2.5 - 50 ppm	SAA-2	10
05	Aceton	50 - 4,000 ppm	SAC-5	10
08	Acetylene	100 – 5,000 ppm	SAL-5	10
33 16 81	Ammonia	2.5 to 200 ppm	SAM-3	10
78	Benzene	0.1 to 75 ppm	SBE-2M	10
33 16 84	Breath Alcohol Testers	0 to 0.5 BAC	CF000165	10
73	Carbon Dioxide	150 to 10,000 ppm	SCD-5	10
97	Carbon Disulfide	1.25 - 100 ppm	SCS-2	10
76	Carbon Monoxide	2.5 to 200 ppm	SCO-3	10
96	Chloroform	10 - 100 ppm	SCF-3	10
33 38 06	Ethanol	0.05 - 5%	SET-7	10
07	Ethylene Oxide	0.1 - 10 ppm	SEO-1	10
33 16 98	Gasoline	300 - 6,000 ppm	SGA-6L	10
93	Hydrogen Chloride	1 - 30 ppm	SHC-1	10
92	Hydrogen Cyanide	1.25 - 100ppm	SHN-2	10
33 16 94	Hydrogen Fluoride	0.5 - 30 ppm	SHF-2	10
75	Hydrogen Sulphide	0.25 to 8%	SHS-7	10
33 38 02	Mercaptans	0.1 - 8 ppm	SBM-1	10
33 16 74	Mercaptans	0.5 to 40 ppm	SEM-2M	10
33 38 03	Methyl Bromide	0.5 - 80 ppm	SMB-2M	5
33 38 01	Nitric Acid	1 - 20 ppm	SNA-2M	10
33 16 83	Nitrogen Dioxide	0.5 to 30 ppm	SND-2	10
86	Nitrogen Oxides	0.25 - 30 ppm	SNO-2M	10
77	Oxygen	3 to 24%	SOX-9M	5
82	Petroleum Hydrocarbons	10 to 1,200 ppm	SHE-5L	10
33 16 87	Phenol	1 - 25 ppm	SPE-2M	10
95	Phosgene	0.1 - 10 ppm	SPG-1	10
88	Phosphine	0.05 - 20 ppm	SPH-1	10
89	Styrene	15 - 500 ppm	SST-4L	10
99	Sulfuric Acid	0.5 - 5mg/m³	SSA-1L	10
33 16 79	Sulphur Dioxide	0.25 to 20 ppm	SSD-1	10
80	Toluene	5 to 600 ppm	STO-4M	10
90	Vinyl Chloride	1 - 20 ppm	SVC¬2M	10
91	Xylene	12.5 - 2,000 ppm	SXY-4	10

Tube Type Gas Detectors

All-in-one Automatic Tube Pump

The automatic tube pump is the first all-in-one solution designed for measurements with all Dräger short-term tubes and for sampling tubes and systems. Ease of operation and a high degree of reliability compliment the measurement and sampling of gases, vapours and aerosols.



Specification

Short-term Measurements	Using Dräger short-term tubes Number of strokes: adjustable, 1 to 199 strokes Stroke volume: 100 mL
Sample Taking	Flow rate range: 0.1 to 2.0 L/min Resolution: 0.1 to 1.0 L/min: 0.1 L/min ±5% Resolution: 1.0 to 2.0 L/min: 0.2 L/min ±5% Sampling time: adjustable, up to 12 hours, depending on flow rate Resolution in steps of 15 minutes (default) or 1 minute
Display	Two Parts: Segment and matrix
Use of Extension Hose	Up to 30 mtr (98 ft.)
Power Supply	Rechargeable Battery NiMH, T4: 7.2 V, 1,500 mAh (charging time < 4 hours) Alkaline Battery Pack, T4: 6 AA cells, (see battery pack label for approved battery types)
Battery Capacity at 25°C (77°F)	Dräger short-term tubes: >1,000 strokes Sample taking: up to 12 hours, depending on adjusted flow rate
Approvals	ATEX: Ex ia IIC T4 Ga Ex ia I Ma I M 1 / II 1G MED UL: Class I, Div. 1, Group A, B, C, D Class II, Div. 1, Group F, G 5°C ≤ Ta ≤ + 40°C Temp. Code T4 Exia cUL: Class I, Div. 1, Group A, B, C, D Class II, Div. 1, Group F, G 5°C ≤ Ta ≤ + 40°C Temp. Code T4 Exia IECEx: Ex ia IIC T4 Ga CE-mark: according to 2004/108 EC and 94/9/EC
Dimensions (H x W x D)	Approx. 175 x 230 x 108 mm (7" x 9" x 4.25")
Weight (w/o battery pack)	Approx. 1.6 kgs (3.5 lbs)

Name of Mfr. Draeger

CODE	Description	No.	Unit
33 05 72	Tube type gas detector, Draeger Model X-act 5000, without power supply	4523500	Pc.
73	Rechargeable battery NiMH, T4	4523520	Pc.
74	Alkaline battery pack, T4 without battery (6 required)	4523525	Pc.
75	Alkaline battery	8103594	Pc.
76	Charging accessories, 110 – 240 VAC	4523545	Set
77	Extension hose, Dräger accuro & Dräger X-act 5000, 10 m, incl. adapter for tubes, adapter for hose	6400078	Set
78	Extension hose, Dräger accuro & Dräger X-act 5000, 15 m, incl. adapter for tubes, adapter for hose	6400079	Set
79	Extension hose, Dräger X-act 5000, 30 m, incl. adapter for tubes, adapter for hose	6401175	Set

Combination Gas Detectors

GMI Gasurveyor 487R

Designed for **LNG carriers**.

The Gasurveyor 487 is an advanced portable gas detector with an integral pump, and has selectable dual mode operation for Confined Space Monitor (CSM) or Combustible Gas Indicator (CGI).

It provides the ranges 0-100% LEL methane, 0-5% CO_2, 0 to 25 O_2 and 0-1,000 ppm CO. The instrument provides audible and visual alarms, datalogging and automatic data transfer as standard.

Unit Per Set

CODE	33 05 86
Model	Gasurveyor 487R
Measuring Range	Flammable gas : 0 - 100% LEL 0 - 100% Vol in inert or air Carbon Dioxide (CO_2) : 0 - 5% Vol Oxygen (O_2) : 0 - 25% Vol Carbon Monoxide (CO): 0-1,000 ppm
Display	LCD with automatic backlighting
Sampling System	Integral pump with flow-fail sensor; sample path protected by dust and water filters and auto pump switch off.
Battery Life	10 hours minimum
Protection	Rugged carbon/polypropylene case for marine use
Certification	Ex ias IIB T4, UL Class 1 Group A, B, C, D EC MED type approved, CE
Dimensions	180 x 95 x 105 mm
Weight	Approx. 1.3 kgs
Accessories	Standard probes, Sample line, Dust and Water Filters. Conductive sampling line available. On-board calibration software available.
Name of Mfr.	Gas Measurement Instruments Ltd.

GMI Gasurveyor 11-500

The GMI Gasurveyor 11-500 is designed for monitoring in ships with IG Systems. It is suitable for combustible gas monitoring in inert and air atmospheres.

Unit Per Set

CODE	33 05 87
Model	Gasurveyor 11-500
Measuring Range	Flammable gas : 0 - 100% LEL 0 - 100% Vol in inert or air Oxygen (O_2) : 0 - 25% Vol
Display	LCD with automatic backlighting
Default Alarm Point	LEL - 20%
Sampling System	Integral pump with flow-fail sensor; sample path protected by hydrophobic filter and auto pump switch off.
Battery Life	Rechargeable : 8 hours minimum Alkaline Cells : In excess of 15 hours
Protection	Rugged carbon/polypropylene case for marine use
Approvals	EEx ias IIC T4, UL Class 1 Group A, B, C and D EC MED type approved, CE
Dimensions	180 x 90 x 105 mm
Weight	Approx. 1.3 kgs
Accessories	Standard probes, Sample line, Dust and Water Filters. Conductive sampling line available. On-board calibration software available.
Name of Mfr.	Gas Measurement Instruments Ltd.

Portable Gas Detector "V!SA"

A compact personal monitor with the facility to detect up to five gases: 0-100% LEL, 0-25% O_2 and three toxic gases. Ultra loud audible and bright visual alarms warn the user of rising gas levels. Single button operation makes this the easiest to use personal gas monitor on the market.

The unique combination of pump and diffusion sampling allows for pre-entry checks and continuous monitoring within enclosed spaces.

The rugged design and powerful alarms make it an ideal partner in arduous conditions.

Unit Per Set

CODE	33 05 88	33 05 89
Model	V!SA	
Power Supply	Alkaline Battery	Rechargeable Battery
Measuring Range	0-100% LEL (Methane, Butane, Pentane, Propane and others) 0-25% Oxygen (O_2), 0-100 ppm Hydrogen Sulphide (H_2S), 0-1,000 ppm Carbon Monoxide (CO), 0-30 ppm Sulphur Dioxide (SO_2), 0-10 ppm Chlorine (CL_2) 0-300 ppm Nitric Oxide (NO), 0-20 ppm Nitrogen Dioxide (NO_2)	

(to be continued)

Unit Per Set

CODE	33 05 88	33 05 89
Alarm Setting	Instant alarms and Time Weighted Averaging available on all ranges. >100 dB(A) audible alarm	
Expected Sensor Life	Flammable : 5 years, Oxygen : 2 years, Toxic : 2 years	
Battery Life	Rechargeable: 20 hours	Alkaline Cells: 12 hours
Approvals	EEx iad IIC T4, UL Class 1 Group A, B, C, D, EC MED type approved, CE	
Dimensions	130 x 75 x 35 mm	
Weight	0.4 kgs	
Accessories	VISA Calibration Software available for on-board calibration, record keeping and certificate printing.	
Name of Mfr.	Gas Measurement Instruments Ltd.	

Combustible Gas Detectors

GMI Gasurveyor 3-500

The GMI Gasurveyor 3-500 is designed for monitoring in ships with IG Systems. It is suitable for combustible gas monitoring in inert and air atmospheres.

Unit Per Set

CODE	33 05 90
Model	Gasurveyor 3-500
Measuring Range	Flammable gas: 0 - 100% LEL 0 - 100% Vol in inert or air
Display	LCD with automatic backlighting
Default Alarm Point	LEL - 20%
Sampling System	Integral pump with flow-fail sensor; sample path protected by hydrophobic filter and auto pump switch off.
Power Supply	4 'D' size alkaline cells or rechargeable battery pack
Battery Life	Rechargeable: 8 hours minimum Alkaline Cells: In excess of 15 hours
Protection	Rugged carbon/polypropylene case for marine use
Approvals	EEx ias IIC T4, UL Class 1 Group A, B, C and D EC MED type approved, CE
Dimensions	180 x 90 x 105 mm
Weight	Approx. 1.3 kgs
Accessories	Standard probes, Sample line, Dust and Water Filters. Conductive sampling line available. On-board calibration software available.
Name of Mfr.	Gas Measurement Instruments Ltd.

Personal PID Benzene Detectors

A smallest, lightest, most sensitive personal PID (photoionisation detection) monitor for hazardous and toxic compounds including Benzene. When worker exposure exceeds pre-set limits in environment, it's audible, vibrating and flashing LED alarms alert you to the gases present. Readings are displayed on its bright, back-lit LCD display with selectable data logging time.

Unit Per Set

CODE	33 05 95
Model	Cub Personal PID Benzene Detector
Sensitivity	0.001ppm (isobutylene equivalent) *Model dependent 0.002 mg/m³ (isobutylene equivalent) *Model dependent
Accuracy	±5% display reading +one digit
Approvals	Europe: ATEX:CE, ExII 1G, ExiaIICT4; -20°C ≤ Ta ≤ 55°C IECEx: ExiaIICT4-20°C ≤ Ta ≤ 55°C China: ExiaIICT4-20°C ≤ Ta ≤ 55°C US and Canadian approvals: Class I, II and III, Division I, Hazardous (Classified) Locations
Battery life	Battery life up to 16 hours
Calibration	2 point calibration via docking station
Alarm	LEDs,audio and vibrate Sounder 86dB @ 300mm Pre-programmed TWA & STEL. Work exposure alarm levels on all models.
Protection	Designed to IP65 (heavy rain)
Weight & Dimensions	111 grm (3.91 oz) 61 x 66 x 59 mm (2.4 x 2.6 x 2.3")

Name of Mfr.: Atlas Marine Services Pte Ltd.

Volatile Organic Compounds Detectors

Designed to replace all range of gas tubes, it is a revolutionary handheld PID instrument for rapid, accurate detection of volatile organic compounds (VOCs) with exceptional resistance to humidity and contamination. Fastest response time of just 2 seconds and is as quick to clear down. It is simple and, enables one handed operation. Its rugged design and protective, removable rubber boot withstand the harshest environments. Inexpensive consumables and parts, and 5 years warranty when instrument is registered online.

Unit Per Set

CODE	33 05 99
Model	PhoCheck Tiger
Range	Detect up to 480 VOC
Maximum Reading	20,000 ppm or 20,000 mg/m³ (gas dependent)
Accuracy	±5% display reading ± one digit
Intrinsically Safe Approvals	Tamb = - 15°C ≤Ta ≤+45°C (w/lithium ion battery pack) Tamb = - 15°C ≤Ta ≤+45°C (w/alkaline battery pack) ITS09ATEX26890X IECEx ITS 10.0036X 3193491 conforms to UL Std. 913, 61010-1 & Certified to CAN/CSA Std. C22.2 No. 61010-1

(to be continued)

Unit Per Set

CODE	33 05 99
Battery Life	Li-ion: life up to 24 hours continual use Alkaline: (Duracell Procell MN 1500) life up to 8.5 hours continual use
Calibration	Standard calibration 100ppm isobutylene Custom calibration capability
Alarm	Flashing LED and 95 dBA at 300mm (12") audible sounder Selectable vibrating alarm Pre-programmed TWA and STE Pre-programmed with over 480 gases
Protection	Designed to IP65 (heavy rain), CE 1180, EMC tested to EN61326-1:2006, EN50270:2006 & CFR 47:2008 Class A
Weight & Dimensions	Instrument without probe: Width: 340 × Height: 90 × Depth: 60 mm Standard case: W:420 × H:320 × D:97 mm Instrument weight 0.72 kgs, Packed weight: 5.5kgs (12lb)

Name of Mfr.: Atlas Marine Services Pte Ltd.

Carbon Monoxide Gas Alarm

A device for detecting the "Silent Killer", Carbon Monoxide, which is released when fuels are burnt inefficiently. Raising loud 85db alarm and flashing RED LED light to alert when detecting the CO in the room. This alarm can be mounted on the ceiling or on a wall near the ceiling. Battery operated, five year lifetime, and chirp sounds and indicator light notify you the end of battery lifetime. This alarm comes with calibrated test gas kit to enable the unit to be inclusively tested on installation and annually over the expected life. Certified to BS EN 50291. Battery included. Hard wire version is also available.

Unit Per Set

CODE	33 10 12
Alarm Sound	85 dB
Alarm Light	LED × 3
Size	112 mm diam × 40 mm thick
Weight	130 grm

Name of Mfr.: Gas Safe Europe Ltd.

CO Alarm Test Gas Kit

A calibrated test gas kit for sensor inclusively testing Carbon Monoxide (CO) alarms manufacturered to BS EN 50291(Europe) and UL 2034(USA). Low cost, safe and easy to use, this test kit ensures CO alarm sensors are still sensing CO. Sensors have a limited and underminable life and can be effected by airborne pollutants such a cigarette smoke, cooking fumes etc. Each kit contains a patented enclosure shroud which holds the test gas at the required level for a fixed time to facilitate a field sensor test. It contains sufficient test gas to carry out 11 tests per can.

33 10 13	CO alarm test kit, 11 tests/can, 400ml	Can

Name of Mfr.: Gas Safe Europe Ltd.

Test Gas for Gas Detector

For testing the accuracy of gas detectors. There are various type of test gases according to the type of gas, manufacturer of the gas detectors.

When ordering, please specify the following points.

How to order : 33 - 05 -

Test gas for gas detector, TYPE of GAS DETECTOR, MFR'S NAME, MODEL NAME, COMPOSITION of GAS, GAS DENSITY

Example of Combustible Gases and Toxic Gases

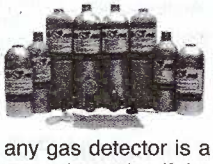
Combustible Gases

Gases		Molecular Formula (Chemical Formula)	Explosion Range (Vol%)
Acetone	アセトン	C_3H_6O	2.1～13.0
Acetylene	アセチレン	C_2H_2	1.5～100
Butyl Acetate	酢酸ブチル	$C_6H_{12}O_2$	1.2～7.5
Butylene	ブチレン	C_4H_8	1.7～9.0
City Gas	都市ガス	-	5～
Ethanol	エタノール	C_2H_5OH	3.3～19
Ethyl Acetate	酢酸エチル	$C_4H_8O_2$	2.0～11.5
Ethylene	エチレン	C_2H_4	2.7～34
Gasoline	ガソリン	-	1.4～7.6
Hydrogen	水素	H_2	4.0～75.6
i-Butane	ｉ－ブタン	C_4H_{10}	1.8～8.0
Kerosene	灯油	-	0.8～
Liquefied Propane Gas	ＬＰＧ	-	2～12
Methane	メタン	CH_4	5.0～15.0
Methanol	メタノール	CH_3OH	5.5～44
Methyl Ethyl Ketone	メチルエチルケトン	$CH_3COC_2H_5$	1.8～11.5
n-Butane	ｎ－ブタン	C_4H_{10}	1.5～7.8
n-Pentane	ｎ－パンタン	C_5H_{12}	1.4～7.8
O-Xylene	Ｏ－キシレン	$C_6H_4(CH_3)_2$	1.0～6.0
Propane	プロパン	C_3H_8	2.1～9.5
Propylene	プロピレン	C_3H_6	2.0～11.7
Toluene	トルエン	$C_6H_5CH_3$	1.2～7.0

Toxic Gases

Gases		Molecular Formula (Chemical Formula)	Explosion Range (Vol%)
Acetaldehyde	アセトアルデヒド	CH_3CHO	4.0～57
Acrylonitrile	アクリロニトリル	CH_2CHCN	2.8～28
Ammonia	アンモニア	NH_3	15～28
Arsine	アルシン	AsH_3	0.8～98
Benzene	ベンゼン	C_6H_6	1.2～8.0
Butadiene	ブタジエン	C_4H_6	2.0～11.5
Carbon Monoxide	一酸化炭素	CO	12.5～74
Chlorine	塩素	Cl_2	-
Diborane	ジボラン	B_2H_6	0.8～88
Ethylene Oxide	酸化エチレン	CH_2CH_2O	3.0～100
Germane	ゲルマン	GeH_4	0.5～50
Hydrogen Chloride	塩化水素	HCl	-
Hydrogen Cyanide	シアン化水素	HCN	5.4～46.6
Hydrogen Sulfide	硫化水素	H_2S	4.8～45.5
Methyl Bromide	臭化メチル	CH_3Br	10.0～15.0
n-Hexane	ｎ－ヘキサン	C_6H_{14}	1.2～7.5
Phosgene	ホスゲン	$COCl_2$	-
Phosphine	ホスフィン	PH_3	1.3～9.8
Silane	シラン	SiH_4	0.8～98
Sulfar Dioxide	二酸化硫黄	SO_2	-
Vinylchloride	塩化ビニル	CH_2CHCl	3.8～29.3

Span Gases



Span Gas for all types of gas detectors and analyzer. To help comply with standards, various types of calibration gas cylinders are available for your usage.

The most important accessory to any gas detector is a calibration kit, which provides the means to determine if the instrument is working properly. When using gas detection equipment, it is necessary to calibrate the equipment on a regular basis to guarantee accurate results. According to some regulations and standards, one must test the gas detector prior to each use with a suitable test gas.

Can Specifications

Type	20L	34L	58L	110L
Height × Diam	230×78mm	280×74mm	360×88mm	360×88mm
Weight in kgs	0.35	0.7	0.8	0.8
Material	Aluminum Alloy			
Filling Pressure	300 PSI	500 PSI	500 PSI	1000 PSI
Usable Gas	20 ltr	34 ltr	58 ltr	110 ltr
Connection	7/16" - 28 NS/2 Male	5/8" - 18 UNF (C-10)		
Filling Tolerance	5-99PPM ±10% > 100PPM ±5%	5-49 PPM ±10%, 50-500PPM ±5% > 500PPM ±2%		
Trans-portation	UN 1956 Class 2			
Mixture	Flammable, non reactive and limited range of reactive gases	Flammable, non reactive and reactive gases		

Type of Mixture Gases

A span gas comes in aluminum alloy cylinder. Please specify kind of gas with capacity of cylinder you request selecting from standard ranges in the following table. If other Mixtures are required, please specify Gas Type and Concentration.

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 15 11 12 13 14	0.75% Vol (50%LEL) Iso-Butane (C_4H_{10}) Balance Air	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 15 16 17 18	8% Butane (C_4H_{10}) Balance Nitrogen (N_2)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 19 20 21 22	99.5% Pure Butane (C_4H_{10})	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 23 24 25 26	50 PPM Carbon Monoxide (CO) Balance Air	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 27 28 29 30	100 PPM Carbon Monoxide (CO) Balance Air	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 31 32 33 34	250 PPM Carbon Monoxide Balance Air(CO)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 35 36 37 38	5% Carbon Dioxide (CO_2) Balance Nitrogen (N_2)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 39 40 41 42	25 PPM Hydrogen Sulphide (H_2S) Balance Nitrogen (N_2)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 43 44 45 46	50 PPM Hydrogen Sulphide (H_2S) Balance Nitrogen (N_2)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can

(to be continued)

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 15 47 48 49 50	2.5% Vol (50%LEL) Methane (CH_4) Balance Air	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 51 52 53 54	99.95% Pure Methane (CH_4)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 55 56 57 58	99.995% Pure Nitrogen (N_2)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 59 60 61 62	2.1% Oxygen (O_2) Balance Nitrogen (N_2)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 63 64 65 66	5.5% Oxygen (O_2) Balance Nitrogen (N_2)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 67 68 69 70	0.7% Vol (50%LEL) Pentane (C_5H_{12}) Balance Air	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 71 72 73 74	1.1% Vol (50%LEL) Propane (C_3H_8) Balance Air	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 75 76 77 78	99.95% Pure Propane (C_3H_8)	in 20 ltr can in 34 ltr can in 58 ltr can in 110 ltr can
85 15 07	100 PPM Isobutylene Balance Air	in 110 ltr can
85 15 08	216ppm Ethanol Balance Nitrogen 0.038% BRAC Equivalent for Alcohol Meter Test Gas	in 110 ltr can
85 15 09	2% Vol (50% LEL) Hydrogen Balance Air	in 110 ltr can

4 Gas Mixtures

Very reactive gas mixture only available in 34, 58, 100 ltr cylinders.

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 15 81 82 83	2.5% Methane (CH_4), 50PPM Carbon Monoxide (CO), 25PPM Hydrogen Sulphide (H_2S), 12% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can
85 15 84 85 86	2.5% Methane (CH_4), 100PPM Carbon Monoxide (CO), 25PPM Hydrogen Sulphide (H_2S), 20.9% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can
85 15 87 88 89	2.5% Methane (CH_4), 100PPM Carbon Monoxide (CO), 40 PPM Hydrogen Sulphide (H_2S), 15% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can
85 15 90 91 92	2.5% Methane (CH_4), 100PPM Carbon Monoxide (CO), 25 PPM Hydrogen Sulphide (H_2S), 18% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can

(to be continued)

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 15 10	0.9% (50%LEL) Isobutane, 50 PPM Carbon Monoxide, 25 PPM Hydrogen Sulphide, 12% Oxygen Balance Nitrogen	in 58 ltr can

Name of Mfr.: Atlas Marine Services Pte. Ltd.

Regulators and Accessories

Fixed Flow Regulators for 34 ltr, 58 ltr, and 110 ltr

Available for portable detectors with no pump or hand pump, also ideal for fixed head detectors. Flow rate 0.3 litres/minute, 0.5 litres/minute or 1.0 litres/minute.

Unit Per Pc.

CODE	Flow Rate	CODE	Flow Rate
85 15 93	0.3 ltr/min	85 15 95	1.0 ltr/min
94	0.5 ltr/min		

Demand Flow Regulators for 34 ltr, 58 ltr and 110 ltr

Special Designed for gas detectors with built-in electric sample pump. Important gas is supplied at "Sample pump" normal working flow rate, hence ensures testing and calibration are similar to true operation conditions.

85 15 96	Regulator, demand flow, for 34 ltr, 58 ltr and 110 ltr	Pc.

20 ltr Cylinder Regulators

Design for 20 litre can's of gases to provide varying from 0.25 to 1.5 litre/min.

85 15 97	Regulator for 20 ltr cylinder	Pc.

Spray Nozzles for quick testing, bump testing or filling sample bags

For use with 20 ltr cans only.

85 15 98	Spray nozzle for quick testing, bump testing or filling sample bags	Pc.

Gas Sample Bags with Clip Valve

Sample Bags are available too for use with fixed equipment or pumped instrument.

85 15 99	Gas sample bag with clip valve	Pc.

Mixtures Gases from Fastcalgas

Unit Per Btl.

CODE	Gas Description	Fastcalgas No.	Cylinder Size Ltr
	Ammonia (NH_3)		
85 17 01	25 ppm NH_3/Air	FCG22000	58
	Butane (C_4H_{10})		
85 17 02	0.9% (50% LEL) C_4H_{10}/Air	FCG23000	103
03	0.9% (50% LEL) C_4H_{10}/N_2	FCG23005	103
04	8% C_4H_{10}/N_2	FCG23010	34
05	8% C_4H_{10}/N_2	FCG23015	16
06	8% C_4H_{10}, 13.8% CO_2/N_2	FCG23020	34
07	8% C_4H_{10}, 13.8% CO_2/N_2	FCG23025	16
	Iso-Butane (C_4H_{10})		
85 17 08	0.9% (50% LEL) i-C_4H_{10}/Air	FCG24000	34
09	0.9% (50% LEL) i-C_4H_{10}/Air	FCG24010	103
10	10% i-C_4H_{10}/N_2	FCG24005	34
11	10% i-C_4H_{10}/N_2	FCG24060	18
	Carbon Dioxie (CO_2)		
85 17 12	1% CO_2/Air	FCG25000	103
13	15% CO_2/Air	FCG25005	103
14	15% CO_2/N_2	FCG25010	103
	Carbon Monoxide (CO)		
85 17 15	50 ppm CO/Air	FCG26000	103
16	60 ppm CO/Air	FCG26005	103
17	100 ppm CO/N_2	FCG26010	34
	Ehtanol (C_2H_5OH)		
85 17 18	191ppm C_2H_5OH/N_2	FCG33000	34
	Hydrogen Sulphide (H_2S)		
85 17 19	10 ppm H_2S/N_2	FCG27000	58
20	25 ppm H_2S/N_2	FCG27005	58
21	40 ppm H_2S/N_2	FCG27010	58
22	50 ppm H_2S/N_2	FCG27015	58
	Nitrogen (N_2)		
85 17 23	Nitrogen (99.99% v/v)	FCG28000	34
24	Nitrogen (99.99% v/v)	FCG28010	103
	Oxygen (O_2)		
85 17 25	2% O_2/N_2	FCG29000	103
26	5% O_2/N_2	FCG29005	103
27	10% O_2/N_2	FCG29010	103
	Methane (CH_4)		
85 17 28	2% (40% LEL) CH_4/Air	FCG30000	34
29	2% (40% LEL) CH_4/Air	FCG30110	103
30	2.5% (50% LEL) CH_4/Air	FCG30005	34
31	2.5% (50% LEL) CH_4/Air	FCG30125	103
32	1.45% CH_4, 15% O_2/N_2	FCG30010	103
33	2.5% CH_4, 17% O_2/N_2	FCG30015	34
34	2.5% CH_4, 17% O_2/N_2	FCG30135	103
35	50% CH_4/N_2	FCG30020	34
	Pentane (C_5H_{12})		
85 17 36	0.75% (50% LEL) C_5H_{12}/Air	FCG31000	103
37	0.75% C_5H_{12}, 15% O_2/N_2	FCG31005	34
38	0.75% C_5H_{12}, 15% O_2/N_2	FCG31010	103
	Propane (C_3H_8)		
85 17 39	0.55% (25% LEL) C_3H_8/Air	FCG32000	103
40	1.1% (50% LEL) C_3H_8/Air	FCG32005	103
	Zero Air		
85 17 41	20.8% O_2/N_2	FCG29015	103
	Regulators		
85 17 42	For use with 34 ltr steel cylinder	FCG00713	-
43	For use with 34 ltr, 58 ltr Aluminium cylinder and 103 ltr steel cylinder	FCG00715	-

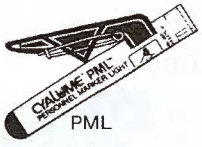
4 Gas Mixtures for Calibration from Fastcalgas

Unit Per Btl.

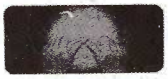
CODE	Composed of				Fastcalgas No.	Cylinder Size Ltr
	Methane (CH_4)	Hydrogen Sulfide (H_2S)	Carbon Monoxide (CO)	Oxygen Nitrogen (O_2/N_2)		
85 17 46	1.45%	10 ppm	-	15%	FCG21000	58
47	1.45%	10 ppm	300 ppm	15%	FCG21005	58
48	1.45%	20 ppm	60 ppm	15%	FCG21020	58
49	2.2%	25 ppm	100 ppm	18%	FCG21045	34
50	2.2%	40 ppm	100 ppm	15%	FCG21055	34
85 17 51	2.5%	10 ppm	50 ppm	18%	FCG21010	58
52	2.5%	15 ppm	100 ppm	18%	FCG21015	58
53	2.5%	25 ppm	50 ppm	12%	FCG21030	58
54	2.5%	25 ppm	50 ppm	20.9%	FCG21035	58
55	2.5%	25 ppm	100 ppm	18%	FCG21050	58
85 17 56	2.5%	40 ppm	100 ppm	15%	FCG21060	34
57	Iso-butane ($i\text{-}C_4H_{10}$) 0.9%	25 ppm	50 ppm	12%	FCG21025	34
58	Propane (C_3H_8) 1.1%	25 ppm	100 ppm	19%	FCG21040	58

Cyalume Lights

Compact, windproof, waterproof lights. The personal marker light PML is designed for use with life jackets, life vests and other similar flotation devices. Light sticks are used for illuminations or signals in case of an emergency.



PML


Stick

Unit Per Pc.

CODE	33 06 01	33 06 02	33 06 03
Type	PML Personal Marker Light	Stick Regular	Stick Hi-intensity
Duration	8 Hrs	8-10 Hrs	4-6 Hrs

Safety Handlamps, Primary Cell Powered

For use in a wide range of potentially explosive gases, vapours, mists and dusts. The lamp is constructed from an exceptionally robust and highly durable thermoplastic material, well able to withstand the effects of heavy industrial use.

The material itself is anti-static, preventing the build up of potentially dangerous electrostatic charges. The lamp is protected from ingress of dusts and liquids and can therefore be used in the dustiest and wettest conditions possible.

The Wolflite Primary Cell Safety Handlamp H-4DCA meets all relevant provisions of the 2014/34/EU Explosive Atmospheres (ATEX Equipment) Directive.

Unit Per Pc.

CODE	33 06 07
Model	H-4DCA
Beam Type	Spot

(to be continued)

Unit Per Pc.

CODE	33 06 07
Light Source	4.8volt, 2.4 watt (0.5A)
Output	37lm (at nominal voltage)
Power Source	LR20/R20 primary cells, to IEC 60086
Volts	4 x 1.5 volt
Light Duration	Up to 20 Hours
Dimension	130 x 140 x 185 mm
Weight (Incl. Cells)	1.45 kgs
Approval Code	II 2 GD Ex e ib IIC T4 Gb - Ex tD A21 IP66* T135°C Db *IECEx certified for IP65
Type of Protection	"e" increased safety, "ib" intrinsic safety, "tb" protection by enclosure
Area of Classification (Gases)	Zones 1 and 2, Gas Groups IIA, IIB and IIC
Temp. Classification(Gases)	T4
Area of Classification(Dusts)	Zones 21 and 22
Max. Surface Temp. (Dust)	135°C
Certificates	ATEX BAS00ATEX2203 / IECEx TSA 05.0017X
Name of Mfr	The Wolf Safety Lamp Company Ltd

Rechargeable Safety Handlamps

For use as a general-purpose safety lamp for inspection and work tasks, the rechargeable battery offers a convenient and cost-effective solution for Ex applications where a handlamp is frequently required for long periods.

The hand lamp body and lens ring is moulded in a highly resilient thermoplastic material able to withstand the drop and impact expected from heavy industrial use, even at sub-zero temperatures. Additionally, the material is anti-static, ensuring there is no risk of a dangerous build up of static charges.

The lamp enclosure is sealed to IP66, preventing the ingress of dust and sealing against water in all conditions except submersion.

Unit Per Pc.

CODE	33 06 08
Model	H-251ALED
Beam Type	Spot with fringe light
Light Source	3.75 volt, 1 watt
Output	60lm (Peak)
Power Source	Rechargeable battery, Sealed Lead Acid
Volts	4 volt
Light Duration	Up to 24 hours
Dimension	130 x 140 x 185 mm
Weight (Incl. Cells)	1.75 kgs
Approval Code	II 2GD Ex ib op is IIC T4 Gb Ex ib op is IIIB T170°C Db
Type of Protection	"ib" intrinsic safety, "op is" optical radiation
Area of Classification (Gases)	Zones 1 and 2 Gas Groups IIA, IIB, IIC

(to be continued)

Unit Per Pc.

CODE	33 06 08
Temp. Classification (Gases)	T4
Area of Classification (Dusts)	Zones 21 and 22
Max. Surface Temp. (Dust)	170°C
Name of Mfr	The Wolf Safety Lamp Company Ltd

Battery Chargers
for Safety Handlamp

For use with the H251A LED safety handlamp. The battery is charged internally in this product via charging studs on the base of the handlamp. The hand lamp is simply slotted into the charger and secured in place with the latch plate.

The chargers are designed to hold the handlamps while charging enabling the handlamps to always be ready for use. The charger is for use at mains voltage of 230 volts or 110 volts, selectable by voltage chargeover switch.

State of charge of the battery is indicated on the charger by two coloured light emitting diodes, sequenced to show main and full charge. All chargers may be used free standing or can be bench or wall mounted.

Unit Per Pc.

CODE	33 06 09	33 06 10
Model	C-251HV	C-251HVE
Type of Plug	UK 3 Pin	Euro 2 Pin
Apparatus Standard	EN60 335	
Insulation Class	II	
Enclosure	Polypropylene	
Input Voltage	120/230V AC	
Recharge Time	8 - 10 hours	
Ingress Protection	IP20	
Weight	0.75 kgs	
Name of Mfr.	The Wolf Safety Lamp Company Ltd.	

Electric Safety Lamps

An electric safety lamp (Hand Lantern) of an approved type with a minimum burning period of 3 hours. Included for use with an emergency fire fighting outfit. Available in a dry battery type or rechargeable alkaline type as follows. Both models shall be for use in explosive gas atmospheres.

Dry Battery Type

Alkaline Rechargeable Type

Unit Per Pc.

CODE	33 06 11	33 06 16	33 06 17
Type	Dry battery R20P (UM-1) × 6 pc.	Alkaline Rechargeable 15 amp/hr	Charger for rechargeble safety lamp AC 100V or 220V (Please specify voltage when ordering)
Bulb	7.2V 0.55A	2.5V 1.3A	
Weight	1.76 kgs	2.4 kgs	3.6 kgs

Safety Cap Lamps

Hands-free safety light, providing brilliant illumination of the work site, to be used in confined space and where explosive gas is a potential danger, such as on oil tankers, chemical tankers, LNG tankers, etc.

The headlight can be easily attached to the helmet by means of bracket and headpiece clip. Lead acid power rechargeable battery is provided with belt loops.

Specifications

Headpiece & Cable	
Nom. Voltage of Bulb	4 volt
Burning Time	13 hours
Initial Light Output	36 lumens
Main Bulb Rating	1.0 amp 48 lumens
Auxiliary Bulb Rating	0.46 amp
Weight of Headpiece	160 grm
Length of Exposed Cable	1.25 mtr
Weight of Cable	165 grm
Battery	
Nom. Voltage	4 volt
Capacity of Battery	13 Ah (52 Wh) at 1 amp to 3.7 volt
Number of Cells	2
Size L × W × H	152 × 57 × 215 mm
Weight	1.95 kgs

33 06 18	Safety cap lamp with rechargeable battery	Set

Safety LED Headtorches

The ATEX LED headtorch is an ultra small, lightweight headtorch weighing only 90 grm including batteries. Fitted with an adjustable removable fabric head band allowing the headtorch to be comfortably worn directly on the head for extended periods. It is ATEX approved to safe use in Zones 1 & 2 hazardous areas and is ideal for applications where hands free lighting is essential.

Unit Per Set

CODE	33 06 20
Model	HT-400
Approved Code (Industrial)	II 2 GD Ex ib IIC T4 Gb IP66 / Ex ib IIIB T125°C Db
Type of Protection	"ib" intrinsic safety
Area of Classification (gas)	Zones 1 & 2, Gas Groups IIA, IIB, IIC
Max Surface Temp (gas)	T4
Ambient Temperature	-20°C to + 40°C
Area of Classification (Dust)	Zones 21 and 22
Max Surface Temp. (Dust)	125°C
Certificate	Baseefa 10ATEX0067, IECEx BAS 10.0023
Power Source	3 x LT-401 (LR03 Alkaline AAA cells)
Light Duration	Up to 8.5 hours
Ingress Protection	IP66
Weight (incl cells)	0.090 kgs

Name of Mfr.: Wolf Safety Lamp Company

Rechargeable Safety Handlamps

The tough, durable casing protects the advanced electronics given a product that will perform in the most demanding environments. A dual power switch allows you to obtain the ideal combination of beam power and usage time (from 8 up to 24 hours). On the emergency lamp model an emergency lighting function switches the lamp on when a power failure occurs. For this the lamp should be inserted into charging holder.

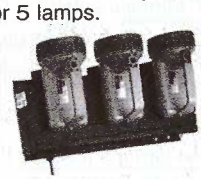
Unit Per Pc.

CODE	33 06 55	33 06 56
Model	IL-640 NiMH	IL-640 EM NiMH
Beam Type	Spot	
Light source	4 high luminous Cree LED's, Lifetime: L70 > 50,000h	
Light Output	High power: 600 lumen Low power: 160 lumen	
Power Source	6V rechargeable NiMH battery	
Operating Temperature	-20 deg C to +40 deg C	
Apparatus Standard	EN50014, EN50019, EN50020, EN50281-1-1	
Enclosure	High impact polyamide	
Ingress Protection	IP67	
Dimensions	Approx. 215(L) x 120(W) x 125mm(H)	
Weight w/battery	1.4 kgs	
Name of Mfr.	Atexor Oy Ltd.	

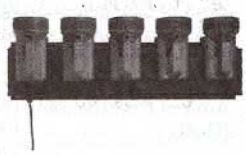
Battery Chargers
for Rechargeable Safety Handlamp

For use with the IL-640 series rechargeable safety lamps in several patterns of charging slots : for single lamp, for 3 lamps and for 5 lamps.

Single



For 3 lamps



For 5 lamps

Unit Per Pc.

CODE	33 06 57	33 06 58	33 06 59
Model	ILC-VAC	CR-C3	CR-C5
Mounting	Wall mounted vertical or horizontal	Wall mounted horizontal	
Enclosure	High impact PC/Aluminium	Anodised aluminium	
Input Voltage	85 ...264V AC, 47...63 Hz	100...240VAC 50-60Hz 2.4A (+ Outlet)	
Recharge Time	6 hours		
Ingress Protection	IP44		

(to be continued)

Unit Per Pc.

CODE	33 06 57	33 06 58	33 06 59
Certification	See Remark (a)	e17*72/245 *2006/2 8*0093*02	e17*72/245 *2006/2 8*0093*02
Dimensions	153 x 138x 88 mm	510 x 230 x 110 mm	850 x 230 x 110 mm
Weight	860 grm	3.8 kgs	5.6 kgs
Name of Mfr.	Atexor Oy Ltd.		

Remark: (a) EMC Directive 89/93/EEC
Mains adaptor: EEC-EMC Directive 93/42: EN55022, EN61000-3-2, EN61000-3-3, EN50081-1, EN50081-2, EN50082-1, EN55024
Low Voltage Directive 72/23/EEC, IEC60950, EN60950
Amendment Directive E93/68/EEC, IEC60950, EN60950
Mains adaptor approvals: UL/cUL, CE, TUV

High Powered LED Rechargeable Safety Handlamps

A first handlamp that uses high power LED (Light Emitting Diode) technology for explosive environments. Instead of an ordinary bulb, the lamp uses a high power LED with a service life of capacity 50,000 hours. The lamp is equipped with an environmentally friendly NiMH battery whose continuous operating time is more than seven hours. The shock resistant cover is manufactured completely of antistatic plastic and aluminium and its enclosure class is IP 65. On the emergency lamp model an emergency lighting function switches the lamp on when a power failure occurs. The lamp must be stored and charged in an exclusive charging holder. Fully compliant with the Cenelec requirements for standards EN60079-0, EN60079-11 and EN60079-28 as well as with ATEX classification II 2G Ex op is IIC T4 Gb & II 2D Ex op is IIIC T135°C Db.

ML-808 ATEX / ML-808 ATEX EM

MICA MLC Charger

Unit Per Pc.

CODE	33 06 61	33 06 62
Model	ML-800 ATEX	ML-800 ATEX EM
Beam Type	Spot Beam	
Light Source	1 high luminous Cree LED, Lifetime: 50,000hrs Light output : over 100/25 lumen	
Power Source	6V rechargeable NiMH battery	
Operating Time	Full Power : 4 hrs 30 min Low Power: 15 hours	
Approval Code	II 2G Ex op is IIC T4 Gb II 2D Ex op is IIIC T135°C Db	
Area of Operation	Gas: Zones 1 and 2 Dust: Zones 21 and 22	
Temp. Classification	Gas: T4, Dust: 135°C	
Ingress Protection	IP65	

(to be continued)

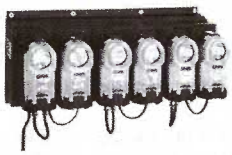
Unit Per Pc.

CODE	33 06 61	33 06 62
Certification	ATEX: VTT 13 ATEX 024 issue 1	
Enclosure	Dissipative (antistatic) polypropylene + aluminium, impact resistant	
Dimensions	120 x 63 x 54 mm	
Weight with Battery	400 grm	
Name of Mfr.	Atexor Oy Ltd.	

Battery Chargers for High Powered LED Rechargeable Safety Handlamp

For use with the ML-808 series high powered LED rechargeable safety handlamps in several patterns of charging slots: for fast charging, for 6 lamps.

MLC Fast Charger



CR-6-MLC

Unit Per Pc.

CODE	33 06 63	33 06 64
Model	MLC Charger + IL2 Adapter	CR-6-MLC
Mounting	Wall mounted vertical or horizontal	Wall mounted horizontal
Enclosure	High impact Nylon/ Aluminium	Anodised aluminium
Input Voltage	85...264VAC, 47...63Hz	100...240VAC 50-60Hz 2.4A
Recharge Time	2h 30 min	
EMC Certification	Directives 72/245/ EEC, 95/54/EC Cert No. e17*72/245*2006/ 28*0108*02	Directives 89/336/ EEC, 72/245/EEC, 95/54/EC Cert No. e17*/72/245*2006/ 28*0108*02
Dimensions	142 x 83 x 72 mm	490 x 210 x 63 mm
Weight	270 grm	3.2 kgs
Name of Mfr.	Atexor Oy Ltd.	

Rechargeable LED Hand Lamps for Hazardous Areas

A rechargeable LED hand lamp for hazardous areas, certified for use in Zone 0 areas. Available three patterns of model: Rechargeable safety hand lamp, rechargeable emergency lamp and rechargeable safety hand lamp with blinking mode.

Unit Per Pc.

CODE	33 06 65	33 06 66
Model	IL-800 Zone 0	IL-800 EM Zone 0
Type	Hand lamp	Emergency lamp
Beam Type	Narrow and wide	
Light Source	3 high luminous led's Cree LED's Light output 200/80 lumen Lifetime : 50,000 hr	

(to be continued)

Unit Per Pc.

CODE	33 06 65	33 06 66
Power Source	6V rechargeable NiMH battery	
Light Duration	High power output: 6 hours Low power output: 12 hours	
Ingress Protection	IP67	
Certification	ATEX : TUV 10 ATEX 7878 IECEx : IECEx TUR 11.0008	
Type of Protection	II 1G Ex ia IIC T4 Ga II 2D Ex tb IIIC 100°C IP67 Db	
Area of classification G (Gas)	Zones 0, 1 and 2 Gas groups IIA, IIB, IIC	
Area of Classification (Dust)	Zones 21 and 22 Dust groups IIIA, IIIB, IIIC	
Temp. Classification	Gas: T4 Dust 100°C	
Enclosure	Antistatic impact resistant polypropylene	
Weight with Battery	1.1 kgs	
Dimensions	215mm(L)x120mm(W)x125mm(H)	

Name of Mfr. : Atexor Oy Ltd.

Rechargeable LED Hand Lamps

The LED light sources deliver an outstanding light output from the high intensity spot beam, switchable to a wide-angle flood on performance model (XT-70). CE marked to the ATEX Directive and IECEx certified, for safe use in Zone 1 potentially explosive gas atmospheres, where a T4 temperature class permits.

Unit Per Pc.

CODE	33 06 12	33 06 13
Model	XT-50 Standard	XT-70 Performance
Beam Type	Spot	Spot / Food
Approval Code	I M2/II 2GD Ex ib op is I Mb/IIC T4 Gb IP67 Ex ib op is IIIB T185°C Db (Temperature ambient –30°C to +40°C)	
Type of Protection	"ib" intrinsic safety	
Area of Classification (Gases)	Zones 1 and 2, Gas groups IIA, IIB and IIC	
Temp Classification (Gases)	T4	
Area of Classification (Dust)	Zones 21 and 22 Dust Groups IIIA and IIIB	
Certificate	ATEX Baseefa09ATEX0326X IECEx BAS 09.0153X	
Power Source	Rechargeable battery, Lithium-ion	
Light Duration Full/ Half	Up to 4.0/8.0hrs	Up to 7.5/15.0hrs
Ingress Protection	IP67	
Weight (incl cells)	1.2 kgs	
Compatible Charger	XT-200L 12-24Vdc / XT-200H 90V-254Vac	

Name of Mfr.: Wolf Safety Lamp Company

Battery Chargers for LED Hand Lamp

The XT-200 quick charger base can fully recharge the handlamp in 2 hours. The charge operate from 90 – 254 V AC main voltage.

33 06 14	Battery charger XT-200H for LED hand lamp Wolf XT	Pc.

Compressed Air/Electric Safety Lights

Explosion-proof, high powered compressed air driven lamp, commonly used in the oil and petrochemicals industries, for tank cleaning and pipeline inspections, offering a safer alternative to low voltage lighting in dangerously wet conditions as well as where flammable gases and vapours can accumulate in confined spaces.

ALM-100P

A-TL45

A-TL44

Unit Per Set

CODE	33 06 21	33 06 23
Model	ALM-100P	ALI-100P
Type	Suspension	
Lamp	Mercury lamp HF-100X E-26	Incandescent lamp IL-100 115V E-26
Air source	4.5 - 8 kgf/cm^2	
Air consumption	600 NL/min.	
Main Material	Brass (Non-spark)	
Size & Weight	H 395 mm x D 175 mm, 10.5 kgs	
Approval	H.K. / L.R. / B.V.	

Replacement Parts for Model AL-100

CODE	Part No.	Description	Unit
33 06 25	AL-100- 0	Mist separator	Pc.
26	AL-100-10	Box spanner	Pc.
27	AL-100-14	Reflector	Pc.
28	AL-100-16	Mist separator clamp	Pc.
29	AL-100-17	Oil basin	Pc.
33 06 30	AL-100-18	Oil basin tube	Lgh
31	AL-100-19-2	Air hose with coupling 10 mtr	Lgh
32	AL-100-19-4	Ditto,20 mtr	Lgh
33	AL-100-23	Mist separator Container box	Pc.
34	AL-100-24	Quick coupling	Pr.
33 06 35	AL-100-25	Coupling for air Source	Pc.

Unit Per Set

CODE	33 06 37	33 06 38
Model	A-TL45	A-TL44
Beam Type	Flood or Spot	Bay light (All-around 360°illumination)
Lens	Toughened glass (15 mm)	Ball glass/ Polycarbonate dome
Area of Classification	-20°C to + 40°C	
Certification	BASEEFA Ex 78209X	
Enclosure	Nickel plated brass and gun-metal	
Light Source; Type	Tungsten halogen filled filament bulb	
Volts	24 volt	
Watts	250 W	
Output	6,000 lm (at 24 volt)	

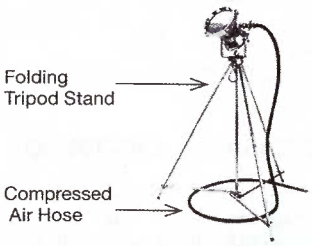
(to be continued)

Unit Per Set

CODE	33 06 37	33 06 38
Air Pressure	4.0 - 8.0 bar	
Consumption	0.75 m^3/min.	
Weight	12.2 kgs	7.9 kgs
Name of Mfr.	The Wolf Safety Lamp Company Ltd.	

Accessories for Model A-TL45 & A-TL44

Air Line Filter

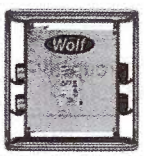


CODE	Description	Size	Model	Unit
33 06 51	Compressed air hose, anti-static	12mm bore×18.3 mtr	A-179	Lgh
52	"	12mm bore×36.6 mtr	A-180	"
33 06 53	Air line filter	-	A-184	Pc.
33 06 54	Folding tripod stand	-	A-300	Pc.

7TH
33

Tank Lighting Kits

Tank Lighting kit provides a low voltage temporary lighting solution for Zone 1 Hazardous Areas where potentially explosive gases, vapours and dusts may be present in a confined space. The kits allow for a flexible set up of high quality task and ambient lighting to suit all working conditions in tanks and vessels and offers operators a high level of safety using various configurations of the LED Floodlites (WF-300®XL), LinkEx™ LED Temporary Luminaires (LX-400 series) and ATEX Transformers.



Transformer

LED Floodlite

LED Temporary Luminaire

Stainless Steel Leadlamp Transformers for Tank Lighting Kit

Unit Per Pc.

CODE	33 19 01	33 19 02
Model	LL-133/T3	LL-223/T3
Volts in	110V AC	230V AC
Approval Code	For Output Power ≤ 400VA: Ex d e IIC T3 Gb - Ex t IIIC T195°C Db (-20°C ≤ Ta ≤ +30°C) For Output Power ≤ 320VA: Ex d e IIC T3 Gb - Ex t IIIC T195°C (-20°C ≤ Ta ≤ +42°C)	
Type of Protection	"e" increased safety "d" flameproof	
Area of Classification (Gas)	Zones 1 and 2, gas groups IIA, IIB and IIC	
Temp Classification (Gas)	T3	

(to be continued)

Area of Classification (Dust)	Zones 21 and 22, Dust Groups IIIA, IIIB and IIIC
Certificate	ATEX-LCIE02ATEX6118X IECEX-LCI 11.0008X
Ingress Protection	IP66
Power	320/400VA
Volts out	24V
Socket Arrangement	4 output sockets, ATX 110/24V 2P + E as standard
Size	512 x 562 x 260 mm (L x W x H)
Weight	28 kgs

Name of Mfr.: Wolf Safety Lamp Company

LED Floodlites WF-300®XL

The Linkex™ WF-300®XL LED Floodlite is a high performance, robust, lightweight and portable Floodlite for use in potentially explosive atmospheres. It delivers an outstanding level of white light and is fully compliant with the latest ATEX and IECEx standards, including OPIS - Optical Intrinsic Safety. Fitted with Wolf's unique SOVI system to ensure safe operation, the Floodlite is certified for safe use in Zone 1, T4, IIc, -40°C to +55°C ambient, hazardous gas, vapour, mist or dust environments.

Unit Per Pc.

CODE	33 19 05	33 19 06
Voltage	18-50V AC/DC (LV)	90-264V AC/DC (HV)
Approval Code	II 2 G D Ex eb mb op is IIC T4 Gb Ex tb op is IIIC T118°C Db T = -40°C to +55°C	
Type of Protection	'eb' increased safety 'mb' encapsulation 'tb' enclosure protection	
Area of Classification (Gases)	Zones 1 and 2, Gas groups IIA, IIB and IIC	
Temp Classification (Gases)	T4	
Area of Classification (Dust)	Zones 21 and 22, Dust Groups IIIA, IIIB and IIIC	
Certificate	SIRA17ATEX3035X IECExSIR17.0013X	
Light Source	36 x white high power LEDs	
Ingress Protection	IP66/67	
Weight	7.3 kgs (excluding cable)	

Name of Mfr.: Wolf Safety Lamp Company

Tank Lighting Kit Configuration

Unit Per Set

CODE	Model	Transformer	Lamps	Cable
33 19 16	LL-155/T3	LL-133/T3 110V AC	4 x WF-300®XL (58W LED Floodlites)	Fitted with 20 mtr of SY cable
17	LL-255/T3	LL-233/T3 230V AC		
33 19 18	LX-185/T3	LL-133/T3 110V AC	4 x LX-400 (27W LED 180° Leadlamps)	
19	LX-285/T3	LL-233/T3 230V AC		

Name of Mfr.: Wolf Safety Lamp Company

LinkEx™ LED Temporary Luminaire

Unit Per Set

CODE	Product's Code	LED Temporary Luminaire	Linkable	Fitted with SY Cable	Plug & Socket
		AC 110V			
33 19 21	LX-400SH	LED	No	10 mtrs 2.5 mm²	ATX plug
22	LX-400SH		Yes	5 mtrs 2.5 mm²	ATX plug & Socket
33 19 23	LX-400SH/360	LED	No	10 mtrs 2.5 mm²	ATX plug
24	LX-400SH/360		Yes	5mtrs 2.5 mm²	ATX plug & Socket
		AC 230V			
33 19 26	LX-400SH	LED	No	10 mtrs 2.5 mm²	ATX plug
27	LX-400SH		Yes	5 mtrs 2.5 mm²	ATX plug & Socket
33 19 28	LX-400SH/360	LED	No	10 mtrs 2.5 mm²	ATX plug
29	LX-400SH/360		Yes	5 mtrs 2.5 mm²	ATX plug & Socket

Name of Mfr.: Wolf Safety Lamp Company

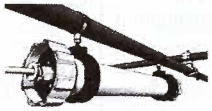
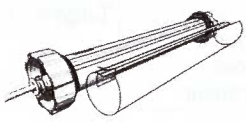
Accessories for LX-400 Series LED Temporary Luminaire

Reference Chart

LED Luminaire	Magnet Kit	Tripod	Scaffold bracket	Protective Films (x3 pack)
LED	LX-680	LL-680 + LL-670	LL-678	LL-545/3

Remark : Tripod (LL-680) will need to be used with a Tripod Bracket (LX-670)

Unit Per Set

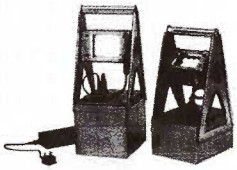
CODE	Model & Name	
33 19 30	LL-680 Magnet Kit	
32	LL-680 "Tripod"	
33	LX-670 "Tripod Bracket" for Tripod LL-680	
34	LX-678 "Scaffold Bracket"	
37	LX-545/3 "Protective Films (x3 Pack)"	

Accessories for WF-300®XL LED Floodlite

Unit Per Pc.

CODE	Model & Name	CODE	Model & Name
33 19 41	WF-545 "Magnetic Set"	**33 19 42**	LL-680 "Tripod"

Rechargeable LED Floodlights



A rechargeable high output LED floodlight, designed for use in harsh and potentially explosive atmosphere applications, it offers unique levels of light output, operational duration and robustness in a self contained battery powered lamp. The Worklite is ideal for use in remote applications for extended periods. All models deliver a piercing 30° beam, combined with a flood of lower level fringe light. The light has a 12 LED lamp head, giving over 1,000 lumens output.

Unit Per Pc.

CODE	33 19 51	33 19 52
Model	WL-80	WL-85
Power Source Capacity	18 Ah	33 Ah
Battery Type	Rechargeable battery, sealed gel lead acid 12V	
Approval Code	II 2 GD Ex e ib mb IIC T4 Ex tD A21 IP65 T135°C	
Type of Protection	'e' increased safety, 'ib' intrinsic safety, 'mb' excapsulation, tD enclosure protection	
Area of Classification (Gases)	Zone 1 & 2, Gas Groups IIA, IIB, IIC	
Temp. Classification (Gases)	T4	
Area of Classification (Dust)	Zones 21 and 22	
Certificate	Sira07ATEX3027	
Ingress Protection	IP65 to EN60529: 1992	
Beam Type	Spot beam with a flood of low level fringe light	
Light Source Power	12 x 3watt LEDs	
Weight	16.5 kgs	23 kgs

Name of Mfr.: Wolf Safety Lamp Company

LED Portable Daylight Signaling Lamps

Installation required by SOLAS regulations Chapter V which reads as follows: "All ships of over 150 tons gross tonnage, when engaged on international voyages, shall have on board an efficient daylight signaling lamp which shall not be solely dependent upon the ship's main source of electrical power."

< Features >

* Long life and needless lamp exchange.
* 2 hours or more continuous operations with incorporated rechargeable battery in main body.
* All weather condition due to strict waterproof body.
* Durable corrosion-proof Synthetic body.
* Shutterless, Realized 86% lighter than existence model.

Unit Per Set

CODE	33 06 50
Model	SPM-L01
Lamp	Hi glitter LED
Luminosity	100,000cd or more
Protection	IP67
Material	Synthetic Resin
Weight	0.9 kgs
Name of Mfr	Shonan Kosakusyo Co, Ltd.
Accessories	
33 06 46	Battery charger for SPM- L01 portable type
33 06 40	Carrying Case for SPM-L01

Fire Hose

In cargo ships of 1,000 gross tons or more, the number of non-perishable fire hoses to be provided shall be one for each 30 mtr area of the ship and one spare.

In no case shall there be less than 5 hoses in all.

Unit Per C/L

Rubber Lined Tetoron

CODE	Nominal Size	Length per Coil	Working Pressure
33 07 01	40	15 mtr	0.9 MPa
02	50		
03	65		
33 07 04	40	20 mtr	
05	50		
06	65		
33 07 07	40	25 mtr	
08	50		
09	65		
33 07 10	40	30 mtr	
11	50		
12	65		

Unit Per C/L

CODE	Nominal Size	Length per Coil	Working Pressure
D. N. V. Approved (Polyester yarn and coated inside with synthetic rubber)			
33 07 15	40 mm	15 mtr	1.3 MPa
16		20 "	
33 07 17	50 mm	15 mtr	
18		20 "	
33 07 19	65 mm	15 mtr	
20		20 "	
U. K. DOT Approved (All synthetic rubber lined)			
33 07 21	45 mm	15 mtr	1.3 MPa
24		18 "	
27		25 "	
33 07 22	50 mm	15 mtr	
25		18 "	
28		25 "	
33 07 23	65 mm	15 mtr	
26		18 "	
29		25 "	
H.K. Approved			
33 07 34	45 mm	15 mtr	1.3 MPa
35		20 "	
36		25 "	
33 07 37	50 mm	15 mtr	
38		20 "	
39		25 "	
33 07 40	65 mm	15 mtr	
41		20 "	
42		25 "	

Note: Coupling excluded

Fire Hoses

M.E.D. Approved Type

Rubber Covered Fire Hose SF-120
Outer Colour : Red

Features:
Tough, durable and very abrasion resistant.
Resistance to oil, fuel and a wide range of chemicals
Resistance to heat, UV and ozone
Excellent adhesion between rubber and textile
No cleaning and drying required.

Applications:
Refineries, Chemical industry, Fire brigades, Marine and offshore installations and Fire hose for usage under tough conditions.

Service Temperature: -20°C up to + 100°C based on water.
Working Pressure: 20 bar

Unit Per C/L

CODE	Type	Flat Measure	Pressure	Alligator No.
33 37 01	38 mm × 15 mtr	65 mm	20 bar	SF1200381
02	38 mm × 20 mtr			SF1200382
03	38 mm × 30 mtr			SF1200383
33 37 04	45 mm × 20 mtr	70 mm	20 bar	SF120045
33 37 05	52 mm × 15 mtr	85 mm	20 bar	SF1200521
06	52 mm × 20 mtr			SF1200522
07	52 mm × 30 mtr			SF1200523

Name of Mfr.: Alligator

Uncoated Single Jacket Fire Hose SF-121
Outer Colour : White

Features:
Very lightweight and highly flexible (even at low temperature)
Small coil diameter
Excellent resistance to weathering and ozone
Very good resistance to sea water and a wide range of chemicals
Mildew and rotproof

Applications:
Industrial and municipal fire brigades
Marine fire fighting

Service Temperature: -10°C up to + 60°C based on water.
Working Pressure: 15 bar

Unit Per C/L

CODE	Diam. × Length	Flat Measure	Pressure	Alligator No.
33 37 15	38 mm × 15 mtr	65 mm	15 bar	SF121038
16	38 mm × 20 mtr			SF1210382
17	38 mm × 30 mtr			SF1210383
33 37 18	52 mm × 15 mtr	85 mm	15 bar	SF121051
19	52 mm × 20 mtr			SF121052
20	52 mm × 25 mtr			SF12105225
21	52 mm × 30 mtr			SF1210523

Name of Mfr.: Alligator

Coated Single Jacket Fire Hose SF-123
Outer Colour : Red

Features:
Very lightweight and highly flexible (even at low temperature)
Excellent resistance to heat, weathering and ozone
Very good resistance to sea water and a wide range of chemicals
Hardwearing for long service life
Mildew and rotproof

Applications:
Industrial and municipal fire brigades
Marine fire fighting

Service Temperature: -10°C up to + 60°C based on water.
Working Pressure: 15 bar

Unit Per C/L

CODE	Type	Flat Measure	Pressure	Alligator No.
33 37 26	38 mm × 15 mtr	65 mm	15 bar	SF123038
27	38 mm × 20 mtr			SF1230382
28	38 mm × 30 mtr			SF12030383
33 37 29	45 mm × 15 mtr	70 mm	15 bar	SF1230451
30	45 mm × 20 mtr			SF1230452
31	45 mm × 30 mtr			SF1230453
33 37 32	52 mm × 15 mtr	85 mm	15 bar	SF123051
33	52 mm × 20 mtr			SF123052
34	52 mm × 30 mtr			SF1230523

Name of Mfr.: Alligator

Fire Hose

Inner/outer Synthetic Rubber Lined

High durable fire hose with synthetic rubber reinforcement on inner and outer surface of the hose. It has excellent resistance to weather, abrasion, oil, chemical and especially to ozone attack.
Easy to clean hose surface, and easy to handle because of difficulty to kink. Nominal working pressure is 16 kgf/cm². Supplied standard length in 20 mtr. Please specify type of hose coupling if necessary to be attached.

Unit Per C/L

CODE	Nominal Size	Weight grm/mtr	Length Per Coil
33 07 31	40	335	20 mtr
32	50	430	
33	65	570	

Fire Hoses with Prefitted Coupling

Internationally approved fire hoses with prefitted fire hose coupling, covering a vast range of patterns and sizes to suit customer's requirements from around the world. Please specify necessary class certification of fire hose when ordering.

Machino Type – Brass

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 37 41	38	15	10	68
42		20		
43		25		
44		30		
33 37 45	52	15	10	85
46		20		
47		25		
48		30		

(to be continued)

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
33 37 49 50 51 52	65	15 20 25 30	10	105
Hose Colour – Red				
33 37 53 54 55	38	15 20 30	15	65
33 37 56 57 58	52	15 20 30	15	85
33 37 59 60 61	65	15 20 30	15	105

Nakajima Type – Brass

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
Hose Colour – White					
33 37 62 63 64	61	38	15 25 30	10	68
33 37 65 66 67	72	52	15 25 30	10	85
33 37 68 69 70 71	91	65	15 20 25 30	10	105
Hose Colour – Red					
33 37 72 73 74	61	38	15 20 30	15	65
33 37 75 76 77	72	52	15 20 30	15	85
33 37 78 79 80	91	65	15 20 30	15	105

Nakajima Type – Aluminium

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
Hose Colour – White					
33 37 81 82 83	61	38	15 25 30	10	68
33 37 84 85 86	72	52	15 25 30	10	85
33 37 87 88 89 90	91	65	15 20 25 30	10	105
Hose Colour – Red					
33 37 91 92 93	61	38	15 20 30	15	65

(to be continued)

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
33 37 94 95 96	72	52	15 20 30	15	85
33 37 97 98 99	91	65	15 20 30	15	105

Pin Lug Type – Brass

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 38 00 21 22 23	38	15 20 25 30	10	68
33 38 24 25 26 27	52	15 20 25 30	10	85
33 38 28 29 30 31	65	15 20 25 30	10	105
Hose Colour – Red				
33 38 32 33 34	38	15 20 30	15	65
33 38 35 36 37	52	15 20 30	15	85
33 38 38 39 40	65	15 20 30	15	105

Instantaneous Type – Brass

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 38 41 42 43 44	38	15 20 25 30	10	68
33 38 45 46 47 48	52	15 20 25 30	10	85
33 38 49 50 51 52	65	15 20 25 30	10	105
Hose Colour – Red				
33 38 53 54 55	38	15 20 30	15	65
33 38 56 57 58	52	15 20 30	15	85

(to be continued)

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
33 38 59 60 61	65	15 20 30	15	105

Instantaneous Type – Aluminium

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 38 62 63 64 65	38	15 20 25 30	10	68
33 38 66 67 68 69	52	15 20 25 30	10	85
33 38 70 71 72 73	65	15 20 25 30	10	105
Hose Colour – Red				
33 38 74 75 76	38	15 20 30	15	65
33 38 77 78 79	52	15 20 30	15	85
33 38 80 81 82	65	15 20 30	15	105

Storz Type - Brass

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
Hose Colour – White					
33 38 83 84 85 86	66	38	15 20 25 30	10	68
33 38 87 88 89 90	66	52	15 20 25 30	10	85
33 38 91 92 93 94	81	65	15 20 25 30	10	105
33 38 95 96 97	89	75	15 20 30	10	130
Hose Colour – Red					
33 38 98 99 39 00	66	38	15 20 30	15	65
33 39 01 02 03	66	52	15 20 30	15	85

(to be continued)

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
33 39 04 05 06	81	65	15 20 30	15	105
33 39 07 08 09	89	75	15 20 30	15	130

Storz Type – Aluminium

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
Hose Colour – White					
33 39 10 11 12 13	66	38	15 20 25 30	10	68
33 39 14 15 16 17	66	52	15 20 25 30	10	85
33 39 18 19 20 21	81	65	15 20 25 30	10	105
33 39 22 23 24	89	75	15 20 30	10	130
Hose Colour – Red					
33 39 25 26 27	66	38	15 20 30	15	65
33 39 28 29 30	66	52	15 20 30	15	85
33 39 31 32 33	81	65	15 20 30	15	105
33 39 34 35 36	89	75	15 20 30	15	130

Guillemin Type – Brass

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 39 37 38 39	45	15 20 30	10	70
33 39 40 41 42	70	15 20 30	10	110
Hose Colour – Red				
33 39 43 44 45	45	15 20 30	15	70
33 39 46 47 48	70	15 20 30	15	110

Guillemin Type – Aluminium

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 39 49	45	15	10	70
50		20		
51		30		
33 39 52	70	15	10	110
53		20		
54		30		
Hose Colour – Red				
33 39 55	45	15	15	70
56		20		
57		30		
33 39 58	70	15	15	110
59		20		
60		30		

Uni 45 Type - Brass

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 39 61	45	15	10	70
62		20		
63		30		
Hose Colour – Red				
33 39 64	45	15	15	70
65		20		
66		30		

Uni 70 - Brass

Unit Per Lgh

CODE	Hose Size mm	Hose Length mtr	Pressure Bar	Flat Measure mm
Hose Colour – White				
33 39 67	70	15	10	110
68		20		
69		30		
Hose Colour – Red				
33 39 70	70	15	15	110
71		20		
72		30		

Nor – Aluminium

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
Hose Colour – White					
33 39 73	65	52	15	10	85
74			20		
75			25		
76			30		

(to be continued)

Unit Per Lgh

CODE	Size mm		Hose Length mtr	Pressure Bar	Flat Measure mm
	Lug	Hose			
33 39 77	84	65	15	10	105
78			20		
79			25		
80			30		
Hose Colour – Red					
33 39 81	65	52	15	15	85
82			20		
83			30		
33 39 84	84	65	15	15	105
85			20		
86			30		

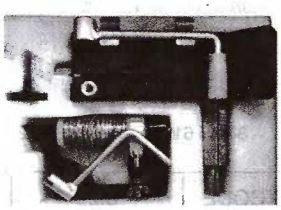
Fire Hose Boxes

Versatile box to store fire hoses of up to 20 mtrs in length with nozzles and spanner.

The box and cover are made of polycarbonate for weather and sea water resistance.

33 07 51	Fire hose box, polycarbonate, capacity 20 mtrs	Pc.

Portable Fire Hose Binding Machines



Suitable for binding firefighting hose on hose coupling shanks using copper wire, G.I. wire or stainless steel wire. Applicable fire hoses between 25mm to 110mm to new hose couplings. Generally, 1.6mm (16 SWG) galvanised wire is accepted as the binding wire.

33 07 52	Binding machine, fire hose, portable, For hose size 25 mm to 110 mm	Set

Spanners for Hydrant

Designed for tightening or loosening of fire hose couplings. Please select suitable spanner to your hose coupling type and size.

for Nakajima

for ANSI - Pin Lug

for ANSI - Slotter

Unit Per Pc.

CODE	Type of Hydrant	Nom. Coupling Size	Overall Length mm	Material
33 07 91	Nakajima	40A	270	Bronze
92		50A	295	
93		65A	330	
33 07 95	ANSI-Pin Lug	40A	246	Copper
96		65A	280	
33 07 97	ANSI-Slotter	40A	175	Copper
98		65A	235	

Fire Hose Nozzles

Wide variety of nozzle connecting types with hose couplings are available according to several standards. Some common types are as shown below.

Nakajima Coupling

ANSI Pin Coupling

Machino Coupling

Unit Per Pc.

CODE	Nom. Size	Spout Diam.	Length	Weight
Nakajima Coupling				
33 08 01	40 mm	12 mm	350 mm	0.73 kgs
03	50	16	450	1.17
04	65	20	500	1.77
ANSI Pin Coupling				
33 08 06	40 mm	12 mm	350 mm	0.71 kgs
08	65	20	500	1.70
Machino Coupling				
33 08 09	40 mm	12 mm	350 mm	0.8 kgs
10	50	16	370	1.2
11	65	20	500	2.0

7TH 33

Guillemin Type

33 35 61

33 35 62

33 35 63

33 35 64

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 61	45mm, Jet/Spray	Aluminium	Guillemin	ST040012
62	70mm, Jet/Spray			ST040022
63	45mm, Jet/Spray with manshield			ST040014
64	70mm, Jet/Spray with manshield			ST040024

Pontstar Type

33 35 65

33 35 66

33 35 67

33 35 68

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 65	DN40	Brass	Pontstar Robinet	ST040025
66	DN70		Diffuseur	ST040029
33 35 67	DN40		Fut de Lance	ST040026
68	65/70 MM		Ponstar	ST040030

UNI 45/UNI 70 Type

UNI 45

UNI 70

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 69	45 mm, Jet / Spray	Brass	UNI 45	ST04545
70	70 mm, Jet / Spray		UNI 70	ST04560

Nakajima Type

33 08 01-04

33 35 71-73

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 08 01	1-1/2" (40A) Lug size 61mm	Brass	Nakajima	ST050012
03	2" (50A) Lug size 72 mm			ST050071
04	2-1/2" (65A) Lug size 91 mm			ST050091
33 35 71	1-1/2" (40A) Lug size 61mm	Aluminium		ST051012
72	2" (50A) Lug size 72 mm			ST051071
73	2-1/2" (65A) Lug size 91 mm			ST051091

NS / KR Type

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 74	68 mm, Jet / Spray	Brass	NS	ST056012
75	83 mm, Jet / Spray		KR	ST056021

PIN Lug Type

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 76	1-1/2" (40A) Thread:11-1/2 TPI Jet/Spray short	Brass	PIN Lug	ST0750200
33 08 08	2-1/2" (65A) Thread: 7-1/2 TPI Jet/Spray short			ST075032

LFB Type

33 35 77

33 35 78

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 77	2-1/2" Thread: 5-1/5 TPI Jet/Spray	Brass	LFB	ST120011
78	2-1/2" Thread: 5-1/5 TPI BSP male			ST120019

Instantaneous Type

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 79	2-1/2"	Brass	Instantaneous	ST230011

NOR Type

33 35 80

33 35 81

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 80	2" (LAS 2/50A) Jet/Spray	Brass	NOR	ST250011
81	2-1/2" (LAS 1/65A) Jet/Spray			ST250021

Barcelona Type

33 35 82

33 35 83

33 35 84

33 35 85

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 82	DN45, Lug size 45 mm Jet/Spray	Aluminium	Barcelona	ST300012
83	DN70, Lug size 70 mm Jet/Spray			ST300022
84	DN45, Lug size 45 mm Jet/Spray with manshield			ST300014
85	DN70, Lug size 70 mm Jet/Spray with manshield			ST300024

ROTA Type

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 35 86	2-1/2", Jet/Spray	Brass	ROTA	ST320012

Storz Type

33 35 91

33 35 92

33 35 93

33 35 94

33 35 95

33 35 96

33 35 97

33 35 98

33 36 01

33 36 02

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
Multi Purpose Nozzles				
33 35 91	2", Lug size:66mm DIN 14365	Aluminium	Storz-C	ST44066
92	2-1/2", Lug size: 81mm DIN 14365		Storz-65	ST44081
93	3", Lug size:89mm DIN 14365		Storz-B	ST44089
94	2", DIN 14365		BSP male	ST44099
33 35 95	2", Lug size:66mm Nozzle with manshield		Storz-C	ST45066
96	2-1/2", Lug size: 81mm Nozzle with manshield		Storz-65	ST45081
97	3", Lug size:89mm Nozzle with manshield		Storz-B	ST45089
98	2", Nozzle with manshield		BSP male	ST45099
Fire Nozzles				
33 36 01	2", with jet/spray nozzle	Brass	BSP male	ST49527
33 36 02	2", Lug size:66mm Jet/Spray	Brass	Storz-C	ST500012
03	2-1/2", Lug size 81 mm Jet/spray		Storz-65	ST500032
04	3", Lug size 89mm Jet/spray		Storz-B	ST500042

UNIFIRE / HS 16 Type

33 36 05

33 36 06

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 36 05	2"Thread: BSP male	Brass chrome plated PVC	UNIFIRE V16	ST550500
06	2"Thread: BSP male		UNIFIRE	ST550501

SMS Type

33 36 07

33 36 08

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 36 07	2-1/2", jet/spray with manshield	Aluminium	SMS	ST62005
08	2-1/2", jet/spray			ST62010

Foam Nozzles with Ball Valve

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 36 09	2" Thread: BSP male	Aluminium	-	ST700400

Ball Nozzles

Unit Per Pc.

CODE	Size	Material	Type	Alligator No.
33 36 10	13 mm	Chromed	-	ST954013
11	19 mm			ST954019
12	25 mm			ST954025

(to be continued)

Applicators for All Purpose Nozzle

For use with all purpose nozzle. Applicator is made of bronze with brass coupling. Please specify the type of coupling, Nakajima, ANSI pin, etc., to be connected with when ordering.

Unit Per Pc.

CODE	Size	CODE	Size
BSP Male Thread Coupling			
33 07 53	50A x 1,200 mm	**33 07 54**	50A x 1,800 mm
Storz Coupling			
33 07 55	50A x 1,200 mm	**33 07 58**	65A x 1,800 mm
56	50A x 1,800 mm	**59**	75A x 1,200 mm
57	65A x 1,200 mm	**60**	75A x 1,800 mm
ANSI PIN Coupling			
33 07 61	40A x 1,200 mm	**33 07 67**	65A x 1,200 mm
62	40A x 1,800 mm	**68**	65A x 1,800 mm
63	40A x 3,600 mm	**69**	65A x 3,600 mm
Nakajima Coupling			
33 08 15	40A x 1,200 mm	**33 08 18**	65A x 1,200 mm
16	40A x 1,800 mm	**19**	65A x 1,800 mm
17	40A x 3,600 mm	**20**	65A x 3,600 mm
33 08 94	50A x 1,200 mm		
95	50A x 1,800 mm		
96	50A x 3,600 mm		
Machino Coupling			
33 07 71	40A x 1,200 mm	**33 07 77**	65A x 1,200 mm
72	40A x 1,800 mm	**78**	65A x 1,800 mm
73	40A x 3,600 mm	**79**	65A x 3,600 mm
33 07 74	50A x 1,200 mm		
75	50A x 1,800 mm		
76	50A x 3,600 mm		

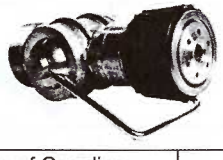
Remark: Lug distance of Storz coupling C 50A: 66 mm, Storz coupling 65A: 81 mm, Storz coupling B 75A: 89 mm, and of Nakajima coupling 40A: 61mm, 50A: 2 mm, 65A: 91mm

Fog Nozzles 3-position for Fire Hose Nozzle

3-position nozzles produces shut-off/spray/jet flow spray modes.

Nozzle comes with couplings suitable to connect with the hose couplings of the ship. Made of brass.

Made of Brass



Unit Per Pc.

CODE	Type of Coupling	Size
33 08 30	BSP male	2" (50A)
33 08 42	Storz	2" (50A)
43		2-1/2" (65A)
33 08 31	Nakajima	1-1/2" (40A)
32		2" (50A)
33		2-1/2" (65A)
33 08 34	ANSI Pin	1-1/2" (40A)
35		2" (50A)
36		2-1/2" (65A)
33 08 37	Machino	1-1/2" (40A)
38		2" (50A)
39		2-1/2" (65A)

Made of Aluminium

Unit Per Pc.

CODE	Type of Coupling	Size
33 35 50	BSP male	2" (50A)
33 35 51	PIN Lug	1-1/2" (40A)
52		2-1/2" (65A)
33 35 53	Storz	2" (50A)
54		2-1/2" (65A)
33 35 55	Nakajima	1-1/2" (40A)
56		2" (50A)
57		2-1/2" (65A)
33 35 58	Machino	1-1/2" (40A)
59		2" (50A)
60		2-1/2" (65A)

International Shore Connections

Required by SOLAS regulations Chapter II Regulation 19. "Ships of 500 tons or more shall be provided with at least one international shore connection."

The connection is fitted with a coupling to match the hose couplings on the ship.

Please specify the required type of ship's coupling: Nakajima, ANSI Pin, etc. when ordering. Connections come with bolts, nuts, washers and gaskets.

Basic Dimensions

Outside Diam.	: 178 mm	Inside diam.	: 64 mm
P. C. D.	: 132 mm	Flange Thick	: 14.5 mm
Slots in Flange	: 19 mm diam x 4 holes		
Bolts and Nuts	: 16 mm diam x 50 mm length x 4 pcs.		

33 08 41	International shore connection fitted with couplings to match hose coupling on ship	Pc.

Keeping Box for International Shore Connection

Made of polyester reinforced with glass fibre. The outside is smooth finished.

33 08 40	Keeping box for international shore connection, polyester, red coloured, 290 x 290 x 170 mm	Pc.

Name of Mfr.: Alligator

Fire Hose Couplings

A wide variety of types are available as per the illustration below. Made of Brass or Aluminium are available, and used for shipboard fire fighting.

Nakajima

Machino

John Morris

Nor

USA Pin

USA Slotter

French

Storz

Unit Per Pr.

CODE	Size	Type	Standard	Connection
Brass				
33 08 51 **52** **53**	40A(1-1/2) 50A(2) 65A(2-1/2)	Nakajima	JIS F-7335	Interlocking
33 08 54 **55** **56** **57** **58**	25A(1) 40A(1-1/2) 50A(2) 65A(2-1/2) 75A(3)	Machino	JIS B-9911	Inserting
33 08 59 **60** **61**	40A(1-1/2) 50A(2) 65A(2-1/2)	John Morris	B.S.336	Inserting
33 08 62 **63** **64**	40A(1-1/2) 50A(2) 65A(2-1/2)	Nor	Norwegian	Interlocking
33 08 65 **66**	1-1/2" 2-1/2"	(USA) ANSI Pin	NH (NST)	Screw Connecting
33 08 69 **70**	1-1/2" 2-1/2"	(USA) ANSI Slotteer	NH (NST)	Screw Connecting
33 08 73 **74**	40A(1-1/2) 65A(2-1/2)	French	NF-S61-704 NF-S61-705	Interlocking
33 08 75 **76**	52C(2) 75B(3)	Storz	DIN 14302 DIN 14303	Interlocking
33 08 77 **78** **79** **80**	25A(1) 40A(1-1/2) 50A(2) 65A(2-1/2)	BSP & PF - Not Illustrated -	BSP 21 JIS B-0202	Screw Connecting
Aluminium				
33 08 88 **89** **90**	40A(1-1/2) 50A(2) 65A(2-1/2)	Nakajima	JIS F-7335	Interlocking
33 08 82 **83**	40A(1-1/2) 65A(2-1/2)	Machino	JIS B-9911	Inserting
33 09 31 **32** **33**	40A(1-1/2) 50A(2) 65A(2-1/2)	John Morris	B.S.336	Inserting

Rubber Packings for Hose Coupling

Please specify the type and nominal size of hose coupling to be attached.

How to order : 33 - 08 - 86

Rubber packing for hose coupling, TYPE of HOSE COUPLING, NOMINAL SIZE

Unit Per Pc.

CODE	Size	CODE	Size
For Nakajima Coupling			
33 08 45 **46**	1-1/2" 2"	**33 08 47**	2-1/2"
For ANSI PIN Coupling			
33 08 48 **49**	1-1/2" 2"	**33 08 50**	2-1/2"
For Machino Coupling			
33 08 97 **98**	1-1/2" 2"	**33 08 99**	2-1/2"

Screw Thread Information for the above

Standard	Size	Thread Per Inch	Basic O.D. Male Part.
USA NH (NST)	1-1/2" 2" 2-1/2"	9 8 7-1/2	1.990" 2.5156" 3.0686"
British BSP Japan PF/PT	1-1/2" 2" 2-1/2"	11 11 11	47.803 mm 59.614 mm 75.184 mm

Reducing Hose Couplings

Made of brass. Designed for connecting hoses of different size. Furnished in individual pieces.

Nakajima

Machino

ANSI Pin

Unit Per Pc.

CODE	Coupling Type	Size	
		Connection	Hose End
33 08 84	Nakajima	2"	1-1/2"
91		2-1/2"	1-1/2"
85			2"
33 08 92 **87**	Machino	2-1/2"	1-1/2" 2"
33 08 93 **33 09 00**	ANSI Pin	2-1/2"	1-1/2" 2"

Fire Hose Couplings

Y Piece

33 08 81	Coupling fire hose, brass, Y piece, Inlet 2" male	Pc.

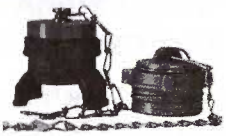
Fire Hose Couplings

Guillemin Type

33 18 01-03

33 18 06-14

33 18 16-19



33 18 21-24

33 18 26-29

33 18 31

CODE	Size	Material	Type	Alligator No.
Fire Hose Couplings with Locking Ring				Unit Per Pc.
33 18 01	Hose end 45 mm Lug size 45 mm	Aluminium	Guillemin	SM044045
02	Hose end 38 mm Lug size 70 mm			SM044063
03	Hose end 70 mm Lug size 70 mm			SM044070
Adapters				Unit Per Pc.
33 18 06	2" BSP female, Lug size 45 mm	Aluminium	Guillemin	SM046045
07	2" BSP female, Lug size 70 mm			SM046070
08	2-1/2" BSP female, Lug size 70 mm			SM046071
09	1-1/2" R female, Lug size 45 mm			SM046044
10	2" R female, Lug size 50 mm			SM046050
33 18 11	1-1/2" BSP male, Lug size 45 mm	Aluminium	Guillemin	SM046043
12	2" R male, Lug size 45 mm			SM046046
13	2" R male, Lug size 50 mm			SM046051
14	2-1/2" R male, Lug size 70 mm			SM046073
33 18 16	2-1/2" BSP female, Lug size 70 mm	Brass	Guillemin	SM047071
17	2" R female, Lug size 45 mm			SM047047
18	2" R female, Lug size 70 mm			SM047072
19	2-1/2" R female, Lug size 70 mm			SM047074
Caps with Locking Ring				Unit Per Pc.
33 18 21	Lug size 45 mm	Aluminium	Guillemin	SM048045
22	Lug size 70 mm			SM048070
33 18 23	Lug size 45 mm	Brass	Guillemin	SM048545
24	Lug size 70 mm			SM048570
Rubber Rings Suction/Delivery				Unit Per Pc.
33 18 26	Suction/Delivery 45 mm	Rubber	Guillemin	SM049045
27	Suction/Delivery 70 mm			SM049070
28	Delivery 45 mm			SM049046
29	Delivery 70 mm			SM049071
Spanners				Unit Per Pc.
33 18 31	for all size	Brass	Guillemin /DSP	SM05010

UNI 45 / UNI 70 Type

33 18 41/42

33 18 43/44

33 18 51

33 18 52

33 18 53

33 18 54

33 18 55

33 18 56

33 18 57

33 18 58

33 18 59

33 18 61/62

33 18 63

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pr.
33 18 41	45 mm	Brass	UNI 45	SM06045
42	70 mm		UNI 70	SM06070
Rubber Rings				Unit Per Pc.
33 18 43	-	Rubber	UNI 45	SM06145
44			UNI 70	SM06170
Adapters				Unit Per Pc.
33 18 51	45× 2" (UNI female × BSP female)	Brass	UNI 45	SM065040
52	70× 2" (UNI female × BSP female)		UNI 70	SM065060
53	70× 2-1/2" (UNI female × BSP male)		UNI 70	SM065065
54	70× 2-1/2" (UNI female × BSP female)		UNI 70	SM065066
33 18 55	45× 2" (UNI male × BSP female)	Brass	UNI 45	SM06569
56	70× 2" (UNI male × BSP female)		UNI 70	SM06570
57	70× 2-1/2" (UNI male × BSP female)		UNI 70	SM06571
58	70× 2-1/2" (UNI male × BSP male)		UNI 70	SM06572
59	45× 70 (UNI male × UNI female)		UNI 45/ UNI 70	SM06575
Caps				Unit Per Pc.
33 18 61	-	Brass	UNI 45	SM07045
62			UNI 70	SM07070
Spanners				Unit Per Pc.
33 18 63	-	Brass	UNI 45-70	SM075045

Machino/Nakajima Type

33 18 71

33 18 72

33 18 73

33 18 74

33 18 75

33 18 76

33 18 77

33 18 78-80

33 18 81

33 18 82

33 18 83

33 18 84

33 18 86

33 18 87

33 18 88

33 18 91-93

33 18 96-98

CODE	Size	Material	Type	Alligator No.
Adapters				Unit Per Pc.
33 18 71	1-1/2"(40A) female Thread:2" BSP female	Brass	Machino	SM082040
72	1-1/2"(40A) male Thread:2" BSP female			SM082055
33 18 73	2" (50A) female Thread: 2" BSP female	Brass	Machino	SM082045
74	2" (50A) male Thread: 2" BSP female			SM082056
33 18 75	2-1/2" (65A) male Thread: 2" BSP female	Brass	Machino	SM082060
76	2-1/2"(65A) female Thread: 2" BSP female			SM082050
77	2-1/2"(65A) female Thread: 2-1/2" BSP female			SM082047
Caps				Unit Per Pc.
33 18 78	1-1/2" (40A)	Bass	Machino	SM08405
79	2" (50A)			SM08407
80	2-1/2" (65A)			SM08410
Adapters				Unit Per Pc.
33 18 81	1-1/2" (40A) Lug Size: 61 mm Thread: 2" BSP female	Brass	Nakajima	SM09861
82	2" (50A) Lug Size: 72 mm Thread: 2" BSP female			SM09872
83	2-1/2" (65A) Lug Size: 91 mm Thread: 2" BSP female			SM09891
84	2-1/2" (65A) Lug Size: 91 mm Thread: 2-1/2" BSP female			SM09895
33 18 86	1-1/2" (40A) Lug Size: 61mm Thread: 2" BSP female	Aluminium	Nakajima	SM09897
87	2" (50A) Lug Size: 72mm Thread: 2" BSP female			SM09898
88	2-1/2" (65A) Lug Size: 91mm Thread: 2" BSP female			SM09899

(to be continued)

Caps				Unit Per Pc.
33 18 91	1-1/2" (40A) Lug size: 61 mm	Aluminium	Nakajima	SM099061
92	2" (50A) Lug size: 72mm			SM099072
93	2-1/2" (65A) Lug size: 91 mm			SM099091
33 18 96	1-1/2" (40A) Lug size: 61 mm	Brass	Nakajima	SM10061
97	2" (50A) Lug size: 72mm			SM10072
98	2-1/2" (65A) Lug size: 91 mm			SM10091

KR/NS Type

33 32 01

33 32 02

33 32 03/04

33 32 05

CODE	Size	Material	Type	Alligator No.
Fire Hose Couplings				Unit Per Pc.
33 32 01	63 mm Lug size: 84 mm Hose end: 63 mm	Brass	KR	SM138065
33 32 02	50 mm Lug size: 68 mm Hose end: 50 mm	Brass	NS	SM140050
Adapters				Unit Per Pc.
33 32 03	2" Lug size: 68 mm Thread: BSP female	Brass	NS	SM141050
33 32 04	2" Lug size: 84 mm Thread: BSP female	Brass	KR	SM141084
Caps				Unit Per Pc.
33 32 05	2", Lug size: 68mm	Brass	NS	SM142050

Pin Lug Type

33 32 06/07

33 32 11/12
33 08 86

CODE	Size	Material	Type	Alligator No.
Caps				Unit Per Pc.
33 32 06	1-1/2" (40A) Thread: 9 TPI female	Brass	PIN Lug	SM158380
07	2-1/2" (65A) Thread: 7-1/2 TPI female			SM158650
Hose Couplings				Unit Per Pr.
33 32 11	2-1/2" (65A) Hose end: 38 mm Thread: 7-1/2 TPI	Brass	PIN Lug	SM174380
12	2-1/2" (65A) Hose end: 50 mm Thread: 7-1/2 TPI			SM174500
33 08 66	2-1/2" (65A) Hose end: 65 mm Thread: 7-1/2 TPI			SM174630

(to be continued)

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pr.
33 32 15	1-1/2" (40A) Hose end: 38 mm Thread: 7-1/2 TPI	Aluminium	PIN Lug	SM175380
16	2" (50A) Hose end: 50 mm Thread: 7-1/2 TPI			SM175500
17	2-1/2" (65A) Hose end: 65 mm Thread: 7-1/2 TPI			SM175630

LFB/LRT Type

33 32 21-23

33 32 24

33 32 26

33 32 27

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pr.
33 32 21	2-1/2" (65A) Hose end: 38 mm Thread: 5-1/5 TPI	Brass	LFB	SM204380
22	2-1/2" (65A) Hose end: 50 mm Thread: 5-1/5 TPI			SM204500
23	2-1/2" (65A) Hose end: 63 mm Thread: 5-1/5 TPI			SM204630
Adapter				Unit Per Pc.
33 32 24	2-1/2" (65A) 5-1/5" female thread × 2-1/2" BSP female thread	Brass	LFB	SM204631
Caps				Unit Per Pc.
33 32 26	2-1/2"	Brass	LFB	SM205650
File Hose Couplings				Unit Per Pr.
33 32 27	2-1/2" Hose end: 63mm	Brass	LRT	SM206630

Instantaneous Type

33 32 29
33 08 59/60/61

33 32 31-33

33 32 34/35

33 32 36/37

33 32 38/39

33 32 41/42

33 32 43/44

33 32 45

33 32 46

33 32 47

33 32 48

CODE	Size	Material	Type	Alligator No.
Fire Hose Couplings				Unit Per Pr.
33 08 59	Lug size 2-1/2" Hose end: 40 mm	Brass	Instanta-neous	SM395238
32 29	Lug size 2-1/2" Hose end: 45 mm			SM395245
08 60	Lug size 2-1/2" Hose end: 50 mm			SM395252
08 61	Lug size 2-1/2" Hose end: 65 mm			SM395265
33 32 31	Lug size 2-1/2" Hose end: 38 mm	Aluminium	Instanta-neous	SM396038
32	Lug size 2-1/2" Hose end: 52 mm			SM396050
33	Lug size 2-1/2" Hose end: 63 mm			SM396063
Adaptors Female				Unit Per Pc.
33 32 34	2-1/2" Thread: 2" BSP female	Brass	Instanta-neous	SM410050
35	2-1/2" Thread: 2-1/2" BSP female			SM410065
33 32 36	2-1/2" Thread: 2" BSP female	Aluminium	Instanta-neous	SM411050
37	2-1/2" Thread: 2-1/2" BSP female			SM411065
Adapters Male				Unit Per Pc
33 32 38	2-1/2" Thread: 2" BSP female	Brass	Instanta-neous	SM415050
39	2-1/2" Thread: 2-1/2" BSP female			SM415065
33 32 41	2-1/2" Thread: 2" BSP female	Aluminium	Instanta-neous	SM416050
42	2-1/2" Thread: 2-1/2" BSP female			SM416065
33 32 43	2-1/2" Thread: 2" BSP male	Aluminium	Instanta-neous	SM417050
44	2-1/2" Thread: 2-1/2" BSP male			SM417065
Caps Male				Unit Per Pc.
33 32 45	2-1/2" male	Brass	Instanta-neous	SM420065
46	2-1/2" female			SM420080
33 32 47	2-1/2" male	Aluminium		SM421065
Rubber Rings				Unit Per Pc.
33 32 48	2-1/2"	Rubber	Instanta-neous	SM425066

NOR Type

33 32 51-53
33 08 62/63/64

33 32 55-58

33 32 60-62

33 32 63/64

33 32 65

33 32 66/67

PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pr.
33 08 62	1-1/2" (40A) Hose end: 38 mm	Brass	NOR	SM530138
32 51	2" (LAS 2) Hose end: 38 mm			SM530238
08 63	2" (50A) Hose end: 50 mm			SM530250
32 52	2-1/2" (LAS 1) Hose end: 38 mm			SM530638
08 64	2-1/2" (65A) Hose end: 65 mm			SM530665
32 53	2-1/2" (LAS 1) Hose end: 50 mm			SM530650
Adapters				Unit Per Pc.
33 32 55	2" (LAS 2) Thread: 1-1/2" BSP female	Brass	NOR	SM535038
56	2" (LAS 2/50A) Thread: 2 BSP female			SM535050
57	2-1/2" (LAS 1) Thread: 2" BSP female			SM535065
58	2-1/2" (LAS 1/65A) Thread: 2-1/2" BSP female			SM535070
Adapters				Unit Per Pc.
33 32 60	2" (LAS 2/50A) Thread: 2" BSP male	Brass	NOR	SM540050
61	2-1/2" (LAS 1) Thread: 2 BSP male			SM540065
62	2-1/2" (LAS 1/65A) Thread: 2-1/2" BSP male			SM540070
Caps				Unit Per Pc.
33 32 63	2" (LAS2/50A)	Brass	NOR	SM542050
64	2-1/2" (LAS 1/65A)			SM542065
Coupling Spanners				Unit Per Pc.
33 32 65	2" - 2-1/2"	Steel	NOR	SM543015
Rubber Rings				Unit Per Pc.
33 32 66	2"	Rubber	NOR	SM545050
67	2-1/2"			SM545065

Barcelona Type

33 32 71-73

33 32 74-77

33 32 81-84

33 32 86-89

33 32 91/92

33 32 93

33 32 94/95

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pc.
33 32 71	DN45 Hose end 45 mm Lug size 62 mm	Aluminium	Barcelona	SM550035
72	DN70 Hose end 63 mm Lug size 85 mm			SM550063
73	DN70 Hose end 70 mm Lug size 85 mm			SM550070

(to be continued)

33 32 74	DN70 Hose end 38 mm Lug size 85 mm	Brass	Barcelona	SM552039
75	DN70 Hose end 52 mm Lug size 85 mm			SM552050
76	DN70 Hose end 63 mm Lug size 85 mm			SM552063
77	DN70 Hose end 70 mm Lug size 85 mm			SM552070
Adapters				Unit Per Pc.
33 32 81	DN45, Lug size 62mm, Thread: 2" BSP female	Aluminium	Barcelona	SM555005
82	DN70, Lug size 85mm, Thread: 2" BSP male			SM555009
83	DN70, Lug size 85mm, Thread: 2" BSP female			SM555010
84	DN70, Lug size 85mm, Thread: 2-1/2" BSP female			SM555070
33 32 86	DN45, Lug size 62mm, Thread: 2" BSP female	Brass	Barcelona	SM556005
87	DN70, Lug size 85mm, Thread: 2" BSP female			SM556010
88	DN70, Lug size 85mm, Thread: 2-1/2" BSP female			SM556070
89	DN70, Lug size 85mm, Thread: 2-1/2" BSP male			SM556071
Caps				Unit Per Pc.
33 32 91	DN45 Lug size: 62mm	Aluminium	Barcelona	SM560045
92	DN70 Lug size: 85mm			SM562070
33 32 93	DN70 Lug size: 85mm	Brass	Barcelona	SM562070
Rubber Rings				Unit Per Pc.
33 32 94	DN45	Rubber	Barcelona	SM570045
95	DN70			SM570070

GOST Type

33 32 96/97

33 33 01-03

33 33 04/05

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pc.
33 32 96	2" Hose end: 52 mm Lug size: 79 mm	Brass	GOST 2 LUGS	SM640050
97	2-1/2" Hose end: 64 mm Lug size: 96 mm			SM640065
Adapters				Unit Per Pc.
33 33 01	2", Lug size 79 mm Thread: 2" BSP female	Brass	GOST 2 LUGS	SM641050
02	2-1/2", Lug size 96 mm Thread: 2" BSP female			SM641065
03	2-1/2", Lug size 96 mm Thread: 2-1/2" BSP female			SM641070

(to be continued)

CODE	Size	Material	Type	Alligator No.
Caps				Unit Per Pc.
33 33 04	2", Lug size 79 mm	Brass	GOST 2 LUGS	SM642050
05	2-1/2", Lug size 96 mm			SM642065

ROTA 3 LUGS Type

33 33 06-09

33 33 11-13

33 33 14/15

33 33 16

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pc.
33 33 06	2" Hose end: 50 mm	Brass	ROTA 3 LUGS	SM660035
07	2-1/2" Hose end: 38 mm			SM660038
08	2-1/2" Hose end: 50 mm			SM660050
09	2-1/2" Hose end: 63 mm			SM660065
Adapters				Unit Per Pc.
33 33 11	2", Thread: 2" BSP female	Brass	ROTA 3 LUGS	SM665035
12	2-1/2", Thread: 2" BSP female			SM665050
13	2-1/2", Thread: 2-1/2" BSP female			SM665065
Caps				Unit Per Pc.
33 33 14	2"	Brass	ROTA 3 LUGS	SM666035
15	2-1/2"			SM666065
Rubber Rings				Unit Per Pc.
33 33 16	2-1/2", Inside dia 62 mm Outside dia 74 mm Thick 16mm	Rubber	ROTA	SM667065

Storz Type

33 33 21-38

33 33 41-48

33 33 51-55

33 33 61-66

33 33 71-75

33 33 76-78

33 33 81-98
33 08 75/76

33 34 01-07

33 34 11-15

33 34 21-25

33 34 26

33 34 27

33 34 28

33 34 29

33 34 30

33 34 36-38

33 34 41-47

33 34 51-55

33 34 61-65

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pc.
33 33 21	Lug size: 52 mm Hose end: 25 mm	Aluminium	Storz	SM700525
22	Lug size: 52 mm Hose end: 32 mm			SM700532
23	Lug size: 52 mm Hose end: 38 mm			SM700538
33 33 24	Lug size: 66 mm Hose end: 25 mm	Aluminium	Storz-C	SM700625
25	Lug size: 66 mm Hose end: 32 mm			SM700632
26	Lug size: 66 mm Hose end: 38 mm			SM700638
27	Lug size: 66 mm Hose end: 45 mm			SM700645
28	Lug size: 66 mm Hose end: 52 mm			SM700650
33 33 31	Lug size: 81 mm Hose end: 38 mm	Aluminium	Storz-65	SM700838
32	Lug size: 81 mm Hose end: 52 mm			SM700850
33	Lug size: 81 mm Hose end: 65 mm			SM700865
34	Lug size: 81 mm Hose end: 75 mm			SM700875
33 33 35	Lug size: 76 mm Hose end: 65 mm	Aluminium	Storz China	SM700880
33 33 36	Lug size: 89 mm Hose end: 52 mm	Aluminium	Storz-B	SM700950
37	Lug size: 89 mm Hose end: 65 mm			SM700965
38	Lug size: 89 mm Hose end: 75 mm			SM700975
Adapters				Unit Per Pc.
33 33 41	1-1/2" Lug size 66 mm Thread: BSP female	Aluminium	Storz-C	SM705645
42	2" Lug size 66 mm Thread: BSP female			SM705650
43	2-1/2" Lug size 66 mm Thread: BSP female			SM705665
33 33 44	2" Lug size 81 mm Thread: BSP female	Aluminium	Storz-65	SM705850
45	2-1/2", Lug size 81 mm Thread: BSP female			SM705865
33 33 46	2" Lug size 89 mm Thread: BSP female	Aluminium	Storz-B	SM705950
47	2-1/2", Lug size 89 mm Thread: BSP female			SM705965
48	3" Lug size 89 mm Thread: BSP female			SM705975
33 33 51	1-1/2" Lug size 66 mm Thread: BSP male	Aluminium	Storz-C	SM710654
52	2" Lug size 66 mm Thread: BSP male			SM710655
33 33 53	2" Lug size 81 mm Thread: BSP male	Aluminium	Storz-65	SM710855
54	2-1/2" Lug size 81 mm Thread: BSP male			SM710860

(to be continued)

CODE	Size	Material	Type	Alligator No.
33 33 55	2-1/2" Lug size 89 mm Thread: BSP male	Aluminium	Storz-B	SM710890
Reducing Pieces				Unit Per Pc.
33 33 61	66 × 44 mm	Aluminium	Storz	SM712044
62	81 × 66 mm			SM712081
63	89 × 66 mm incl. swivel			SM712089
64	89 × 81 mm			SM712091
65	115 × 66 mm			SM7120911
66	133 × 89 mm			SM712092
Caps				Unit Per Pc.
33 33 71	1-1/2", Lug size 52 mm	Aluminium	Storz	SM715052
72	2", Lug size 66 mm		Storz-C	SM715660
73	2-1/2", Lug size 81 mm		Storz-65	SM715881
74	3", Lug size 89 mm		Storz-B	SM715889
75	4", Lug size 133 mm		Storz	SM715895
Y Piece with Cocks				Unit Per Pc.
33 33 76	Inlet 89 mm Outlet 66 mm	Aluminium	Storz	SM716750
77	Lug size 81 mm			SM716760
78	Lug size 66 mm			SM716770
Hose Couplings				Unit Per Pc.
33 33 81	Lug size: 44 mm Hose end: 19 mm	Brass	Storz	SM720420
82	Lug size: 44 mm Hose end: 25 mm			SM720425
83	Lug size: 44 mm Hose end: 32 mm			SM720432
84	Lug size: 52 mm Hose end: 25 mm			SM720525
85	Lug size: 52 mm Hose end: 32 mm			SM720532
86	Lug size: 52 mm Hose end: 38 mm			SM720538
33 33 87	Lug size: 66 mm Hose end: 25 mm	Brass	Storz-C	SM720625
88	Lug size: 66 mm Hose end: 32 mm			SM720632
89	Lug size: 66 mm Hose end: 38 mm			SM720638
08 75	Lug size: 50 mm Hose end: 50 mm			SM720650
33 90	Lug size: 66 mm Hose end: 45 mm			SM720645
91	Lug size: 66 mm Hose end: 63 mm			SM720663
33 33 92	Lug size: 81 mm Hose end: 38 mm	Brass	Storz-65	SM720838
93	Lug size: 81 mm Hose end: 50 mm			SM720850
94	Lug size: 81 mm Hose end: 75 mm			SM720875
33 33 95	Lug size: 76 mm Hose end: 63 mm	Brass	Storz-China	SM720865
33 33 96	Lug size: 89 mm Hose end: 38 mm	Brass	Storz-B	SM720938
97	Lug size: 89 mm Hose end: 50 mm			SM720950
98	Lug size: 89 mm Hose end: 63 mm			SM720963
08 76	Lug size: 89 mm Hose end: 75 mm			SM720975

(to be continued)

Adapters				Unit Per Pc.
33 34 01	1-1/2", Lug size 66 mm Thread:BSP female	Brass	Storz-C	SM725062
02	2", Lug size 66 mm Thread:BSP female			SM725066
33 34 03	2", Lug size 81 mm Thread:BSP female	Brass	Storz-65	SM725081
04	2-1/2", Lug size 81 mm Thread:BSP female			SM725082
33 34 05	2", Lug size 76 mm Thread:BSP female	Brass	Storz China	SM725085
33 34 06	2", Lug size 89 mm Thread:BSP female	Brass	Storz-B	SM725089
07	2-1/2", Lug size 89 mm Thread:BSP female			SM725090
33 34 11	1-1/2", Lug size 66 mm Thread:BSP male	Brass	Storz-C	SM727062
12	2", Lug size 66 mm Thread:BSP male			SM727066
33 34 13	2",Lug size 81 mm Thread:BSP male	Brass	Storz-65	SM727080
14	2-1/2", Lug size 81 mm Thread:BSP male			SM727081
33 34 15	3", Lug size 89 mm Thread:BSP male	Brass	Storz-B	SM727089
Caps				Unit Per Pc.
33 34 21	44 mm	Brass	Storz	SM735044
22	52 mm			SM735052
23	66 mm	Brass	Storz-C	SM735066
20	76 mm	Brass	Storz-China	SM735076
24	81 mm	Brass	Storz-65	SM735081
25	89 mm	Brass	Storz-B	SM735089
Chain & S-Hook				Unit Per Pc.
33 34 26	30 cm	Steel	-	SM736100
Spanners				Unit Per Pc.
33 34 27	2" - 2-1/2"	Brass	Storz	SM755650
28	3"/2"	Iron Steel with PVC Handle	Storz-BC	SM760760
29	4", 3", 2"	Iron	Storz-ABC	SM760770
30	4", 3", 2"	Steel with PVC Handle	Storz-ABC DIN 14822	SM760780
Rubber Rings Delivery				Unit Per Pc.
33 34 36	66 mm	Rubber	Storz-C	SM790066
37	81 mm		Storz-65	SM790081
38	89 mm		Storz-B	SM790089
Rubber Rings Suction/Delivery				Unit Per Pc.
33 34 41	31 mm	Rubber	Storz	SM845031
42	44 mm			SM845044
43	52 mm			SM845052
44	133 mm			SM845133
45	66 mm	Rubber	Storz-C	SM845066
46	81 mm	Rubber	Storz-65	SM845081
47	89 mm	Rubber	Storz-B	SM845089

(to be continued)

CODE	Size	Material	Type	Alligator No.
Locking Rings				Unit Per Pc.
33 34 51	44 mm	Steel	Storz	SM847044
52	52 mm			SM847052
53	66 mm	Steel	Storz-C	SM847066
54	81 mm	Steel	Storz-65	SM847081
55	89 mm	Steel	Storz-B	SM847089
Rubber Rings				Unit Per Pc.
33 34 61	48×37×3 mm (1-1/2")	Rubber	-	SM84948
62	60×47×3 mm (2")			SM84960
63	75×54×3 mm			SM84972
64	76×66×3 mm (2-1/2")			SM84976
65	88×78×3 mm (3")			SM84988

33 34 66/67

33 34 68

33 34 71-76

33 34 81-85

33 34 91-96

33 35 01-04

33 35 11-16

7TH
33

CODE	Size	Material	Type	Alligator No.
Dual Nipples				Unit Per Pc.
33 34 66	1-1/2" × 1-1/2" Thread:ANST male	Brass	-	SM900040
67	2-1/2" × 2-1/2" Thread: BSP male			SM900066
68	2" × 2" Thread: BSP male	Brass	-	SM902050
Reducing Nipples				Unit Per Pc.
33 34 71	2" × 1" BSP male	Brass	-	SM905025
72	2-1/2"×1-1/2" BSP male			SM905065
73	2-1/2" × 2" BSP male			SM905066
74	2-1/2" × 2" ANST male × BSP male			SM905067
75	2-1/2"×2-1/2" ANST male × BSP male			SM905068
76	2-1/2"×2" ANST male×VP male			SM905069
33 34 81	2-1/2"×1-1/2" BSP male × BSP female	Brass	-	SM910065
82	2-1/2"× 2" BSP male × BSP female			SM910066
83	2-1/2"× 2" ANST male × BSP female			SM910067
84	2-1/2"×2-1/2" ANST male × BSP female			SM910068
85	2-1/2"×UNI70 ANST male × female			SM910070
Reducing Sockets				Unit Per Pc.
33 34 91	1-1/2"×2" ANST female × BSP female	Brass	-	SM915040
92	2-1/2"×1-1/2" BSP female			SM915065
93	2-1/2"×2" BSP female			SM915066
94	2-1/2"×2-1/2" ANST female × BSP female			SM915067
95	2-1/2"×2" ANST female × BSP female			SM915068
96	2-1/2"×2-1/2" ANST female × BSP female			SM915069

(to be continued)

Reducing Socket Swivel				Unit Per Pc.
33 35 01	1-1/2"×2" ANST female × BSP female	Brass	-	SM917038
02	1-1/2"×1-1/2" ANST female × ANST female			SM917040
03	2-1/2"×2" ANST female × BSP female			SM917065
04	2-1/2"×2-1/2" ANST female × ANST female			SM917070
Reducing Nipples				Unit Per Pc.
33 35 11	2"×1-1/2" BSP female × BSP male	Brass	-	SM920050
12	2-1/2"×2" BSP female × BSP male			SM920065
13	2-1/2"×2" ANST female × BSP male			SM920066
14	2-1/2"×2-1/2" ANST female × BSP male			SM920067
15	2-1/2"×1-1/2" ANST female × ANST male			SM920069
16	2-1/2"×1-1/2" ANST female × 9THR			SM920070

SMS Type

33 35 25-27

33 35 28-30

33 35 31/32

33 35 33/34

33 35 36

33 35 37

33 35 38

33 35 39

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pr.
33 35 25	2-1/2", Hose end 38mm	Alluminium/ Pressal	SMS	SM92538
26	2-1/2", Hose end 50mm			SM92550
27	2-1/2", Hose end 63mm			SM92563
33 35 28	2-1/2", Hose end 38mm	Brass	SMS	SM92638
29	2-1/2", Hose end 50mm			SM92650
30	2-1/2", Hose end 63mm			SM92663
Adapters				Unit Per Pc.
33 35 31	2-1/2", Thread 2" BSP female	Alluminium/ Pressal	SMS	SM93010
32	2-1/2", Thread 2-1/2" BSP female			SM93020
33 35 33	2-1/2", Thread 2" BSP female	Brass	SMS	SM93110
34	2-1/2", Thread 2-1/2" BSP female			SM93120
Caps				Unit Per Pc.
33 35 36	2-1/2"	Alluminium/ Pressal	SMS	SM94063
33 35 37	2-1/2"	Brass	SMS	SM94263
Reducing Couplings				Unit Per Pc.
33 35 38	63 mm × 32 mm	Alluminium/ Pressal	SMS	SM94563
Rubber Rings				Unit Per Pc.
33 35 39	2-1/2"	Rubber	SMS	SM95063

Water Mist Lance and Mobile Water Monitor

The SOLAS (SOLAS II-2/10 7.3) amendments requires the following additional firefighting systems for ships designed to carry container on or above the weather deck, and keel laid on or after 1 January 2016.

(i) Water mist lance (at least one should be installed on board), which is a device to penetrate a container wall and produce water mist inside containers.

(ii) Mobile water monitor (only for a ship designed to carry five or more tiers of containers on or above the weather deck), which is a portable device to spray water to the top tier of containers on deck. Ships with breadth less than 30m: at least two mobile water monitors to be installed, ships with breadth of 30m or more: at least four mobile water monitors to be installed.

Water Mist Lance

It complies fully with the IMO's Maritime Safety Committee's 93rd session and SOLAS regulation II-2/10.7.3. Mist Lance consists of a tube with a piercing nozzle which is capable of penetrating a container wall and producing a water mist inside the container when connected to the fire main.

Unit Per Set.

CODE	33 08 12
Max. Working Pressure	20 bar
Water Consumption	72 ltr/min at 4 bar (K-Facter : 34.6)
Throwing Distance	Approx. 10 mtr
Inlet Connection	1" BSP female thread
Dimension L x W x D	530 x 150 x 28 mm
Weight	Approx. 2 kgs (w/o Hydraulic coupling)

Special Hammer for Water Mist Lance

A heavy hammer for making an opening for extinguishing lances in doors, steel tanks, roller shutters, roofing tiles etc. Made from galvanized steel, solid welded-on impact tip and non-slip handle. Dimension: 480mm x W165mm. Weight: 2.8 kgs.

33 08 13	Hammer galvanized for making an opening for water mist lance	Pc.

Mobile Water Monitor

In addition to SOLAS amendment, MSC.1/Circ.1472 was also approved to set design and performance standards of a mobile water monitor. It is water discharge device of portable type, consisting of inlet fitting, monitor water way, swivel fitting, discharge nozzle and a shut-off device.

Highly maneuverable, operating like hand line nozzles while delivering much more wear. Simple to set up for quick attack operations, and can be left unmanned at the fire scene to conserve manpower. Horizontal range of 0 degree from 250 degree, and vertical swivel range of 0 degree from 90 degree. Ground spikes at the base is resistant to long-term wear and provide excellent ground stability.

Flow Rate and Discharge Length ± 5% tolerance

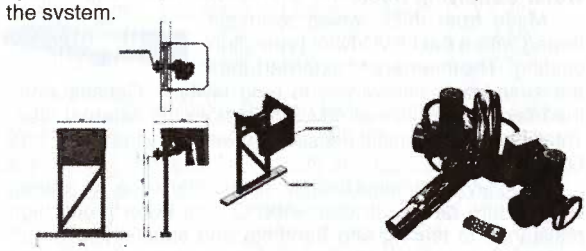
Monitor Inlet Pressure	Flow Setting	Flow Rate	Straight Stream Reach	
			Effective	Overall
Bar	Nozzle Tip	LPM	Meters	Meters
4	1,140 1,900 2,660	800 1,300 1,870	38 43 46	41 46 49
7	1,140 1,900 2,660	1,080 1,805 2,525	46 54 56	49 58 59
9	1,140 1,900 2,660	1,200 2,010 2,820	52 60 60	54 63 63

Unit Per Set

CODE	33 08 14
Model	WM-80M
Material	Body : Stainless steel 316 Jet spray nozzle: Bronze
Working Pressure	Max. 16 bar
Flow Rate	Over 1,300 ltr/min @4 bar
Discharge Length	Over 40 mtr @4 bar
Connection	2" PT female threads
Overall Dimension	Approx. 760 x 420 mm
Weight	Approx. 22 kgs w/o coupling
Note :	Hydrant coupling for option
Certificate	KR & MED approval

Anti-Piracy Water Jet Cannons

A water jet cannon is based on the use of high quality oscillating water cannons, which are installed on several points on the ship and prevent any boarding attempt when activated. The system is sent to the ship as a modular package that is installed by the crew without any required external help. Training will be given to operate the system and a user manual will enable smooth operation of the system.



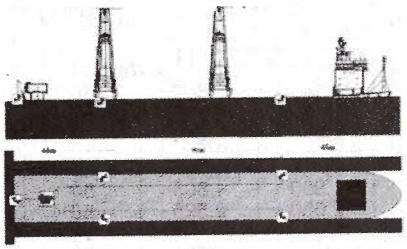
The installation of the system is divided into 2 main categories.

A – Engine room related installation

- Ensure existing pump has enough capacity.
- Else, in case the capacity is not available, connect engine room pumps to on deck diesel powered booster pump.
- Connection of hoses from pump (via engine room or deck).

B – Deck related installation

- Install water cannons on deck or railing, using supplied connection kit.
- Run 6" feeder hoses from main pump outlet / manifold.
- Run 4" hoses from feeder to water cannon.



System Components

- Storage container
- High quality oscillating water cannons, (a modified type of the systems used by fire fighting departments).
- Special fittings to temporarily attach the cannons to deck or railing.
- Hoses, supplying water from pump to water cannons.
- Ballistic shields to protect water cannons from direct small caliber fire arms.

Typical Installation Pattern per Ship's Overall Length

Overall Length	No. of Cannon	Water Supply	
		ltr/min.	m3/hr
200 mtr	5 cannons	10,000	600
280 mtr	7 cannons	14,000	840
360 mtr	9 cannons	18,000	1,080

Performance of Water Jet Cannon

- Ultra compact
- Weight : just 11.4 kgs
- Totally adjustable
- Capacity 2,000 ltr/min at 5.5 bar
- Range 50 – 55 meters
- High quality aluminum
- Includes manometer
- Left right radius between -180 degrees to +180 degrees
- Up down radius between -45 degrees to +90 degrees
- 12/24V electro motor
- Remote control option with joystick
- 10 year warranty

Water Supplying Hose

Made from thick woven synthetic thread with a bacl PVC/Nitril protection coating. The internal and external tubes are seamlessly interwoven to long levity. Consequently the internal tube cannot disconnect from the external tube. Totally oil and chemical resistant as well as extreme UV and Ozon protected.

Long levity, remains flexible, no maintenance, no rotting, temperature range -35°C to +100°C, sea water proof, high resistance to tearing and bending, and special textile cuff protect connector areas,

Couplings & Connectors

High quality aluminum connectors with fast connect and release system, as used by fire fighting department worldwide.

How to order: 31 - 41 - 21

Water jet cannon system,With further details

Fireman's Outfits

Required according to SOLAS regulations Chapter II Regulation 17. "All ships shall carry at least two fireman's outfits complying with the requirements."

In addition, two fireman's outfits shall be provided for tankers. One set contains Protective clothing, Boots, Gloves, Helmets, Electric safety lamp and Axe. However, Electrical safety lamp and Axe are not included in the unit.

Unit Per Set

CODE	33 09 01	33 09 11	33 09 21	33 09 41
Approved	H. K.	U. K. DOT	N. M. D.	MED

Individual Order

Items	Approval				Unit
	H.K.	U.K. DOT	N.M.D.	MED	
Helmet	33 09 02	33 09 14	33 09 22	33 09 42	Pc.
Coat	03	12	23	43	Pr.
Trousers	06	17	26	44	Pr.
Boots	04	16	24	45	Pr.
Gloves	05	15	25	46	Pr.

Fire Blankets

Flameproof blanket can envelop a worker from head to foot to extinguish burning clothes.

Should be located in any fire-hazard area to provide instant protection when clothing catches fire.

Unit Per Set

CODE	Material	Size	Case
33 09 50	Fibreglass with silicone rubber coating	1.8 x 1.2 mtr	PVC
51	Flame-retardant wool	82" x 62"	Metal

Water-Jel Fire Blankets and Sterile Burn Dressings

When placed on a victim, this unique fire blanket helps stop burn progression, relieve the pain, cool the skin, and protect against airborne contamination all in one easy step.

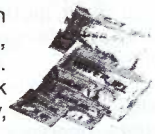
The gel-soaked blankets can also be used to extinguish flames on a victim, protect a rescuer from heat and flames, and extinguish small fires.

Fire Blankets

Unit Per Pc.

CODE	Size mm	CODE	Size mm
33 09 53	460 x 200	33 09 55	1,830 x 1,520
54	910 x 760	56	2,440 x 1,830

Sterile Burn Dressings



Sterile burn dressings help stop burn progression, relieve the pain, cool the skin, and protect against airborne contamination. These water-soluble dressings will not stick to the wound and are easy to store, carry, and use.

Unit Per Pkt.

CODE	Size mm	CODE	Size mm
33 09 57	50 × 150	**33 09 59**	100 × 400
58	100 × 100		

Name of Mfr.: Water-Jel Technologies

Fire Axes

Required with fire fighting gear by SOLAS regulation Chapter III Number 17. "The axe shall have a pick head with a wood or insulated handle."

With wood handle

With insulated handle

33 09 61	Fire axe pickhead with wood handle	Pc.
62	Fire axe pickhead with insulated handle	"

Emergency Door Key Case

Polyester Door Key Case to put around the locked door. In case of emergency, break the glass case and take the key for evacuation.

Size 110×132mm, coloured.

33 09 68	Emergency Door Key Case	Pc.

Fireproof Lifelines

Combination rope of wire and nylon or hemp rope, complete with safety snap hook. Available 15 to 50 mtr lengths.

Unit Per C/L

Code	Line			Hook
	Diam.	Length	Construction	
33 09 69	8 mm	15 mtr	Wire & Hemp	Safety Snap Hook
70		21 mtr		
71		30 mtr	Wire & Nylon	
72		40 mtr		
73		50 mtr		
74	12 mm	40 mtr	Wire & Hemp	

Chemical Protection Suits

A limited-use chemical protective suit for operations on board that involve a gaseous, liquid or solid hazardous substance.

The suit material is resistant against the chemical substances listed below in accordance with EN 943-1:2002 1b, EN943-2:2002(ET), SOLAS II-2,Reg.19.

Note: Breathing apparatus and boots are excluded from the set.

Chemical Substance	Breakthrough time in min.	Chemical Substance	Breakthrough time in min.
Acetone	> 480	Hydrogen Chloride	> 480
Acetonitrile	> 480	Methanol	> 480
Ammonia	> 480	Methyl Chloride	> 480
1,3 Butadiene	> 480	n-Heptane	> 480
Carbon Disulfide	> 480	Caustic Soda 40%	> 480
Chlorine	> 480	Sulphuric Acid 96%	> 480
Dichloromethane	> 480	Tetrachloethylene	> 480
Dimethylamine	> 480	Tetrahydrofurane	> 480
Ethyl Acetate	> 480	Toluene	> 480
Ethylene Oxide	> 480		

Type	Chemical protection suits complete with socks
Model	CPS5800
Shelf Life	10 years
Weight	2.2 kgs
Approvals	EN943 1: 2002 type 1b EN943 : 2002 (ET) SOLAS II-2, Reg 19 ISO 16602:2007

Name of Mfr.: Draeger

Unit Per Set

CODE	Size (mtr)	No.	CODE	Size (mtr)	No.
33 09 81	M:1.6-1.75	R57787	**33 09 79**	XL :1.8-1.90	R57789
78	L:1.7-1.85	R57788	**80**	XXL:1.85-2.0	R57790

Gas Protection Suits

The ideal disposable, gas-tight chemical protective suit for hazmat incidents. Where complete protection against hazardous gases, liquids and particles is of the utmost priority, this lightweight garment is the suit of choice.

The suit material is resistant to the chemical substances listed below in accordance with EN 943-1:2002 1a, EN943-2:2002(ET), SOLAS II-2 Reg.19 and NFPA 1994: 2007.

Note: Breathing apparatus and boots are excluded from the set.

Chemical Substance	Breakthrough time in min.	Chemical Substance	Breakthrough time in min.
Acetone	> 480	Methanol	> 480
Acetonitrile	> 480	Methyl Chloride	> 480
Ammonia	> 480	Mustard Gas (HD)	> 480
1,3 Butadiene	> 480	n-Heptane	> 480
Carbon Disulfide	> 480	Sarine (GB)	> 480
Chlorine	> 480	Sodium Hydroxide 40%	> 480
Dichloromethane	> 480	Soman (GD)	> 480
Dimethylamine	> 480	Sulphuric Acid 96%	> 480
Ethyl Acetate	> 480	Tetrachloethylene	> 480
Ethylene Oxide	> 480	Tetrahydrofurane	> 480
Hydrogen Chloride	> 480	Toluene	> 480
Lewisite (L)	> 480	VX	> 480

Type	Chemical protection suits complete with socks
Model	CPS5900
Shelf Life	10 years
Weight	3 kgs
Approvals	EN943 1: 2002 type 1b EN943-2: 2002 (ET) NFPA 1994: 2007 SOLAS II-2, Reg 19 ISO 16602:20071

Name of Mfr.: Draeger

Unit Per Set

CODE	Size (mtr)	No.	CODE	Size (mtr)	No.
33 09 82	S:1.5-1.65	R57781	**33 09 85**	XL :1.8 -2.0	R57784
83	M:1.6-1.75	R57782	**86**	XXL:1.95-2.1	R57785
84	L:1.7-1.85	R57783			

Disposable Gas Protection Suits

DuPont™Tychem®10000

Designed for disposable (limited or single use) Chemical Protection Suits for gas, liquids, solid chemicals. Overwhelmingly light weight, high mobility and comfort than general rubber protective clothing. Comply with Bureau Veritas Rules for the Classification of Steel Ships SOLAS II-2,Reg19. IGC Code. IBC Code. EN943:2002. EU Category: Type 1a

Note: Breathing apparatus, boots are excluded from the set.

DuPont™ Tychem®10000			
Chemical Substance	Break-through time in min.	Chemical Substance	Break-through time in min.
Acetone	>480	Chloromethane	> 480
Acetonitrile	>480	Nitrobenzene	> 480
Ammonia Gas	>480	Sodium Hydroxide 50%	> 480
1.3 Butadiene	>480	Sulfuric Acid 98%	> 480
Carbon Disulfide	>480	1122 Tetrachloroethylene	> 480
Chlorine Gas	>480	Tetrahydrofuran	>480
Dichloromethane	>480	Toluene	>480
Diethylamine	>480	Tabun	>480
N,N-Dimethylformamide	>480	Sarin	>480
Ethyl Acetate	>480	VX Gas	>480
Ethylene Oxide Gas	>480	Mustard Gas	>480
N-Hexane	>480	Lewisite	>480
Hydrogen Chloride	>480		
Methanol	>480		

Model	DuPont™ Tychem®10000
Application	Protection against toxic, corrosive gases, liquids, solid chemicals.
Weight	Approx4000g (XL size ,without boots)
Approvals	EN943:2002 SOLAS II-2, Reg 19

Unit Per Set

CODE	Size (mtr)	Chest (cm)	CODE	Size (mtr)	Chest (cm)
DuPont™Tychem®C					
33 09 75	M:1.68-1.76	92-100	**33 09 77**	XL:1.8-1.88	108-116
76	L:1.74-1.82	100-108	**99**	XXL:1.86-1.94	116-124

Name of Supplier.: Takashina

DuPont™, Tyvec®, Tychem® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company.

Disposable Chemical Protection Suits

DuPont™Tyvek® Classic Plus

Designed for disposable (limited or single use) Chemical Protection Suits for sprays, solid particles and fibers tight. Suitable for Cleaning and maintenance on-board, Spray painting, Asbestos, Dismantling of a ship(Dioxins). Comply with Bureau Veritas Rules for the Classification of Steel Ships SOLAS II-2,Reg. EN 14605:2005+A1:2009. EU Category: Type 4.5.6

Note: Breathing apparatus are excluded from the set.

Model	DuPont™Tyvek® Classic Plus
Weight	Approx 300 grm (without gloves and boots)
Approvals	EN 14605:2005+A1:2009 SOLAS II-2, Reg 19 Biological protection: EN 14126:2003

Unit Per Set

CODE	Size (mtr)	Chest (cm)	CODE	Size (mtr)	Chest (cm)
33 09 87	M:1.68-1.76	92-100	**33 09 89**	XL:1.8-1.88	108-116
88	L:1.74-1.82	100-108	**90**	XXL:1.86-1.94	116-124

Name of Supplier.: Takashina

DuPont™Tychem®C/DuPont™ Tychem®F

DuPont™ Tychem®C

DuPont™ Tychem®F

Designed for disposable (limited or single use) Chemical Protection Suits for liquids, sprays, solid particles and fibers tight. Overwhelmingly light weight, high mobility and comfort than general rubber protective clothing. Comply with Bureau Veritas Rules for the Classification of Steel Ships SOLAS II-2,Reg.IGC Code.IBC Code. EN14605: 2005+A1:2009. EU Category: Type 3.4.5.6

Note: Breathing apparatus are excluded from the set.

DuPont™ Tychem®C		DuPont™ Tychem®F	
Chemical Substance	Break-through time in min.	Chemical Substance	Break-through time in min.
Hydrochloric Acid (37%)	265	Acetone	> 480
Sulfuric Acid (>95%)	> 480	Acetonitrile	> 480
Sulfuric Acid Fuming (30%)	82	Aniline	> 480
Nitric Acid (70%)	> 480	Diethyl Ether	> 480
Phosphoric Acid (85%)	> 480	Vinyl Chloride	> 480
Hydrofluoric Acid (48%)	17	Chlorine(gaseous)	>480
Perchloric Acid (70%)	> 480	Xylene, mixed isomers	>480
Hydrogen peroxide (505)	> 480	Ethyl Acetate	>480
Sodium Hydroxide (50%)	> 480	Mercury	>480
Sodium Hypochlorite (15%)	> 480	Styrene	>480
Potassium Chromate (sat)	> 480	Toluene	>480
MercuricII Chloride (sat)	> 480	Phenol (85%)	>480
Formaldehyde	> 480	Butanol, n-	>480
(10%Liquid phase)		Benzene	>480
		Methanol	117

Model	DuPont™Tychem®C	DuPont™Tychem®F
Application	Protection against numerous inorganic chemicals.	Protection against numerous organic and highly concentrated inorganic chemicals.
Resistance	Resists liquid splashes up to 2 bar.	Resists liquid splashes up to 5 bar.

(to be continued)

Model	DuPont™Tychem®C	DuPont™Tychem®F
Weight	Approx450 g (without gloves and boots)	Approx650g (without gloves and boots)
Approvals	EN 14605:2005+A1:2009 SOLAS II-2, Reg 19 Biological protection: EN 14126:2003	

Unit Per Set

CODE	Size (mtr)	Chest (cm)	CODE	Size (mtr)	Chest (cm)
DuPont™Tychem®C					
33 09 91	M:1.68-1.76	92-100	**33 09 93**	XL:1.8-1.88	108-116
92	L:1.74-1.82	100-108	**94**	XXL:1.86-1.94	116-124
DuPont™Tychem®F					
33 09 95	M:1.68-1.76	92-100	**33 09 97**	XL:1.8-1.88	108-116
96	L:1.74-1.82	100-108	**98**	XXL:1.86-1.94	116-124

Name of Supplier.: Takashina

DuPont™, Tyvec®, Tychem® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company.

Asbestos Safety Kit

The asbestos safety kit is used by vessel's crew to remove asbestos materials during operation/at sea. The kit is accompanied by an instruction how to use the PPE, the equipment including vacuum cleaner. The kit is usually part of an Asbestos Management Plan. In this Plan the locations of asbestos are indicated and preventive measures to avoid exposure to the asbestos fibres. The kit is not to be used for large scale asbestos removal works e.g. during docking.

Each item in the kit is according to EU quality standard for asbestos removal, and approved by a certified company (such as Kiwa Oesterbaai) for Inventory of Hazardous Materials (DNV GL, Rina, Bureau Veritas, Lloyd's Register).

Asbestos Safety Kit contains:

- HEPA vacuum cleaner with vacuum cleaner bags
- PPE
- Asbestos waste bags
- Asbestos warning stickers
- Duct tape
- Glue spray
- Spray bottle with impregnating fluid
- Full instruction
- Certified

33 09 67	Asbestos Safety Kit	Set

Name of Mfr.: Alligator

Fire Extinguishers

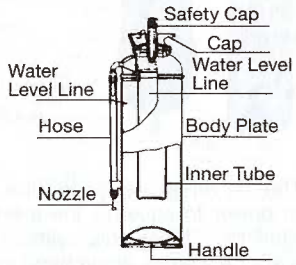
Ships of 1,000 gross tons or more shall carry at least 5 portable fire extinguishers as required by 1974 SOLAS Chapter II Regulation 6 amended 1983.

Table for General Extinguishing Agents Required

Class of Fire	Type of Hazard	Agents				
		Water	Foam	ABC Dry Chemical	CO_2	Halon
A	Ordinary Combustible Wood, Cloth, Paper Rubbish	Yes	Yes	Yes	No	No
B	Flammable Liquids and Grease, Gasoline, Oil, Paint Grease, Natural Gas, Manufactured Gas	No	Yes	Yes	Yes	Yes
C	Electrical Equipment Wiring, Controls, Panels, Motors	No	No	Yes	Yes	Yes
A + B	Combination of Ordinary Combustible and Flammable Liquids and Gases	No	No	Yes	No	No
A + C	Combination of Ordinary Combustible and Electrical Equipment	No	No	Yes	No	No
B & C	Combination of Flammable Liquids & Gases and Electrical Equipment	No	No	Yes	Yes	Yes
A,B & C	Combination of Ordinary Combustible and Flammable Liquids & Gases and Electrical Equipment	No	No	Yes	No	No

Chemical Foam Fire Extinguishers AB Type

Class AB foam fire extinguisher for flammable or combustible liquid and wood, cloth, paper, rubber, etc, Not for use in fires of electrical origin.



Unit Per Pc.

CODE	Water Capacity	Discharge Duration	Weight	Remark
33 10 01	9 ltr	App. 70 sec.	14 kgs	Portable
02	45 "	110 "	100 kgs	Movable
03	150 "	240 "	275 kgs	Stationary

Refills AB Type

for Chemical Foam Fire Extinguishers

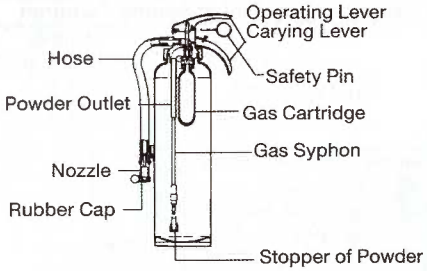
A & B in twin pack, chemical refill and lead sealing plate for foam extinguisher.

Unit Per Pkt.

CODE	For	Unit	Remark
33 10 06	9 ltr	650 grm × 2 (A & B)	-
08	9 ltr	650 grm × 2 (A & B)	w/leadplate
09	45 ltr	3.5 kgs × 2 (A & B)	-
10	150 ltr	11 kgs × 2 (A & B)	-
33 10 11	9 ltr	Lead seal plate only (Pc.)	

Dry Chemical Fire Extinguishers ABC type

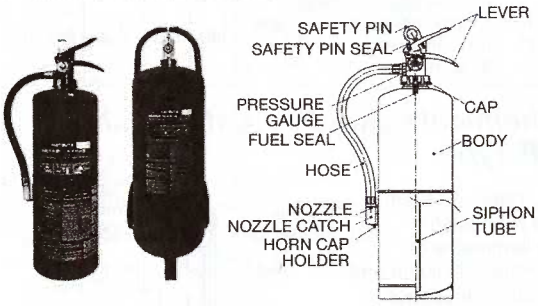
Class ABC chemical powder fire extinguisher for flammable liquid, wood, cloth, paper, rubber, etc. Also applicable for use in fires of electrical origin.



Unit Per Pc.

CODE	Power Content	Discharge Duration	Weight	Remark
33 10 15	1.2 kgs	App. 10 sec.	2.9 kgs	Portable
16	3.5 "	14 "	6.5 "	"
17	5.0 "	15 "	9.1 "	"
18	6.0 "	16 "	10.1 "	"
33 10 19	20.0 kgs	35 Sec.	46.0 kgs	Wheeled
20	23.0 "	42 "	47.0 "	

Dry Chemical Fire Extinguishers
Pressurized, ABC Type



The universal designed Fire Extinguisher, with only 1/3 of power to squeeze the lever compared to a regular extinguisher. Since this cylinder is already pressurized, there are no worries about bursting at the time of operation (burstless). Maintenance check is quite simple to check the pressure gauge pointer is in green zone. Also it is in compliance with PRTRs(Pollutant release and transfer register).

Unit Per Pc.

CODE	Powder Content	Discharge Duration	Weight	Remark
33 10 04	5.0 kgs	App. 14 sec.	8.3 kgs	Portable
05	6.0 kgs	18 sec.	9.3 kgs	Portable
14	23.0 kgs	42 sec.	42.0 kgs	Wheeled

Name of Mfr.: Hatsuta Seisakusho Co. Ltd.

Refills for Dry Chemical Fire Extinguisher and Spare CO_2 Gas Cartridges

ABC powder refill and carbon dioxide gas cartridges for dry chemical extinguisher.

Refills

Unit Per Pkt.

CODE	Contents	CODE	Contents
33 10 26	1.2 kgs	**33 10 24**	3.5 kgs
27	1.5 "	**22**	5.0 "
28	2.0 "	**25**	6.0 "
23	3.0 "	**29**	15.0 "

Spare CO_2 Gas Cartridges

Unit Per Btl

CODE	Contents	For	
		Powder Contents	Fire Extinguisher
33 10 21	B17 grm	1.2 kgs	CSP-4SA
32	C30 grm		SSA-4L
50	B30 grm		SSA-4S
33 10 34	C60 grm	3.5 kgs	SDP-10SA SA-10L SA-10R
33 10 30	D105 grm	4.5 kgs	SDP-15SA
33 10 39	D155 grm	6.0 kgs	SDP-20SA SA-20L
33 10 40	D450 grm	20 kgs	SA-50
		23 kgs	SA-50S
		23 kgs	SDP-55
33 10 54	3.4 ltr (N_2)	40 kgs	SDP-100
59	13.4 ltr (N_2)		SA-100F
33 10 60	13.4 ltr (N_2)	45 kgs	SDP-100HP SA-100H

Remark: CSP and SDP from Hatsuta/SSA and SA from Yamato

Spare CO_2+ N_2 Mixed Cartridges

Unit Per Btl

CODE	Contents	For	
		Powder Contents	Fire Extinguisher
33 10 57	D61 grm (CO_2 + N_2)	4.5 kgs	SA-15NR
		5.0 kgs	SA-17NR
33 10 58		6.0 kgs	SA-20NR

Carbon Dioxide Fire Extinguishers
BC Type

Class BC carbon dioxide fire extinguisher for fighting flammable liquid and electrical fires.

CO_2 is a clean, dry gas and does not conduct electricity. It leaves no residue and can be used on delicate electronic equipment.

Unit Per Pc.

CODE	CO_2 Content	Discharge Duration	Weight	Remark
33 10 41	2.3 kgs	16 sec.	8.5 kgs	Portable
42	5.0 "	27 "	15.5 "	"
43	6.8 "	30 "	21.1 "	"
44	23.0 "	40 "	100.0 "	With wheel

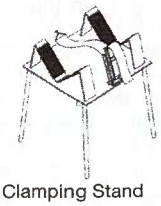
Refilling
for Carbon Dioxide Fire Extinguisher

Empty cylinders can be refilled with carbon dioxide gas as dictated by the High Pressure Gas Safety Regulations. When refilling, the Pressure Test Certificate of the cylinder may be required.

CODE	CO_2 Content	Unit
33 10 46	2.3 kgs	Time
47	5.0 "	"
48	6.8 "	"
49	23.0 "	"

Maintenance Equipment
for Fire Extinguishers

To be provided on board for testing, inspection and service apparatus.



Clamping Stand

Cap Spanner

CODE	Description	Unit
33 10 55	Clamping stand	Set
56	Cap spanner	Pc.

U.K. DOT Approved Fire Extinguishers

Here listed is one of the classified fire extinguishers by U.K. DOT for your reference.

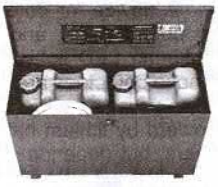
Unit Per Pc.

CODE	Model	Agent	Contents	Application
33 10 61	CW 9	Water	9 ltr	Class A
33 10 62	CF 9	Foam	9 ltr	Class B
63	TF 45	"	45 "	"
64	TF 135	"	136 "	"
33 10 65	CD 10	CO_2	4.5 kgs	Class B, C
66	CD 15	"	6.8 "	"
33 10 67	SP 3	Powder	3.0 kgs	Class A, B, C
68	SP 6	"	6.0 "	"
69	SP 9	"	9.0 "	"

Name of Mfr.: Chubb Fire Limited

Portable Foam Applicators

Installation required by SOLAS 1983 Chapter II, Regulation 6. It shall consist of an air-foam nozzle of an inductor type capable of being connected to the fire main by a fire hose. It is a portable tank containing at least 20 ltr of foam-making liquid and 1 spare tank.



Specifictions

Foam Ejecting Capacity	:	Not less than 1.5 m^3/min.
Foam Expansion Ration	:	Not less than 6 times
Water Solved Foam Electing Capacity	:	Not less than 250 ltr/min.
Foam Liquid Applied	:	3% regular
Foam Liquid quantity	:	20 ltr x 2 containers

33 10 76	Portable foam applicator unit complete (Please specify type of hose coupling, using on board)	Set

ABC Fire Extinguishers
of Self-activating Chemical

The fire extinguisher works similarly to a sprinkler and is suitable for installation on the wall, near the ceiling, in the engine room, store room or empty cabin where people cannot identify the outbreak of fire. The fire extinguisher is fitted with a sensor capable of identifying atmospheric temperature over 95°C. ABC chemical powder is automatically radiated to extinguish a fire at the early stages.

Specifications

Applicable Class of Fire	ABC
Applicable Room Volume	8 m^3
Powder Contents	1.5 kgs
Sensor Reaction	Over 95°C
Time of Radiation	Approx. 6 sec.
Size W x D x H	102 x 107 x 475 mm
Weight	4.1 kgs

33 10 79	ABC fire extinguisher, self-activating type with bracket	Set

Foam Concentrates

For inflammable liquid fires it is essential to choose the foam concentrates suitable for the specific fire. The following foam concentrates are available for various fires.

No.	Name of Foam Concentrates
1	Fluoroprotein Foam
2	A.F.F.F. (Aqueous Film Forming Foam)
3	Protein Foam
4	Alcohol Resistant Fluoroprotein Foam
5	Alcohol Resistant A.F.F.F.
6	Synthetic Foam

Suggested Foam Application Methods for Various Hydrocarbon Fires

Oil Fire

Type of Fire	Foam Concentrate	Expansion Ratio	Foam Generators
Oil Tank	1 Fluoroprotein Foam 2 A.F.F.F. 3 Protein Foam	Low Expansion Foam	•Foam Monitor •Foam Chamber
Oil Tank Sub-surface Injection	Fluoroprotein Foam A.F.F.F.	Low Expansion Foam (2-4times)	•High back pressure •Foam Generator
Polar Solvents	Alcohol Resistant Fluoroprotein Foam Alcohol Resistant A.F.F.F.	Low Expansion Foam	Pour gently foam on surface of Liquid
L.N.G. L.P.G.	Synthetic Foam	High Expansion Foam Medium Expansion Foam	•High Expansion Foam Generator •Medium Expansion Foam Generator
Fat Oil	A.F.F.F.	Low Expansion Foam	•Fog Foam
Engine Room Bilge	A.F.F.F.	Low Expansion Foam	•Foam Sprinkler •Fixed Foam
	Synthetic Foam	High Expansion Foam	•High Expansion Foam Generator
Sea Spill Fire *Ships *Birth *Tanker	Fluoroprotein Foam Protein Foam A.F.F.F.	Low Expansion Foam	•Foam Monitor
Offshore Rigs & Platforms	1% Concentration A.F.F.F.	Low Expansion Foam	•Monitor
Spill of Hazardous Materials	Air Foam Alcohol Resistant A.F.F.F.	Low Expansion Foam	•Foam nozzle

Precautions in Storage

(1) Exposure to direct sun light should be avoided.
(2) The frequency of contact with air must be reduced as much as possible.
(3) Blending with different types of concentrates or liquids or contamination of a new product by an old one should be avoided to ensure the safety and effectiveness of the foam concentrates.

Unit Per Can

CODE	Name of Foam Concentrate	Concent-ration	Containing Can (Ltr)	
			Poly Can	Drum
33 10 81	Fluoroprotein Foam	3%	20	
33 10 82				200
33 10 83	A.F.F.F. (Aqueous Film Forming Foam)	3%	20	
33 10 84				200
33 10 85		6%	20	
33 10 86				200
33 10 87	Protein Foam	3%	20	
33 10 88				200
33 10 89		6%	20	
33 10 90				200
33 10 91	Alcohol Resistant Fluoroprotein Foam	6%	20	
33 10 92				200
33 10 93	Alcohol Resistant A.F.F.F.	6%	20	
33 10 94				200
33 10 95	Synthetic Foam	3%	20	
33 10 96				200

Synthetic Foam Concentrate for High Expansion Foam System

High expansion foam system is specially used for engine room and pump room. The types of foam concentrate are designated by each F.F.S manufacturer's specification in related to Class approval and cannot use the general synthetic foam concentrate. Please specify the manufacturer, type of F.F.S. model and type of Class approval when ordering.

CODE	Manufacturer of Fire Fighting System	Concentrate Model No.	Class	Content
33 39 91	Kashiwa Co. Ltd.	STHAMEX SV2% F-6 #9241	NK, ABS, LR, DNV/GL, KR, CCS, RINA	50L/ drum
33 39 92		STHAMEX SV-HT2%F-10 #9273		200L/ drum
33 39 93	Survitec Group Ltd.	HiEx Foam FC High Expansion F-12, 2% #9271	NK, CCS	20L/ can
33 39 94				200L/ durm

Heat Detector Testers

Designed to provide quick and reliable testing of heat detector with a maximum of safety regardless of the number of units to be tested.

33 10 71	Heat detector tester	Set

Heat Detector Testers for explosion-proof area

Used for carrying out the operation test of the heat detector by utilizing chemical reaction of quicklime and water to generate the high temperature vapor. The tester can also be used at explosion-proof area, because it does not use fire during the operation test. After the vapor generation is finished, wait about 10 minutes before removing the heat generating material from the container because the heat generating material is hot.

In case of using the tester in the explosion-proof area, the applicable gases are limited to Grade IIB, T4 or less according to Gas Classification (Ministry of Labour, Research institute of Industrial Safety Japan) and those having the ignition temperature of 425°C or over. The tester is the approved product of Fire Protection Equipment & Safety Center of Japan, and it is required to be calibrated every 10 years. (The calibration label should be checked.) Support rods are sold separately.

Unit Per Pc.

CODE	**33 10 45**
Model	FTH011
Type Approval No.	TH-004
Max. Temperature	100°C
Applicable Detector	Heat detector except for line type detector Fixed temperature type detector: 90°C or less Compensation type detector: 100°C or less Typical explosion-proof type heat detectors are as follows; Model FDL116-IW-75 / FDL916-IW-65/FDL120-E-60/ FDL120-E-80/FDL120-E-90/FDL120-E-100/FDP219 -I/FDP216-I/FDP214-I/FDP114-I
Weight	Approx. 900 grm
Accessories	Push stick (Made of wood φ18), M5 screw (for fitting the support rod)
Support Rod (Sold separately)	ZER-S2 : Min.980mm – Max.2,700mm ZER-L2 : Min.1,725mm – 6,000mm

Name of Mfr. : Nohmi Bosai Ltd.

Smoke Detectors

A device for detecting smoke emerged by potential fire, and raising an alarm and flickering LED light to alert. Normally the smoke detectoes are mounted on the ceiling or on a wall near the ceiling. The detector is powerd by lithium battery and which life lasts for about 10 years, but depends on environmental condition where it is mounted. A little blip and indicator light notify you the end of battery lifetime.

Unit Per Pc.

CODE	**33 10 72**
Alarm Sound	More than 70 dB
Alarm Light	LED Red
Size	100 mm diam. x 44 mm thick
Weight	160 grm

Name of Mfr. : Nippon Dry-Chemical Co.,Ltd.

Intrinsically Safe Smoke Detectors

Intrinsically safe optoelectric smoke detectors for detecting smoke emerged by potential fire, especially in hazardous area. This will be mounted on the ceiling and once it detects the smoke, it will flicker the warning indicator light.

Unit Per Pc.

CODE	**33 11 00**
Rated Voltage/Current	DC16V / 100mA
Alarm Light	LED Red
Approved Class	Ex ib B T5
Weight	240 grm

Smoke Detector Testers

For testing ionization and photoelectric detector at sight for smoke detection fire alarm system on the ceiling. Test gas is separate order.

33 10 73	Smoke detector tester	Set
74	Spare test gas for smoke detector tester, 350 grm/tin	Tin

Smoke Detector Test Spray

For secure testing of optical or photoelectrical smoke detectors without the need of additional testing instruments. Safe and easy to use, gentle on electronic instruments, evaporation without residues, can content lasts for up to 150 applications, and free of silicone.

Shake can before use and spray test spray for about 5 seconds and with a distance of approx. 30 cm towards the smoke detector. The functioning of the smoke detector has to be tested on a regular basis, and recommended testing period is two inspections per year.

Unit Per Can

CODE	Contents ml	CODE	Contents ml
33 10 75	150	**33 10 77**	250

Name of Mfr.: Weicon GmbH & Co. KG

Smoke & Heat Detector Tester (combined / dual unit)

A combined smoke & heat detector tester in one tool, suitable for testing;

(a) Optical and ionization smoke detectors, and (b) Heat detectors (fixed temperature or rate-of-rise).

The detector can be either conventional or analogue addressable. Also, this enables testing of multi-detectors or multi-criteria detectors from a single test unit.

Test Mode

Normal Heat	To test rate-of-rise and fixed temperature heat detectors up to 90°C.
Hi Heat	To test rate-of-rise and fixed temperature heat detectors up to 100°C.
Smoke	A simulated smoke generated internally using a miniature heat exchanger and a harmless liquid from the smoke capsule.
Clearing	Clean air is blown to remove previously applied smoke.

Also, execute programmed testing, such as simultaneously, sequentially, combined simultaneous and sequentially.

Safety Features:
- Battery over-current cut-out.
- Default 2 minutes maximum test duration timeout.
- Auto power off after 5 minutes of non-use.

Operating Features:
- Colour coded LED user feedback.
- Automatic infrared sensing of the detector.
- Adjustable multi-position head.

Unit Per Pc.

CODE	33 10 80
Model	NITTAN-Testifire 1001
Heat Detector Testing	4 – 6A rms
Smoke Detector Testing	< 0.5A rms
IP (Ingress Protection) Rating	IP20 (Rated according to IEC 60529)
Battery Baton	Nominal 7.2V 2.2Ah NiMH rechargeable battery pack
Battery Charger	Using 100 – 230VAC or 12 VDC input
Weight	.099 kgs
Accessories	2 Batteries, 1 charger, 1 capsule for smoke detector testing

Name of Supplier(Contact): Consilium Nittan Marine Ltd, Tokyo

Cartridge Type Capsules for Smoke & Heat Detector Tester (combined / dual unit)

33 10 97	Capsule, cartridge type for smoke & heat detector	Pc.

Accessories for Smoke & Heat Detector (combined / dual unit)

Battery Baton

Battery Charger

Unit Per Pc.

CODE	Description	Remark
33 14 21	Battery baton	Nominal 7.2V 2.2Ah NiMH rechargeable battery pack
22	Battery charger	100 – 230VAC or 8.4 VDC input

Access Poles for Smoke & Heat Detector Testers (combined/dual unit)

Unit Per Pc.

CODE	Type	Max. Length
33 14 23	Telescopic	2.2 mtr
24		4.5 mtr
25	Extension	1.1 mtr

Flame Detectors Infrared type

A sensor designed to detect the presence of a flame or fire. Flame will be detected by Infrared type sensor, and unit will be mounted on the ceiling in the room. Once it detects a flame, it will flicker the warning indicator light.

Unit Per Pc.

CODE	33 11 03
Rated Voltage/Current	DC30V / 100mA
Alarm Light	LED Red
Detecting Class	Class 1 (EN54)
Weight	210 grm

Spot Fire Detectors
Fixed Temperature Type

Spot Heat Detectors are mounted on exposed ceiling surfaces or on a sidewall near the ceiling. When two metals with different coefficients of thermal expansion are bonded together and then heated, differential expansion causes bending or flexing toward the metal having the lower expansion rate. This action closes a normally open circuit. The mechanism of this fixed temperature type fire detector triggers the fire alarm, when the temperature rises at a rate exceeding a predetermined value.

Unit Per Pc.

CODE	33 10 00
Nominal Operating Temperature	65°C
Rated Voltage/Current	DC 30 V/100 mA
Ex Class	ExibIIB (When barrier relay is connected)
Weight	65 grm

Testing Device
for Infrared Spot Type Flame Detector

An operation-testing device for infrared spot type flame detector. The testing device is capable of providing 2 ranges of emission of spectrums that are required to operate infrared flame detector: the spectrum similar to CO2 spikes immersion region by using an infrared filters over a source and the flickering similar to a flame by using a flashing lamp.

Available two type of testing methods depends upon the testing site environments. (a) Using the Test Initiation Switch (Normally use in this method), or (b) Using the Manual Test Switch (use this method if the (a) is not possible).

This testing device is mandated to calibrate at every 10 years.

The testing rod (Total length: 3,990 mm) is sold separately.

Unit Per Pc.

CODE	33 09 10
Applicable Detector	Infrared Spot Type Flame Detector Model 2RA-P
Light Source	Bulb 4.8V 0.5A
Battery	AA x 4 (Matsushita LR6 (G) or equivalent)
Dimension/ Weight	110 (W) x 148 (H) x 153 (D), Weight: Approx. 600 grm
Accessories	Carry bag, Battery (4 pcs), Spare lamp (1 pc Placed inside), Cotton swab (4 pcs), Manual

Marine Fire Stop Systems

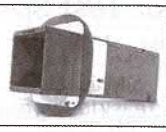
Marine firestop products are always designed specifically fast, safe, and simple to install. Additionally, the products are easy to retrofit for existing penetrations. Sealants are resilient, tough and vibration resistant while fire-rated cable pathways facilitate cable changes without compromising the integrity of the sealed opening, providing continuous savings over the lifetime of the structure or vessel.

The marine firestopping products are fully tested to applicable standards to maintain the integrity of the decks and bulkheads they are rated to such as A0, A15, A30, A60, B0, B15, and B30, as well as hydrocarbon testing for H-Class divisions.

MDM: Marine Fire Rated Cable Pathways

For conditions where cable changes will be frequent and water pressure tightness is not a requirement, the EZ-Path® Marine Cable Pathway is the fastest and most reliable solution. The steel raceway contains a self-sealing system comprised of compressible foam pads installed to form an arch. As the cables pass through the device, the pads retract and allow them to pass while gently squeezing the bundle to provide a functional smoke and air seal. Device modules can be installed individually, or ganged to increase cable capacity. Accessory plates allow for easy mounting to bulkheads or decks.

MDM300A



MDM400A

MDM400B

MDM400C

MDM400D

MDM400G

Features & Benefits:
- Provides sealing function to restrict the passage of fire, smoke, hot gases and conditioned air.
- Easily installable and retrofittable around existing cables with split plate kits.
- No specialty tools required to install.
- Smooth edges protect cable jacketing during install.
- Easily installed into a roughly cut openings, no welded or specialized sleeves required.
- Vibration resistant.

Applications:
- Accessories adapt the pathways to ganged configurations, thicker walls, retrofit with previously installed cables.
- No putty or sealant required.

Unit Per Pc.

CODE	Model No.	Descriptions	Weight
Cable Loading Area / Pathway: 39cm² (6.0 in.²)			
33 14 26	MDM300A	Marine 300 EZ-Path with integrated solid plate	2.0 kgs (4.4 lbs)
Cable Loading Area / Pathway: 82cm² (12.7 in.²)			
33 14 27	MDM400A	Marine 400 single solid plate kit and pathway unit	3.9 kgs (8.6 lbs)
33 14 28	MDM400B	Marine 400 single split plate kit and pathway unit	3.9 kgs (8.6 lbs)
33 14 29	MDM400C	Marine 400 two-gang solid plate kit with two pathway units	6.7 kgs (14.9 lbs)
33 14 30	MDM400D	Marine 400 two-gang split plate kit with two pathway units	7.8 kgs (17.2 lbs)
33 14 31	MDM400G	Marine 400 four-gang solid plate kit with four pathway unit	12.3 kgs (27.3 lbs)

Name of Mfr.: Specified Technologies Inc.

MFS: Marine Firestop Sealant

An advanced hybrid polymer sealant designed for use in H60, A0-A60 and B0-B30 Class divisions in marine and offshore construction around both cable and pipe

penetrations. Marine firestop sealant cures in the presence of atmospheric moisture to form a durable elastomeric seal. This excels in applications where a high-degree of water resistance is required, and complies with International Maritime Organization (IMO) standards.

Features & Benefits:
- Non-corrosive, non-conductive.
- Fast curing, ozone and UV resistant.
- Excellent chemical resistance protects in polluted or corrosive environments.
- Provides superior sealing function to prevent the passage of fire, smoke, hot gases, sound, conditioned air, and water.
- No specialty conduit frames, bolts, nuts, tools, or precision fitting required to install.
- No need to plan or engineer out multiple cable or pipe penetrations.
- No need to layout cables and install individual parts around each cable.

Applications:
- Can be used to form flexible, vibration-resistant seals around pipes and cables in bulkheads and decks.
- Can be used for interior or exterior applications and bonds well to a variety of materials commonly used in marine and offshore construction.
- Can be used in watertight decks and bulkheads.

Unit Per Pc.

CODE	Model No.	Description	Weight
33 14 32	MFS100	Marine firestop sealant, 9.5 oz. tube (281 ml, 17.1 cu.in.)	0.5 kgs (1.18 lbs)

Name of Mfr.: Specified Technologies Inc.

MPU: Marine Firestop Putty

Designed to seal small to medium size openings in H60, A0-A60 and B0-B30 Class divisions in marine and offshore construction for pipes and cables. Marine Firestop Putty is a non-hardening, moldable compound that can be hand-packed into openings for permanent or temporary sealing. Complies with International Maritime Organization (IMO) standards.

Features & Benefits:
- Non curing properties to allow for removal and re-installation, for cable removal or addition.
- Provides superior sealing function to prevent the passage of fire, smoke, hot gases, sound, conditioned air, and water.
- Easily repairable, retrofittable, and installable.
- No specialty tools required to install.

Applications:
- Can be used to form flexible, vibration-resistant seals around pipes and cables in bulkheads and decks.

Unit Per Pc.

CODE	Model No.	Description	Weight
33 14 33	MPU28	Marine firestop putty bar, 458.8 ml, (28 cu.in.)	0.8 kgs (1.85 lbs)
33 14 34	MPU52	Marine firestop putty coil, 15.9 ltr (3.5 gallon), packaged in pail	13.9 kgs (30.8 lbs)

Name of Mfr.: Specified Technologies Inc.

MRF: Marine Firestop Foam

A two-component RTV silicone foam that features excellent crack-and-void filling capabilities. Marine Firestop Foam exhibits uniform cell structure, assuring reproducible, smoke-tight, fire resistant installations. The elastic properties of the foam readily accommodate minor vibration of the pipe, conduit, etc. without loss of system integrity. Used in a 1:1 mix ratio, Marine Firestop Foam, when properly mixed, expands 2 to 4 times its original volume, filling available spaces and forming an effective barrier against fire, smoke and water penetration.

Features & Benefits:
- High resilience allows movement due to expansion, contraction, or vibration.
- Excellent water resistance for water-tight sealing.
- Uniform cell structure ensures reproducible results every time. No charts to check.
- Excellent adhesion to most building substrates.
- Excellent smoke seal.

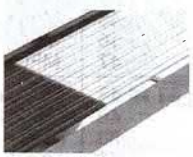
Applications:
- Designed as a seal for both deck and bulkhead penetrations against the passage of fire, smoke or other hot gases.
- Applied in liquid form (with proper damming) and then foams in place, readily sealing around penetrating items such as conduits, cables, duct work or mechanical piping.
- Useful in sealing areas such as control rooms against infiltration of airborne contaminants such as coal dust, dirt, etc.
- Ideal product for use as a thermal or acoustical insulation, or for vibration dampening.

Unit Per Pc.

CODE	Model No.	Description	Weight
33 14 35	MRF500	Marine firestop foam kit, 45.4 kgs (100 lbs), part A and B	45.3 kgs (100 lbs)
33 14 36	MRF520	Marine firestop foam, dual cartridge, 600 ml (20 oz), part A and B	0.95 kgs (2.10 lbs)

Name of Mfr.: Specified Technologies Inc.

MCC: Marine Cable Coating



A latex-based coating designed to protect grouped electrical cables against the propagation of fire. This material will limit flame spread along cables and cable trays. Marine Cable Coating will adhere well to virtually all cable jacketing materials. Application of material is achieved using airless spray equipment or by brush.

Features & Benefits:
- Water-based - easy installation, cleanup and disposal.
- Endothermic fillers - absorb heat and release water.
- High solids formula - no shrinkage!
- Sandable and paintable (when dry).
- Safe - low VOCs (Volatile Organic Compound), no solvents, non-halogenated.
- Excellent smoke seal.

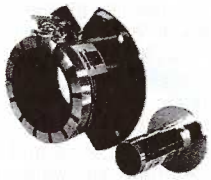
Applications:
- Offers protection of grouped electrical, data, or communications cables in cable tray or racked cable applications.

Unit Per Pc.

CODE	Model No.	Descriptions	Weight
33 14 37	MCC105	Marine cable coating, 19 ltr (1,155 cu.in.)	24.9 kgs (55 lbs)

Name of Mfr.: Specified Technologies Inc.

MFC: Marine Firestop Collars



Designed for use in A0-A60, B0-B30, and H0-H120 Class divisions to protect plastic pipes in marine and offshore construction. The heavy gauge stainless steel shell is lined with a molded, intumescent insert and provided with a marine grade, mild steel flange for attachment to the bulkhead or deck.

Features & Benefits:

- Heavy gauge, chromium rich 316 stainless steel construction.
- Resistant to aging and weathering, no soluble or hygroscopic ingredients.
- High volume of char.
- Provides sealing function to restrict the passage of fire, smoke, and hot gases.
- Easily installable and retrofittable around existing non-metallic pipes.
- Maintenance free.
- Tested and approved for use with USCG Approved SeaCor® and SeaDrain Plus® piping as well as other non-metallic and metallic pipes. (SeaCor® and SeaDrain Plus® are registered trademarks of Georg Fischer)
- Will not damage outside of pipe.

Applications:

- Sized to fit common pipe sizes.
- Applications were tested for common pipes including PVC, PVDF, CPVC, Pb, PE, PE-AL-PE, ABS, GRE, uPVC, Cu and Steel.

Unit Per Pc.

CODE	Model No.	Description	Weight
Marine traditional firestop collar			
33 14 38	MFC16	16 mm	0.09 kgs (0.20 lbs)
39	MFC20	20 mm	0.10 kgs (0.23 lbs)
40	MFC25	25 mm	0.12 kgs (0.26 lbs)
41	MFC32	32 mm	0.16 kgs (0.35 lbs)
42	MFC40	40 mm	0.19 kgs (0.41 lbs)
33 14 43	MFC50	50 mm	0.51 kgs (1.10 lbs)
44	MFC60	60 mm	0.60 kgs (1.31 lbs)
45	MFC63	63 mm	0.61 kgs (1.32 lbs)
46	MFC75	75 mm	0.70 kgs (1.53 lbs)
47	MFC90	90 mm	0.79 kgs (1.75 lbs)
33 14 48	MFC110	110 mm	0.92 kgs (2.03 lbs)
49	MFC115	115 mm	0.95 kgs (2.09 lbs)
50	MFC125	125 mm	1.51 kgs (3.30 lbs)
51	MFC140	140 mm	1.64 kgs (3.62 lbs)
52	MFC160	160 mm	1.83 kgs (4.04 lbs)
33 14 53	MFC169	169 mm	2.13 kgs (4.70 lbs)
54	MFC200	200 mm	4.20 kgs (9.26 lbs)
55	MFC219	219 mm	4.60 kgs (10.12 lbs)
56	MFC225	225 mm	4.97 kgs (10.96 lbs)
57	MFC273	273 mm	5.90 kgs (12.99 lbs)
33 14 58	MFC324	324 mm	6.94 kgs (15.30 lbs)

Name of Mfr.: Specified Technologies Inc.

MFC-W: Watertight Marine Firestop Collars

Water-tight, factory-manufactured, intumescent device for use as a penetration seal in fire-rated bulkheads and decks.

Features & Benefits:

- Tested to IMO A.754 FTP (Class A0-A60, B0-B30, and H0-H120 Bulkheads and Decks).
- Provides water-tightness up to 4 bar and gas-tightness up to 1 bar.
- Rapid intumescent expansion under fire conditions quickly seals off the path for fire, gases, and smoke.
- Stainless steel body with mild steel flange for weld-attachment.
- Solid design requires pipe to be inserted through the water-tight bushing.
- Flexible intumescent liner accommodates vibration and will not damage pipe.

Applications:

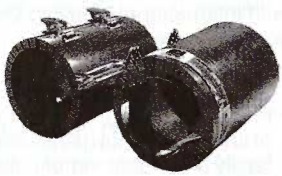
- Applications were tested for common plastic pipes, including PVC, PVDF, CPVC, Pb, PE, PE-AL-PE, ABS and GRE, through pressure rated bulkheads and decks.

Unit Per Pc.

CODE	Model No.	Description	Weight
Watertight marine firestop collar			
33 14 59	MFC16W	16 mm	0.09 kgs (0.20 lbs)
60	MFC20W	20 mm	0.10 kgs (0.23 lbs)
61	MFC25W	25 mm	0.12 kgs (0.26 lbs)
62	MFC32W	32 mm	0.16 kgs (0.35 lbs)
63	MFC40W	40 mm	0.19 kgs (0.41 lbs)
33 14 64	MFC50W	50 mm	0.51 kgs (1.10 lbs)
65	MFC60W	60 mm	0.60 kgs (1.31 lbs)
66	MFC63W	63 mm	0.61 kgs (1.32 lbs)
67	MFC75W	75 mm	0.70 kgs (1.53 lbs)
68	MFC90W	90 mm	0.79 kgs (1.75 lbs)
33 14 69	MFC110W	110 mm	0.92 kgs (2.03 lbs)
70	MFC115W	115 mm	0.95 kgs (2.09 lbs)
71	MFC125W	125 mm	1.51 kgs (3.30 lbs)
72	MFC140W	140 mm	1.64 kgs (3.62 lbs)
73	MFC160W	160 mm	1.83 kgs (4.04 lbs)
33 14 74	MFC169W	169 mm	2.13 kgs (4.70 lbs)
75	MFC200W	200 mm	4.20 kgs (9.26 lbs)
76	MFC219W	219 mm	4.60 kgs (10.12 lbs)
77	MFC225W	225 mm	4.97 kgs (10.96 lbs)
78	MFC273W	273 mm	5.90 kgs (12.99 lbs)
33 14 79	MFC324W	324 mm	6.94 kgs (15.30 lbs)

Name of Mfr.: Specified Technologies Inc.

MFC-T: Transitional Marine Firestop Collars



Designed for use in A0-A60 and B0-B30 Class divisions to protect transitions between steel and plastic pipes in marine and offshore construction. The heavy gauge stainless steel shell is lined with a molded, intumescent insert and provided with a marine grade, mild steel flange for attachment to steel pipes.

Features & Benefits:

- Heavy gauge, chromium rich 316 stainless steel construction.
- Resistant to aging and weathering, no soluble or hygroscopic ingredients.
- High volume of char.
- Provides sealing function to restrict the passage of fire, smoke, and hot gases at transitions from plastic pipes to steel pipes or scuppers.
- Easily installable and retrofittable around existing pipes.
- Will not damage outside of pipe.
- No sealant or welding required.

Applications:

- Offers protection of connections between steel pipes or scuppers to plastic pipes in non-pressurized systems.
- Applications were tested for common plastic and steel pipes or scuppers.
- Easily retrofittable around existing, mated pipes.

- No pre-planning or staging necessary with split closure design.

Unit Per Pc.

CODE	Model No.	Description	Weight
33 14 80	MFC50T	50 mm steel & plastic pipe	0.54 kgs (1.20 lbs)
33 14 81	MFC56T	50 mm steel pipe/60 mm plastic pipe	0.59 kgs (1.30 lbs)
33 14 82	MFC75T	75 mm steel & plastic pipe	0.77 kgs (1.70 lbs)
33 14 83	MFC79T	75 mm steel pipe/90 mm plastic pipe	0.91 kgs (2.00 lbs)
33 14 84	MFC90T	90 mm steel & plastic pipe	1.00 kgs (2.20 lbs)

Name of Mfr.: Specified Technologies Inc.

Safety Belts & Hooks

General use safety belt with lifeline and hook.

33 11 01

33 11 02

33 11 01	Safety belt with lifeline & hook	Pc.
02	Lifeline & hook 10 mmϕ × 1,500 mm	"

Safety Harness

For use to lift or lower workmen in rescue or work operations in places where there is a high risk of falling.

33 11 04	Safety harness full body type	Pc.

Fall Arrester Retractable Type

The self-locking mechanism reduces the impact force and automatically stops the fall when a worker slips or falls with a sudden tension. Housing is made of durable glassfibre and drum-wound lifeline is made of stainless steel. Work load is less than 130 kgs. Workers using fall arrester must work directly under the anchorage to prevent swing fall injuries.

Unit Per Pc.

CODE	Length of Wire	Diam. of Wire	Max. Load Capacity	Weight
33 11 05	10 mtr	4.76 mm	130 kgs	4.6 kgs
06	12 "			4.9 "
07	15 "			9.8 "
08	20 "			9.8 "
09	25 "			10.3 "

Dust Protecting Masks

Designed to prevent the inhalation of dust. Two types of filtering systems are available: a Mechanical Type which filters fumes and dust through a filter cartridge, and an Electrostatic Type which collects fumes and dust over the filter by static electricity.

It must be noted that these masks are not effective for poisonous gases or vapours. Also to avoid risk, it must never be used in circumstances where the Oxygen (O_2) concentration is lower than 18 %.

Single Filter **Twin Filter** **Full Face Twin Filter**

Mechanical

Electrostatic

Unit Per Pc.

CODE	Filtering System	Preventive Efficienty	Weight grum
Single Filter			
33 11 11	Mechanical	99.8%	52
13	Electrostatic	99.5%	129
Twin Filter			
33 11 16	Mechanical	99.95%	200
17	Electrostatic	99.95%	200
Full Face Twin Filter			
33 11 65	Mechanical	99.96%	420
74	Electrostatic	99.96%	420

Replacement Filters for Dust Protecting Masks

Please specify the original maker and model name of dust protecting mask in use.

Unit Per Pc.

CODE	**33 11 18**	**33 11 20**
Filter Type	Mechanical	Electrostatic

Respirators Advantage 200 LS

The Advantage 200 LS Respirator provides a better looking, lighter, and softer face piece, which is made from a translucent "Ocean Blue" formulation of thermoplastic rubber:

The MSA patented MultiFlex® System – a soft, pliable combination of rubber and plastic that provides a virtually customized fit. In addition, the highly effective AnthroCurve™ Sealing Surface instantly conforms to each wearer, equalizing pressure on the face seal area and eliminating annoying pressure points. The unmatched fit exceeds all previous levels of comfort.

This half mask type respirator features a twin filter cartridge with large area and capacity to provide for low breathing resistance and long life.

Not for use in atmospheres containing less than 19.5% oxygen.

CODE	Size	PT/No. US/EU	Unit
33 11 21	Small	815696 / 430356	Pc.
22	Medium	815692 / 430357	"
23	Large	815700 / 430358	"

Name of Mfr. : MSA The Safety Company

Fullface Respirators Advantage 3200

New generation of lightweight air-purifying full face respirator offers a comfortable fit. The face piece lens has

been engineered to be optically correct, giving you superior visibility and peripheral vision. The wraparound scratch-resistant polycarbonate face piece lens provides a wide distortion-free field of vision.

The lens meets all requirements of ANSI Z87.1 including the high-impact performance requirements.

Requires only routine filter replacement and approved according EN136 class 2. As well approved by NIOSH (The National Institute for Occupational Safety and Health) according 42 CFR, part 84.

Unit Per Pc.

CODE	Type	Part No. US/EU
33 12 45	Advantage 3211, S	10031340 / 10027727
46	Advantage 3221, M	10031309 / 10027726
47	Advantage 3231, L	10083791 / 10027728

Name of Mfr.: MSA The Safety Company

Excerpt of Wide Range of Filters for Advantage 200LS and 3200

Filter Type	Acc. to EN 14387 and EN 143	Part No.
A2	Organic gases and vapors	430371
K2	Ammonia	-
A1B1E1	Organic, Inorganic, Sulfur Dioxide and Acid gases and vapors	-
A2B2E1K1	Organic, Inorganic, Sulfur Dioxide, Acid gases and vapors and Ammonia	430373
A2-P3 R	Organic gases and vapors and Particles	430372
K2-P3 R	Ammonia and Particles	10107165
A1B1E1-P3	Organic, Inorganic, Sulfur Dioxide, Acid gases and vapors and Particles	10144828
A2B2E1K1-P3 R	Organic, Inorganic, Sulfur Dioxide and Ammonia gases and vapors and Particles	430374
P2 R	Particle filter with medium efficiency plus adapters	10011347
P3	Particle filter with high efficiency	430375

Name of Mfr. : MSA The Safety Company

Filter Type	Acc. to NIOSH (to 42 CFR, Part 84)	Part No.
GMA	Organic gases and vapors	815355
GMA-P100	Organic gases and vapors and Particles	815362
GMB	Chlorine, Sulfur Dioxide, Chlorine Dioxide, Hydrogen Chloride and Hydrogen Sulfide	815356
GMB-P100	Chlorine, Sulfur Dioxide, Chlorine Dioxide, Hydrogen Chloride, Hydrogen Sulfide and Particles	815363
GMC	Organic gases and vapors, Chlorine, Sulfur Dioxide, Chlorine Dioxide, Hydrogen Chloride and Hydrogen Sulfide	815357
GMC-P100	Organic gases and vapors, Chlorine, Sulfur Dioxide, Chlorine Dioxide, Hydrogen Chloride, Hydrogen Sulfide and Particles	815364
GMD	Ammonia and Methylamine	815358
GMD-P100	Ammonia, Methylamine and Particles	815365
GME	Organic gases and vapors, Chlorine, Sulfur Dioxide, Chlorine Dioxide, Hydrogen Chloride, Hydrogen Sulfide, Ammonia and Methylamine	815359
GME-P100	Organic gases and vapors, Chlorine, Sulfur Dioxide, Chlorine Dioxide, Hydrogen Chloride, Hydrogen Sulfide, Ammonia, Methylamine and Particles	815366
P100	Filter with 99,97% efficiency, against all particulate aerosols	815369

(to be continued)

Respirators

Half mask type respirators which feature a twin filter cartridge with large area and capacity to provide for low breathing resistance and long life. Not for use in atmospheres containing less than 19.5% oxygen.

Filter Type	EU according EN141 and EN143	Part No.
A2	Organic gases and vapors with boiling point > 65°C	430159 box of 12
A2-P3	Organic gases and vapors with boiling point > 65°C and particles	430162 box of 6
A1B2E1K1	Organic gases and vapors with boiling point > 65°C and inorganic gases and vapors, Sulfur Dioxide, Hydrogen Chloride and other acid gases, Ammonia and Ammonia derivatives	430299 box of 10
A1B2E1K1-P3	Organic gases and vapors with boiling point > 65°C and inorganic gases and vapors, Sulfur Dioxide, Hydrogen Chloride and other acid gases, Ammonia and Ammonia derivatives and particles	430302 box of 6
Pre-filter	Protection of particle filter	816661 box of 50
P3	Particle filter with high efficiency	430158 box of 12

Application of Respirator Cartridges

PT/No.	Acid Gases	Filter Type
GMA PT/ No.464031	Organic vapor	R95 & N95
GME PT/ No.92790	Organic vapor, Chlorine, Sulfur dioxide, Chlorine dioxide, Hydrogen chloride, Hydrogen sulfide, Ammonia, Methylamine, Formaldehyde, Hydrogen fluoride	R95 & N95

Remark: R95 – Particular filter (95% filter efficiency level) effective against all particulate aerosols ; time use restrictions may apply.
N95 – Particular filter (95% filter efficiency level) effective against particulate aerosols free of oil; time use restrictions may apply.

33 11 24	Respirator, Comfo Classic, with respirator filter GME	Set
33 11 25	Respirator filter GMA, PT/No.464031	Pc.
27	Respirator filter GME, PT/No.492790	"

Twin Filter Half Mask Respirators

X-Plore 3500

Twin gas and vapor filter cartridge half masks combine practicality of use with comfort. The use of new materials coupled with a modern, attractive design guarantees maximum comfort and user acceptance. Tested and certified according to EN 140 and NIOSH.

Not for use in atmospheres containing less than 19.5% oxygen.

Unit Per Pc.

CODE	Size	Part No.	CODE	Size	Part No.
33 12 91	Small	R55331	**33 12 93**	Large	R55332
92	Medium	R55330			

Name of Mfr.: Draeger

Twin Filter Cartridgefor Respirator X-Plore 3500

Twin filter cartridge for Draeger X-Plore 3500 offers large area and capacity to provide for low breathing resistance and long life. Approved to EN141 and EN143.

Not for use in atmospheres containing less than 19% oxygen.

Unit Per Box

CODE	Filter Type	EU according EN 141 and EN 143	Part No.
33 12 94	A2	Organic gases and vapors with boiling point > 65°C	6738873 (20 pcs/ box)
95	A2-P3	Organic gases and vapors with boiling point >65°C and particles	6738875 (14 pcs/ box)
96	A1B1E1K1	Organic gases and vapors with boiling point >65°C and inorganic gases and vapors, Sulfur Dioxide, Hydrogen Chloride and other acid gases, Ammonia and Ammonia derivatives	6738816 (20 pcs/ box)
97	A1B1E1K1 - HG-P3	Organic gases and vapors with boiling point >65°C and inorganic gases and vapors, Sulfur Dioxide, Hydrogen Chloride and other acid gases, Ammonia and Ammonia derivatives and particles, Mercury	6738817 (14 pcs/ box)
98	Pre-Filter	Protection of particle filter	6738159 (50 pcs/ box)
99	Pre-Filter Retainer	Securing Pre-filter 6738159	6737576 (14 pcs /box)
33 13 00	P3	Particle filter with high efficiency	6738011 (22 pcs/ box)

Dust Mask Disposable

Protects against non-toxic dust, powders, and spray particles.

Comfortable, efficient, lightweight, and low cost, disposable mask.

33 11 28	Dust mark disposable	Pc.
30	" , 50's/pkt	Pkt

Paint Spray Respirators

Low concentration single filter half face gas mask used as a respirator for low concentrations of gases, such as when painting with sprayers. Never use when the oxygen concentration in the atmosphere is less than 18 %.

33 11 31	Paint spray respirator, half mask single filter cartridge	Pc.
32	Replacement filter cartidge for paint spray respirator	Pc.

Fullface Respirators

Advantage 1000

Lightweight air-purifying respirator offers a comfortable fit with increased vision due to the wrap-around flexible lens. Requires only routine filter replacement and approved by NIOSH (The National Institute for Occupational Safety and Health) and MSHA (Mine Safety and Health Administration).

Unit Per Pc.

CODE	Type	MSA No.
33 12 30	Black, S, w/speaking diaphragm	805414
32	Black, M, w/speaking diaphragm	805408
33	Black, L, w/speaking diaphragm	805420
33 12 34	ESP-II Amplifier Kit	10026265

Name of Mfr.: MSA The Safety Company

Filter Cartridges

for Advantage 1000 Fullface Respirator

Filter cartridges are a separate order.

Unit Per Pc.

CODE	Type of Filter Cartridge	Respiratory Hazards	MSA No.
33 12 41	F	For dusts & mists having a TWA not less than 0.05 mg/m³ or 2 million particles/feet³.	802498
42	H	For dusts, fumes & mists having a TWA less than 0.05 mg/m³, asbestos-containing dusts & mists.	806564
43	GME	For Organic vapors, Chlorine, Hydrogen chloride, Sulfur dioxide, Ammonia, Methylamine, Pesticides, Paint, Lacquer & Enamel mists, Chlorine dioxide, Hydrogen sulfide, Formaldehyde, or Hhydrogen fluoride gases	806942
44	GME-H	For Organic vapors, Chlorine, Hydrogen chloride, Sulfur dioxide, Ammonia, Methylamine, Pesticides, Paint, Lacquer & Enamel mists, Chlorine dioxide, Hydrogen sulfide, Formaldehyde, or Hydrogen fluoride; Dusts, Fumes and Mists having a TWA less than 0.05 mg/m³, asbestos	802244

Fullface Respirators

Advantage 3100

New generation of lightweight air-purifying full face respirator offers a comfortable fit. The face piece lens has been engineered to be optically correct, giving you superior visibility and peripheral vision. The wraparound scratch-resistant polycarbonate face piece

lens provides a wide distortion-free field of vision.

Requires only routine filter replacement and approved according EN136 class 3. Suitable for European filters with thread according EN 148. As well approved by NIOSH (The National Institute for Occupational Safety and Health).

Unit Per Pc.

CODE	Type	Part No. US/EU
33 12 38	Advantage 3111, S,	10031343 / 10027724
39	Advantage 3121, M,	10031342 / 10027723
40	Advantage 3131, L,	10031344 / 10027725

Name of Mfr.: MSA the Safety Company

Excerpt of Wide Range of Filters for Model 3100

To be used with MSA 3S, MSA Ultra Elite and MSA Advantage 3100 full face mask ranges and MSA Advantage 410 half mask. Thread Connector according EN 148-1

Filter type [old]	p/n	Filter type [new]	p/n
87 A	D1040000	90 A	10115187
87 AX	D1051000	90 AX	10108408
87 B	D1041000	90 AB	10098113
87 E	D1042000	90 E	10115349
87 K	D1045000	90 K	10115320
87 ABEK	D1040713	90 ABEK	10098114
87 ABEK 2	D1051700	90 ABEK2	10098112
88 A / St	D1061000	92 A / St	10115188
88 B / St	D1062000	92 AB / St	10097994
88 ABEK / St	D1061702	92 ABEK / St	10097995
88 ABEK2 / St	D1061703	92 ABEK2 / St	10097996
89 A / St	D1106000	93 A / St	10115189
89 AX / St	D1070708	93 AX / St	10108409
89 B / St	D1070000	93 AB / St	10097993
89 K / St	D1112000	93 K / St	10115190
89 Hg / St	D1071000	93 Hg / St	10115201
89 ABEK Hg / St	D1070705	93 ABEK / St	10097231
89 ABEK2 Hg / St	D1070707	93 ABEK2 / St	10097232
89 ABEK CO NO Hg / St	D1018700	93 ABEK CO NO Hg / St	10160507
89 CO NO / St	D1018905	93 CO NO/ St	10115314
999 P3	D1010700	P3 PlexTec	10094376

Full Facemask Respirators

A fullface respirator which is light and comfortable to wear, even for long periods of time without becoming tired or stressed. A wide sealing edge provides a snug fit to the face and adjusts easily for wearer comfort. Can be worn with a helmet and hearing protectors.

The facemask has a wide field of vision with inhalation air directed across the inside of the visor to prevent misting. One can talk clearly with the respirator on because of a protected speech diaphragm. The exhalation valve is of a secure construction and keeps the carbon dioxide level inside the mask at a minimum.

The facemask materials are resistant to a wide range of chemicals. Applicable filters are a separate order.

Unit Per Set

CODE	33 11 35	33 11 36	33 11 37
Material	Natual Rubber	Chloroprene Rubber	Silicons Rubber
Heat Resistance	100°C	120°C	250°C
Weight grm	560	600	550

Safety Filters for Full Facemask

Each type of filter has various applications and resistance to different hazardous vapors and particles. When ordering, please ask your supplier for detailed information about the main area of application for each filter.

Unit Per Pc.

CODE	Filter Type
33 11 38	For particle w/filtering capacity low, medium or high.
39	For gas, with name of gas _____
40	For particle & gas, with name of gas _____

Power Assisted Respirators

Full face respirators which are comfortable to wear, light in weight, easy to decontaminate and maintain and compact with no impending hoses. 1.5 kgs total weight including the fitted battery power pack and the only connection is an extending coil cord from the battery to the integral fan/motor unit in the mask.

Low profile facemask gives the wearer a panoramic field of vision through an optically corrected high-impact and chemically resistant visor. Air flow is directed over the inside of the visor to prevent misting and provide a cooling effect to the face making the respirator more comfortable to wear for long periods.

The assistance of the fan provides low resistance gives benefits to protection. The negative pressure induced inside of the facemask is much lower than in other respirators.

Specifictions

Facemask	Silicone elastomer with panoramic visor complete with optical and impact requirement of BS 2092 Grade 1
Blower	Airflow : 120 ltr/min. (Minimum rate) Motor Life : 1,000 hours
Battery	Life : 500 recharge cycle Duration : 10 hours minimum. Charging : approx. 14 hours required.
Component	Complete with facemask, fan/motor unit, battery, filter, airflow tester & manual

33 11 45	Respirator, power assisted with AC 110 volt battery charger	Set
46	Respirator, power assisted with AC 220 volt battery charger	"

Hose Adaptors for Power Assisted Respirator

By connecting a lightweight belt-mounted adaptor with flexible hose, two screw-in filters can be used in place of the normal single filter. This means that filters can be oriented away from the source of contamination, and two filters used in parallel to provide extended filtration capacity.

33 11 47	Hose adaptor for power assisted respirator	Set

Power Assisted Respirators

If your job demands long-term breathing protection, the OptimAir 3000 PAPR [Powered Air Purifying Respirator] is the way to go. Your breathing remains easy and free from resistance even after hours of work.

A maximum in safety, flexibility and ease-of-handling lets you concentrate on your work, knowing that your health is not being compromised.

The OptimAir 3000 PAPR system allows you to breathe normally while you work. Your comfort, well-being and ability to perform effectively are greatly enhanced. Filters also last longer. The microprocessor controlled, variable-speed motor guarantees an optimum amount of air in your head top [mask or hood] – even as your breathing rate changes during more strenuous tasks. In many situations it is not even necessary to maintain an airtight seal.

The pressure differential causes airflow to travel continuously from your face to the outside environment, preventing unfiltered air from entering your head top.

Unit Per Set

CODE	33 11 33	33 11 34
Product	OptimAir 3000 (3000A)	OptimAir 3000 EX (Ex-proof)
Content	Turbo Filtering Device, including comfortable OptiBelt, OptiCharge [standard] battery charger, OptiBat battery [NiMH] (Decon Belt, OptimAir Mask with Hose, Particle Filter [pck of 10])	Turbo Filtering Device Ex proof, including comfortable OptiBelt, OptiCharge Ex proof battery charger, OptiBat Ex proof battery [NiMH]
Air Flow	With use of Hood: Approx.130 ...150 L/ Min With use of Full Face Mask: Approx. 110 L/Min (160 ... 185 L/Min)	With use of Hood: Approx.130 ... 150 L/ Min With use of Full Face Mask: Approx. 110 L/Min
Energy Supply	NiMH Battery-pack [one click battery change]	NiMH Battery-pack ATEX [one click battery change]
Service Time	With Particle Filters: > 8 hours With Combination Filters: > 4 hours	
Filter Choice	Gas Filters / Particle Filters / Combination of Gas Filters and Particle Filters [stackable system]	
Calibration	Automatic self test and calibration at switching on	
Calibration Time	Approx. 8 seconds	
Alarms	Optical and acoustic: · non inserted filter for calibration · exhausted filter · empty battery · flow error · no hood, or mask connected	
Ingress Protection	IP54 according EN 60529	

(to be continued)

Unit Per Set

CODE	33 11 33	33 11 34
Approvals	EC-type certified, according PPE Directive 89/686/EC [including 93/68/EC, 93/95/EC and 96/58/ EC] and according EMC Directive 89/336/ EC, EN12941:2004 TH2 - Hoods and Visors TH3 - Hooded Helmet EN12942:2003 TM3 - Full Face Mask	EC-type certified, according PPE Directive 89/686/EC [including 93/68/EC, 93/95/EC and 96/58/ EC] and according EMC Directive 89/336/ EC, EN 61000-6-2 EN 61000-6-4 BVS 07 ATEX E 38 II 2G Ex ib IIB T4 II 2D Ex ibD 21 T130°C Type of protection: EN 60079-0; 2006 EN 60079-11;2007 EN 61241-0: EN 61241-11: EN 12942:2003 TM3 - Full Face Mask
Product Number	10049557 (10049558)	10049559
Dimensions [HxWxD]	With Flat Cap for particle, or gas filters: 200 x 270 x 110 mm With High Cap for combination of filters: 200 xx270 x 130 mm	
Weight	1.28 Kgs including Particle Filters 1.7 Kgs including Combination Filters	

Name of Mfr. : MSA The Safety Company

OptimAir Filters

OptimAir Filter A p/n 10049637 [10 pck]	Vapours from organic compounds with a boiling point higher than 65°C.
Optim Air Filter ABEK p/n 10049635 [10 pck]	A: brown: Filter Class 1: Vapours from organic compounds with a boiling point higher than 65°C. B: grey: Filter Class 1: Inorganic gases and vapours, e.g. Chlorine, hydrogen sulphide, hydrogen cyanide (not carbon monoxide). E: yellow: Filter Class 1: Sulphur dioxide, hydrogen chloride, acid gases. K: green: Filter Class 1: Ammonia and organic ammonia derivatives.
Optim Air Filter P3 p/n 10049632 [10 pck]	P: white: Filter Class 3: Particle

Single Filter Cartridge Full Face Respirator

X-plore 6300

The efficient yet low-cost full face breathing mask. This mask has proven itself over decades of use worldwide -redesigned and improved with fresh colours and an integrated bar code.

Outstanding protection factor:
- Double layered face seal with triple sealing action.
- Two sizes in one mask => one size fits all.

Proven quality & reliability:
- Proven quality under hardest conditions: used by fire brigades all over the world for decades.
- All parts available as spare part.

Excellent field of vision:
- Excellent field of vision as visor is close to the face.

Requires only routine filter replacement and approved according EN136 class 3. Suitable for European filters with

thread according EN 148-1 as well approved by NIOSH (The National Institute for Occupational Safety and Health) according 42 CFR, part 84

Unit Per Pc.

CODE	Type	Part No.
33 12 71	X-plore 6300 w/o speech diaphragm	R55800
72	X-plore 6530 w/speech diaphragm	R55810

Name of Mfr.: Draeger

Single Filter Cartridge for Full Face Respirator

X-plore 6300

With standard thread connection in accordance with EN 148-1:

- Extensive range of filter types for all major areas of application.
- Conforming to EN 148-1.
- EN 14387, EN 143:2000, EN 371 CE approved (EN 141:2000).
- Filter with aluminium housing to ensure reliable recognition of possible damage.
- Individually packaged for optimum protection of the unused filter.
- Re-sealable for longer use.
- Shelf life (from date of production): 6 years for gas and combination filters & 12 years for particle filters.

Unit Per Pc.

CODE	Type	Part No	CODE	Type	Part No.
33 12 73	A2	6738855	**33 12 81**	A2B2E2K1-P2	6738803
74	A2-P2	6738857	**82**	A2B2E2K1HG-P3	6738815
75	E2	6738796	**83**	A1B2E2K1HG-CO20-NO-P3	6738801
76	K2	6738856			
77	K2-P2	6738858	**84**	A2B2E2K2HG-CO20-NO-P3RD	6738814
			85	AX	6738863
33 12 78	A2B2	6738779	**33 12 86**	AXB2	6738782
79	A2B2-P2	6738780	**87**	AX-P3	6738862
80	A2B2E2K1	6738802			

Filter Colour Code

Colour	Type	Main Application
Brown	AX	Gases and vapours of organic compounds. Boiling point ≤ 65°C
Brown	A	Gases and vapours of organic compounds. Boiling point > 65°C
Grey	B	Inorganic gases and vapours e.g. chlorine, hydrogen, Sulphide, hydrocyanic acid
Yellow	E	Sulphur dioxide, hydrogen chloride
Green	K	Ammonia
Black	CO	Carbon monoxide
Red	Hg	Mercury vapour
Blue	NO	Nitrous gases including nitrogen monoxide
Orange	Reactor	Radioactive iodine incl. radioactive iodide
White	P	Particles

Twin Filter Cartridge Full Face Respirator

X-plore 5000

Outstanding protection factor:

- Double layered face seal with triple sealing action.
- Two sizes in one mask ⇒ one size fits all.

Proven quality & reliability:

- Proven quality under hardest conditions: used by fire brigades all over the world for decades.
- All parts available as spare part.
- Excellent field of vision as visor is close to the face.

Requires only routine filter replacement and approved according EN136 class 3 and NIOSH 42 CFR, part 84.

Unit Per Pc.

CODE	Type	Part No.
33 12 89	With Polycarbonate Lens	R55270
90	With Triplex Lens	R56655

Name of Mfr.: Draeger

Plastic Chipping Goggles

Made of plastic, worn to protect the eye when chipping or scaling metal or other objects that may chip or fragment.

33 11 41	Chipping goggle plastic, standard	Pr.
42	" " " , anti-fog	"

Faceshields

For protection of the face against abrasive particles, flying objects, and chemical splashes.

The faceshield stays in the up or down position as required with friction pivot hinges.

Standard

with Forehead Protection

33 11 43	Faceshield, standard	Pc.
33 11 44	Faceshield, with forehead protection	Pc.
48	Spare shield, polycarbonate, for forehead protection type faceshield	Pc.

Ear Muffs

Highly efficient ear muffs for protection of loud noises of all pitches in factories and areas where air compressors and turbines are used.

MSA left/RIGHT

ScanSilence L3

MSA left/RIGHT

The MSA left/RIGHT, with a new headband with improved comfort, individual ear cups -left and right- and more space for the outer ear, this unique and careful design gives a wider range of protection. Approved according EN 352.

Unit Per Pr.

CODE	Type	Colour	Part No.
33 12 51	Low applications SNR 24 - H/M/L 27/22/14	White	10087436
52		Yellow	10087434
53		Blue	10087435
33 12 54	Medium applications SNR 28 - H/M/L 32/26/17	White	10087427
55		Yellow	10087425
56		Blue	10087426
33 12 57	High applications SNR 33 - H/M/L 33/31/21	White	10087421
58		Yellow	10087399
59		Blue	10087400

Name of Mfr.: MSA The Safety Company

ScanSilence L3

Protection against very high noise level and loud sounds. Using Omnifit reflective headband, light weight, and limited contact pressure for all-day comfort. Cups are 360°C rotating anti-scratch and its height is adjustable. Attenuation: H=38dB, M=34dB, L=36dB. Signal-to-noise ratio: 36dB.

Standards: CE Approved / EN 352-1

33 12 60	Ear muff, ScanSilence L3	Pr.

Name of Mfr.: Scandia Gear

Ear Cup Kits

Designed for easy attachment to any types of helmet.

Standard

MSA left/RIGHT

ScanSilence ML3

Unit Per Pr.

CODE	Type	Colour	Part No.	Applicable Type of Helmet
33 11 66	Ear cup kit, Standard	-	-	Standard
33 12 61	Left/RIGHT, low	White	10087439	
62	applications	Yellow	10087437	
63	SNR 25-H/M/L 27/22/15	Blue	10087438	V-Gard
33 12 64	Left/RIGHT, medium	White	10087430	Super
65	Applications	Yellow	10087428	
66	SNR 28-H/M/L 29/25/17	Blue	10087429	V-Gard
33 12 67	Left/RIGHT	White	10087424	Linesman
68	high applications	Yellow	10087422	
69	SNR 31-H/M/L 32/28/21	Blue	10087423	

Name of Mfr. : MSA The Safety Company

ScanSilence ML3

Protection against very high noise level and loud sounds. Light weight, and limited contact pressure for all-day comfort. Cup is anti-scratch and its height is adjustable. Attenuation: H=37dB, M=32dB, L=24dB. Signal-to-noise ratio: 35dB.

Standards: CE Approved / EN 352-1

33 12 70	Ear Cup Kits, ScanSilence ML3	Pr.

Name of Mfr.: Scandia Gear

Ear Plugs

Three types of ear plugs are available. Made of silicon-rubber for general noise from high-pitched to low-pitched noises or only for high-pitched noises. Made of flexfit, self-expandable and self-adjusting foam.

Silicon Rubber

Self-fit Foam

33 11 56	Ear plug silicon rubber for hi-low pitch noise	Pr.
57	Ditto for hi pitch noise	"
33 11 58	Ear plug self-fit foam	Pr.

Safety Helmets

A lightweight safety helmet made of glass fibre reinforced polyester resin. Adjustable in size. Easy replacement of the suspension. Weight: approx. 380 grm.

33 11 59	Safety helmet, polyester resin, white	Pc.
60	Safety helmet, polyester resin, yellow	"

Slotted V-Gard Safety Helmets

Economical, lightweight, comfortable headwear. Made of high-density polyethylene in a variety of molded-in colours ideal for general industry and construction. Suspension, sweat band and nape strap form the complete protective system. Cap with slots to hold accessories. When ordering, specify colour.

CODE	Description Helmet Shell	Part No. US/EU
33 11 62	White	463942 / 262250
	Yellow	463944 / 262251
	Blue	463943 / 262252
	Green	463946 / 262253
	Orange	463945 / 262254
	Red	463947 / 10002901
	Grey	463948 / ---
	Gold	464852 / ---
33 11 63	Helmet Suspension	454230 / 262239
64	Helmet Chin Strap	258213 / 262153

Name of Mfr.: MSA The Safety Company

Work Vests

Flotation work vest:
Made from multiple foam inserts and nylon outer shell, and orange color with phosphorescent white stripes provides high visibility for day and night. One size fits all.

Hazard warning vest:
Made from vinyl in yellow colour with reflective tape.

33 11 71	Flotation work vest	Pc.
72	Hazard warning vest	"

Life Jackets
with Radar Reflector
(Not SOLAS approved)

A life jacket attached with a radar reflector, but not SOLAS approved, to protect workers from drowning and drifting on the seawater by unexpected falling overboard. The radar reflector is stowed in a pocket attached to the life jacket, and can be inflated by man's breathing. The radar reflector can be searched by ship radar even in dense fog condition. Size of radar reflector : 200 cm x 10 cm when inflated.

33 11 73	Life jacket with radar reflector (not SOLAS approved)	Set

Name of Mfr. : Koa Kako Co.,Ltd

Whistles

Produces loud and clear tone, and used for signalling, warning., etc.

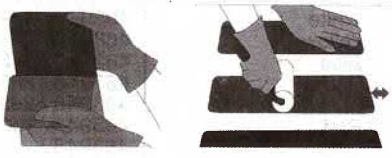
Available in plastic or steel.

33 11 75	Whistle, plastic	Pc.
76	Whistle, steel	"

Anti-Slip Tapes

Gives safe, slip free footing anywhere falls could be a problem. Designed especially for stairs, kitchens, around pools, in food service areas, wheel chair ramps and lobbies.

Diamond-hard mineral provides positive grip. Easy to apply backed adhesive-sticks at a touch.



Type	Surface	Back	Application
A For Rugged Surface	Mineral Grain	Alum. Foil	Vehicles' Steps
B For General Purpose	Mineral Grain	Polyester Film	Stair Steps
C For Interior Purpose	Plastic	Plastic	Interior room, Gymnasium
D For Interior Purpose	Plastic	Plastic	Pool, Bath, Shower Room

Unit Per Rol

CODE	Type	Size W x L	Color
33 11 81	A	10 cm x 18 mtr	Black
86	A	10 cm x 18 mtr	Brown
89	A	10 cm x 18 mtr	Yellow
33 11 82	B	10 cm x 18 mtr	Black
83	B	10 cm x 18 mtr	Red
90	B	10 cm x 18 mtr	Green
33 11 97	B	10 cm x 18 mtr	Grey
33 11 84	C	10 cm x 18 mtr	Black
85	C	10 cm x 18 mtr	Grey
33 12 00	D	10 cm x 18 mtr	White

Remark: Other sizes of width with 18 mtrs length are also available on request.

Anti-Slip Safety Products

An anti-slip safety products incorporate the unique Scotgrip® high-traction anti-slip safety surface which gives a sound foot-holding in the most extreme conditions. By installing anti-slip walkway & deck products not only is this slip hazard eliminated but the lifespan of the underlying material is greatly increased. These tough & durable products are manufactured under BS EN ISO 9001:2008 quality controlled conditions comprising of a reinforced composite base and a graded aggregate surface. As a Scotgrip® quality standard, these products are fire rated, spark and friction tested.

Safegrip Anti-slip Stair Nosings (GSN)

By installing Scotgrip® anti-slip stair nosings not only is this slip hazard eliminated but the lifespan of the step is greatly increased. These products are easily fitted onto open grating/grille, chequered plate, concrete or wood. Colour coded in a wide range of colour schemes to suit individual locations, but Safety Yellow colour one will be supplied if any colour code is not specified.

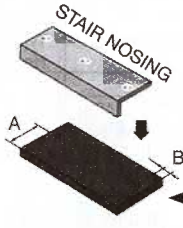
Designed for quick and secure fitting, either by mechanical fixings or bonding to existing surfaces. These products are pre-drilled where required for quick installation.

Surface Grades:
Available three types of surface grades;
High profile – 6 mm aggregate (1/4" approx.)
Low profile – 3 mm aggregate (1/8" approx.)
Fine profile – 1 mm aggregate (1/16" approx.)

Low profile surface grade will be supplied if any surface grade is not specified

Fitting Data

Fitting onto:	Method
Open grating/grille	Type 'S' fixings (Saddle assemblies)
Chequered plate	Self tap screws or nut, bolt and washer
Concrete	HPS impact fixings
Wood	Screws or adhesive



Unit Per Sht

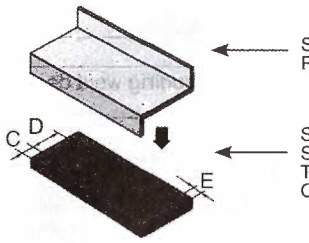
CODE	Breadth mm	Breadth Inch	Length mm	Length Inch	CODE	Breadth mm	Breadth Inch	Length mm	Length Inch
33 45 01	40	1-1/2	450	18	**33 45 21**	160	6	450	18
02			600	24	**22**			600	24
03			750	30	**23**			750	30
04			900	36	**24**			900	36
05			1200	48	**25**			1200	48
33 45 06	80	3	450	18	**33 45 26**	200	8	450	18
07			600	24	**27**			600	24
08			750	30	**28**			750	30
09			900	36	**29**			900	36
10			1200	48	**30**			1200	48
33 45 11	100	4	450	18	**33 45 31**	260	10	450	18
12			600	24	**32**			600	24
13			750	30	**33**			750	30
14			900	36	**34**			900	36
15			1200	48	**35**			1200	48
33 45 16	130	5	450	18					
17			600	24					
18			750	30					
19			900	36					
20			1200	48					

Name of Mfr.: Scotgrip (UK) Limited.

Anti-slip Kicker Tread (KTS)

Designed to fit onto existing steps

Anti-slip Kicker Tread® has all the same safety advantages of anti-slip stair nosings but has the added feature of a safety 'Kicker' incorporated at the rear of the tread to prevent objects being dropped or kicked over the back of it & falling below. These heavy duty products are easily fitted onto open grating/grille, chequered plate, concrete or wood.



Standard Size of Kicker Tread

Breadth (or Depth) of Step	Length
Up to 200mm (8" approx.) Up to 250mm (10" approx.) Up to 300mm (12" approx.)	Supplied to the exact length of your steps. (Please deduct 10mm (3/8" approx.) from length of steps to allow for proper seating.)

Surface Grades

High profile	6 mm aggregate (1/4" approx.)
Low profile	3 mm aggregate (1/8" approx.)
Fine profile	1 mm aggregate (1/16" approx.)

Low profile surface grade will be supplied if any surface grade is not specified.

Colour Code:
Colour coded in a wide range of colour schems to suit individual locations. Available colours are: Safety yellow, Black safety yellow, Black, Green, Grey, Blue, Red, White. Fluorescent and photoluminescent finishes.

Manufactured to customer specification:
Supplied to your requirements as the tread needs to be fairly snug with the stairway stringers.

Fitting Data

Fitting onto:	Method
Open grating	Type 'S' fixings (Saddle assemblies)
Chequered plate	Self tap screws or nut, bolt and washer
Wood	Screws or adhesive

How to order : 33 - 45 - 36 (Sht)

Please specify Size (Breadth x Length), Surface grade (High, Low or Fine prfile), Colour code (Safety yellow or any others), Pre-drill of fixing hole position (if necessary)
Name of Mfr.: Scotgrip (UK) Limited.

Walkways / Decks

Anti-slip walkway & deck products offer high visibility on walking or working surfaces by highlighting the desired area. It is available a wide range of colours to suit your individual location which will make your walking or working surfaces safer.

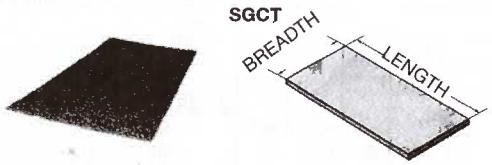
Anti-slip Grating Cover Tile (SGCT)

Quite acceptable when dry but can become extremely dangerous when wet, soiled or painted. By installing this tiles, not only is this slip hazard eliminated but the lifespan of the underlying open grating/grille is greatly increased. These heavy duty products are secured to open grating/ grille with type 'S' fixings (saddle assemblies) comprising of an adjustable u-clamp, nyloc nut and washer.

Surface Grades:

Available three types of surface grades;
High profile – 6 mm aggregate (1/4" approx.)
Low profile – 3 mm aggregate (1/8" approx.)
Fine profile – 1 mm aggregate (1/16" approx.)
Low profile surface grade will be supplied if any surface grade is not specified.

Colour Code:
Colour code in a wide range of colour schemes to suit individual locations.
Available colour codes are: Safety yellow, Black/safety yellow, Black, Green, Grey, Blue, Red, White. Fluorescent and photoluminescent finishes.
Safety yellow colour will be supplied if any colour code is not specified.



Unit Per Sht

CODE	Breadth mm	Breadth Inch	Length mm	Length Inch	CODE	Breadth mm	Breadth Inch	Length mm	Length Inch
33 45 41			500	20	**33 45 61**			500	20
42			1000	40	**62**			1000	40
43	500	20	1500	59	**63**	900	36	1500	59
44			2000	79	**64**			2000	79
45			2500	98	**65**			2500	98
33 45 46			500	20	**33 45 66**			500	20
47			1000	40	**67**			1000	40
48	600	24	1500	59	**68**	1000	40	1500	59
49			2000	79	**69**			2000	79
50			2500	98	**70**			2500	98
33 45 51			500	20	**33 45 71**			500	20
52			1000	40	**72**			1000	40
53	700	28	1500	59	**73**	1200	48	1500	59
54			2000	79	**74**			2000	79
55			2500	98	**75**			2500	98
33 45 56			500	20					
57			1000	40					
58	800	32	1500	59					
59			2000	79					
60			2500	98					

Name of Mfr.: Scotgrip (UK) Limited.

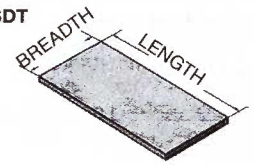
Anti-slip Deck Tile (SDT)

By installing this deck tiles not only is this slip hazard eliminated but the lifespan of the underlying material is greatly increased.

Surface Grades :
Available three types of surface grades ;
High profile – 6 mm aggregate (1/4" approx.)
Low profile – 3 mm aggregate (1/8" approx.)
Fine profile – 1 mm aggregate (1/16" approx.)
Low profile surface grade will be supplied if any surface grade is not specified.

Colour Code:
Colour code in a wide range of colour schemes to suit individual locations.
Available colour codes are: Safety yellow, Black/safety yellow, Black, Green, Grey, Blue, Red, White. Fluorescent and photoluminescent finishes.
Safety yellow colour will be supplied if any colour code is not specified.

These products are pre-drilled where required for quick installation.



Fitting Data

Fitting onto:	Method
Metal deck	Self tap screws, or nut, bolt and washer, or adhesive
Concrete	HPS impact fixings
Wood	Screws or adhesive

Unit Per Sht

CODE	Breadth		Length		CODE	Breadth		Length	
	mm	Inch	mm	Inch		mm	Inch	mm	Inch
33 45 76			500	20	**33 45 96**			500	20
77			1000	40	**97**			1000	40
78	500	20	1500	59	**98**	900	36	1500	59
79			2000	79	**99**			2000	79
80			2500	98	**33 46 00**			2500	98
33 45 81			500	20	**33 46 01**			500	20
82			1000	40	**02**			1000	40
83	600	24	1500	59	**03**	1000	40	1500	59
84			2000	79	**04**			2000	79
85			2500	98	**05**			2500	98
33 45 86			500	20	**33 46 06**			500	20
87			1000	40	**07**			1000	40
88	700	28	1500	59	**08**	1200	48	1500	59
89			2000	79	**09**			2000	79
90			2500	98	**10**			2500	98
33 45 91			500	20					
92			1000	40					
93	800	32	1500	59					
94			2000	79					
95			2500	98					

Name of Mfr.: Scotgrip (UK) Limited.

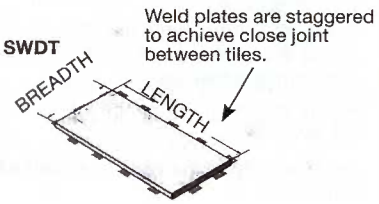
Anti-slip Weld Deck Tile (SWDT)

These heavy duty products are secured as the name suggests - by welding. This unique safety product is manufactured with built in protruding steel plates around the perimeter of the tile. These plates are positioned in such a way that if more than one tile is fitted they can be butted up together by means of interlocking the protruding steel plates.

Surface Grades:
Available three types of surface grades;
High profile – 6 mm aggregate (1/4" approx.)
Low profile – 3 mm aggregate (1/8" approx.)
Fine profile – 1 mm aggregate (1/16" approx.)
Low profile surface grade will be supplied if any surface grade is not specified.

Colour Code:
Available colour codes are: Safety yellow, Black/safety yellow, Black, Green, Grey, Blue, Red, White. Fluorescent and photoluminescent finishes.

Safety yellow colour will be supplied if any colour code is not specified.



Fitting Data

Fitting onto:	Method
Metal deck	By welding the protruding weld deck plates.

Unit Per Sht

CODE	Breadth		Length		CODE	Breadth		Length	
	mm	Inch	mm	Inch		mm	Inch	mm	Inch
33 46 11			500	20	**33 46 31**			500	20
12			1000	40	**32**			1000	40
13	500	20	1500	59	**33**	900	36	1500	59
14			2000	79	**34**			2000	79
15			2500	98	**35**			2500	98
33 46 16			500	20	**33 46 36**			500	20
17			1000	40	**37**			1000	40
18	600	24	1500	59	**38**	1000	40	1500	59
19			2000	79	**39**			2000	79
20			2500	98	**40**			2500	98
33 46 21			500	20	**33 46 41**			500	20
22			1000	40	**42**			1000	40
23	700	28	1500	59	**43**	1200	48	1500	59
24			2000	79	**44**			2000	79
25			2500	98	**45**			2500	98
33 46 26			500	20					
27			1000	40					
28	800	32	1500	59					
29			2000	79					
30			2500	98					

Name of Mfr.: Scotgrip (UK) Limited.

Anti-slip Flex Tile (IFTS)

By installing this tile not only is this slip hazard eliminated but the lifespan of the underlying material is greatly increased. These heavy duty products are secured either by mechanical fixings or bonded to existing surfaces. Surface grade : Fine profile - 1mm aggregate (1/16" approx.). Supplied in a standard size: 5 mtr x 1 mtr (16" x 40") in a roll. Custom sizes are always available.

Colour Code:
Available colour codes are: Safety yellow, Black/safety yellow, Black, Green, Grey, Blue, Red, White. Fluorescent and photoluminescent finishes.

Safety yellow colour will be supplied if any colour code is not specified.

Fitting Data

Fitting onto:	Method
Metal deck	Self tap screws, or nut, bolt and washer, or adhesive
Concrete	HPS impact fixings
Wood	Screws or adhesive

33 46 46	Flex tile, anti-slip, Scotgrip, 5 mtr x 1 mtr, Colour : safety yellow	Roll

Name of Mfr.: Scotgrip (UK) Limited

Anti-slip Ladder Rung Covers for Vertical Ladders

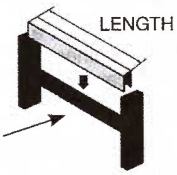
By installing Ladder rung covers not only is this slip hazard eliminated but the lifespan of the ladder rung is greatly increased. These heavy duty products are easily fitted onto existing square & round ladder rungs using adhesives. Surface grade: Fine profile - 1mm aggregate (1/16" approx.). Colour coded in a wide range of colour schemes to suit individual locations, but Safety Yellow colour will be supplied if any colour code is not specified.

PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

LRCS-Square

LRCR-Round

For Square Bar
(Ladder Rung Covers - Square)

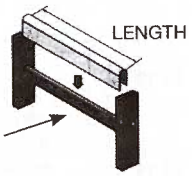


Unit Per Pc.

CODE	Breadth		Length		CODE	Breadth		Length	
	mm	Inch	mm	Inch		mm	Inch	mm	Inch
33 47 01			300	12	**33 47 11**			300	12
02			350	14	**12**			350	14
03	20	3/4	400	16	**13**	25	1	400	16
04			450	18	**14**			450	18
05			500	20	**15**			500	20
33 47 06			300	12	**33 47 16**			300	12
07			350	14	**17**			350	14
08	22	7/8	400	16	**18**	30	1-1/4	400	16
09			450	18	**19**			450	18
10			500	20	**20**			500	20

Name of Mfr.: Scotgrip (UK) Limited.

For Round Bar (LRCR)
(Ladder Rung Covers - Round)



Unit Per Pc.

CODE	Breadth		Length		CODE	Breadth		Length	
	mm	Inch	mm	Inch		mm	Inch	mm	Inch
33 47 21			300	12	**33 47 31**			300	12
22			350	14	**32**			350	14
23	20	3/4	400	16	**33**	30	1-1/4	400	16
24			450	18	**34**			450	18
25			500	20	**35**			500	20
33 47 26			300	12	**33 47 36**			300	12
27			350	14	**37**			350	14
28	25	1	400	16	**38**	40	1-9/16	400	16
29			450	18	**39**			450	18
30			500	20	**40**			500	20

Name of Mfr.: Scotgrip (UK) Limited.

Stepmate Bridges & Ramps

Designed to be placed over the potential hazards of pipes, cables & hoses in the workplace. These products are lightweight for easy manual handling & can be used as a temporary measure or as a more permanent fixture. Designed for pedestrian and light equipment use only. Standard colour is safety yellow which highlights the safe walking route over any potential hazards. Also have a wide range of colours to suit your individual location.

Surface Grades:
Available three types of surface grades;
High profile – 6 mm aggregate (1/4" approx.)
Low profile – 3 mm aggregate (1/8" approx.)
Fine profile – 1 mm aggregate (1/16" approx.)

Low profile surface grade will be supplied if any surface grade is not specified.

Pipe/Cable Bridges

Size mm (inch)

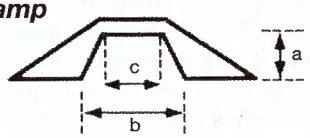
Type	PCB1	PCB2	PCB3	PCB4	PCB5
Width	380 (15")	610 (24")	750 (30")	900 (36")	1,100 (43")
Height	80 (3")	110 (4")	140 (5-1/2")	155 (6")	200 (8")
Length	1,000 (40")	1,000 (40")	1,000 (40")	1,000 (40")	1,000 (40")
No. of Slots	3	3	3	3	3
Size of Slot	45W (1-3/4") × 35H (1-3/8")	85W (3-3/8") × 65H (2-1/2")	115W (4-1/2") × 100H (4")	140W (5-1/2") × 115H (4-1/2")	175W (7") × 150H (6")
Weight kgs	10	18	24	29	36

Unit Per Pc.

CODE	Type	CODE	Type
33 47 51	PCB1	**33 47 54**	PCB4
52	PCB2	**55**	PCB5
53	PCB3		

Name of Mfr.: Scotgrip (UK) Limited

General Purpose Ramp



Size mm (inch)

Type	GP1	GP2	GP3	GP4
Width	410 (16")	450 (18")	500 (20")	600 (24")
Height	100 (4")	125 (5")	150 (6")	180 (7")
Length	1,000 (40")	1,000 (40")	1,000 (40")	1,000 (40")
a	75 (3")	90 (3-1/2")	115 (4-1/2")	140 (5-1/2")
b	175 (7")	180 (7")	200 (8")	230 (9")
c	100 (4")	100 (4")	100 (4")	100 (4")
Weight kgs	12	14	15	17

Unit Per Pc.

CODE	Type	CODE	Type
33 47 56	GP1	**33 47 58**	GP3
57	GP2	**59**	GP4

Name of Mfr.: Scotgrip (UK) Limited

Gangway Treads

Marine gangways are renowned for being extremely dangerous, especially when the angle of the gangway is steep and the surface is wet or oily or both. Some gangways have metal or wooden spars across the surface which can be a trip hazard in itself. By installing this gangway treads not only is this slip hazard eliminated but the lifespan of the underlying material is greatly increased.

The gangway treads have been designed in 3 different styles (stepped, bar and elliptical) to suit your individual location. These heavy duty products are easily fitted onto open grating/grille, chequered plate or wood. These treads

are non load-bearing and must have a suitable underlying structure to be secured to.

The anti-slip gangway are custom made products to suit individual locations, and it is available a wide range of colours to suit your individual location which will make your gangways safer. Available colour codes are: Safety yellow, Black/safety yellow, Black, Green, Grey, Blue, Red, White. Fluorescent and photoluminescent finishes. Other colours are available upon your request.

These treads are designed for quick & secure fitting on your location. These secured by either mechanical fixings or adhesives. Available in a wide range of sizes for custom order to suit individual locations.

Surface Grade:
Available three types of surface grades;
High profile – 6 mm aggregate (1/4" approx.)
Low profile – 3 mm aggregate (1/8" approx.)
Fine profile – 1 mm aggregate (1/16" approx.)

Low profile surface grade will be supplied if any surface grade is not specified.

Stepped Gangway Tread (GW1)

Bar Gangway Tread (GW2)

Elliptical Gagway Tread (GW3)

7TH
33

How to order:

33 - 47 - 61 Stepped gangway tread (Roll)
33 - 47 - 62 Bar gangway tread (Roll)
33 - 47 - 63 Elliptical gangway tread (Roll)

Please specify the following information;
Size (Width x Length), Type of Tread (GW1, GW2 or GW3), Type of Surface Grade (High, Low or Fine profile), Colour Code (Safety Yellow or any other colour)
Name of Mfr. : Scotgrip (UK) Limited.

Anti-slip Pipewalkers

Pipewalkers will provide a sound foot-holding even in the most extreme conditions and will help eliminate "Slips and Trips" in your working environment. Tough, durable, and easy to handle, and can be placed into position quickly and easily due to their flexibility and light weight construction. There are different types ; short tread and long tread. Standard colours black and yellow, and manufactured under BS EN ISO 9001: 2008 quality controlled condition using highly compatible raw materials.

Surface Grade:
Available in the following surface grade;
Fine profile – 1 mm aggregate (1/16" approx.)

Short Tread

Long Tread

Unit Per Pc.

CODE	Type	Size width x length	Weight	Scotgrip No.
33 47 65	Short tread	700 x 3,300	24.5 kgs	STP
66	Long tread	700 x 3,300		LTP

Name of Mfr.: Scotgrip (UK) Limited

Photoluminescent Wayfinding Walkway Matting

For engine room safety in the event of darkness caused by a sudden power loss or low visibility caused by smoke. A durable hardwearing extruded PVC matting, which incorporates a central 100 mm wide photoluminescent wayfinding strip to show an escape path in sudden darkness. The material is non slip, shock absorbing, self draining and comfortable underfoot. It is resistant to most oils, acids, etc. which are used in the marine industry.

Unit Per Rol.

CODE	Width	Length
33 11 87	600 mm	10 mtr
88	910 mm	"

Hazard Warning Reflective Tapes (Reflective Tiger Tapes)

Self adhesive black and yellow striped tape used to warn against hazards.

It can adhere to any reasonably clean surface and can be easily removed. Highly reflective for visibility at night or in a dark area.

Unit Per Rol.

CODE	Width	Thick	Length
33 11 91	45 mm	0.24 mm	10 mtr
92	90 "		
93	150 "		
94	970 "		
33 11 95	50 mm		33 mtr

Barrier Tapes

Strong, non-adhesive polyethylene barrier tape ideal for warning of danger areas or simply diverting the public etc. Normally striped in Black and Yellow.

Unit Per Rol.

CODE	Width mm x L mtr	CODE	Width mm x L mtr
33 11 98	80 x 50	**33 11 99**	75 x 500

Arm Bands

Made of felt covered by vinyl. For identification of person on duty, or appealing each other for caution to the hazards. Available various colours and notices upon request. Please specify colours, letters, symbols or signs when ordering.

How to order: 33 - 11 - 96
Arm band, COLOR, LETTER, SYMBOLS or SIGNS

Alcohol Screening Devices

An instrument to perform a breath alcohol test with speed and precision. It is also possible to measure alcohol in the ambient air (passive), in which case a mouthpiece isn't required.

All measurement functions can be operated with just one button to make it

easier for you to perform the test. The large back-lit display is easy to understand due to its full-text messages which guide you securely through the alcohol test. An LED and audible signal complement the display and indicate the end of a measurement process.

Unit Per Set

CODE	33 12 21	33 12 24
Model	Alcotest 5820	Alcotest 6820
Sensor	Electrochemical Dräger sensor for 1/4" technology; alcohol-specific	
Measuring Range	0 to 2.5 mg/L	
Temperature Range	-5 to +50°C/23 to 122°F	
Display	Graphic backlit LCD display; 32 x 22 mm	Graphic LCD display; 41 mm x 24 mm
Datalogger	Storage of last 100 tests with test numbers	Space for saving the last 5,000 tests with test number, date and time
Power Supply	1 x CR123A-Battery	2 x AA batteries or NiMH batteries
Dimensions (W x H x D),	50/60 x 141 v31 mm	147 x 65 x 39 mm
Weight	150grm incl. battery	approx. 260grm
CE Marking Norm	2014/30/EU (electromagnetic compatibility)	irective 89/336/EEC (electromagnetic compatibility)
Norm	EN 15964, NHTSA, FDA Conformity, depending on configuration	Meets EN 60068-2-6, EN 60068-2-27, EN 60068-2-64, MIL-STD 810F
Protection type	IP54	
Including	3 mouthpieces, 1 battery, hand loop, plastic transportation case.	Test unit, 3 Mouthpieces, 2 Batteries, Hand strap, Plastic case strap, Plastic case

Name of Mfr.: Draeger

Accessories

CODE	Description	No.	Unit
	Dräger Alcotest mouthpiece (Slide'n'click)		
33 12 26	Package with 100 pieces	68 10 690	Pkt
18	Package with 250 pieces	68 10 825	"
19	Package with 1,000 pieces	68 10 830	"
33 12 22	PSU (power source) 600 mA, 11 V, for charging NiMH batteries(for Alcotest 6820 only)	83 16 991	Pc.
33 12 20	Battery(for Alcotest 5820 only)	45 43 808	Pc.

Portable Breath Analyzer

A portable breath analyzer which offers latest in cutting-edge breath alcohol sensing technology. This can be operated with a mouthpiece (included in package) for single use, or you can blow directly into the unit. If the "Flo" message was displayed while in use, this warns "insufficient airflow", and you are not blowing enough. The sensor can be changed easily. Has a range of 0.00 to 0.40% BAC (Blood Alcohol Content) or Hi/Lo range. Requires recalibration on every 6 to 12 months by professional service.

Unit Per Set

CODE	33 12 23
Model	Alcoscan AL-6000
Alcohol Sensor	Semiconductive Oxide Sensor
Detection Range	0.00% - 0.40% BAC or Hi/Lo range
Device Lifetime	- 3,000 tests
Breath Sampling Time	3 sec. (fast mode) / 5 sec. (normal mode)
Certification	US DOT/NTHSA/CE Mark/ISO
Size mm	137 x 73 x 44
Weight grm	105

Remark: NTHSA denotes National Traffic & Highway Safety Administration

Name of Mfr. : AK Solutions

Personal Microcomputer Breath Alcohol Tester

Hand-held, personal breath alcohol tester, which is designed to measure an individual's blood alcohol concentration at one point in time. The subject should exhale firmly into the mouthpiece to being testing for approximately six seconds or until the audio tone stops, then the electronic signal produced by an individual's breath alcohol is converted into a blood alcohol concentration (BAC) level. BAC reading is indicated on the LED bar graph, and the LEDs are divided into the following three-colour ranges:

Green - Generally legal in most jurisdictions
Yellow - Warning level, approaching legal impairment
Red - Danger level above legal impairment

BAC reading in the red range may present a danger to safe driving.

Unit Per Set

CODE	33 12 25
Model	Ensure
Sensor	Semi-conductor sensor
Specificity	Specific for alcohol
Purge Cycle (Initial Test)	30 seconds
Breath Sample	6 second continuous breath sample
Analysis Time	Immediate
BAC Readout Format	mg%, %BAC, Promille or mg/L of breath
Rage of Measurement	0 to 100 mg% (0.000 to 0.100% BAC)
Accuracy	±10@100 mg% (±0.010@0.100% BAC)
Display	10 segment (Colour coded) LED bar graph 15 second continuous display of test results
Battery Pack	9 volt alkaline battery (included)
Complete Package	5 mouthpieces, manual & colour box
Size	12.5 x 6.5 x 2.5 cm
Weight	150 grm
Name of Mfr.	Alcohol Countermeasure Systems

33 12 25	Tester, breath alcohol Ensure	Set

Drug Testing Cups

A fully self contained drug screening cup for detecting drugs and drug metabolites in urine. Fully integrated design eliminates handling of the urine. Only the collector can activate the test, thus eliminating donor manipulation. Label hides test result from those who do not need to view results. The test is a fast visual, competitive panel immunoassay that can be used for the simultaneous, qualitative detection of a specific drug metabolite in human urine. Flat surface makes documenting result easy. The cup has easy Xerox feature where cup can be laid down on its side.

Features & Benefits

- FDA (U.S. Food and Drug Administration) 510(K) cleared.
- CLIA (Clinical Laboratory Improvement Amendments) waved.
- Up to 99% accurate.
- Adheres to the SAMHSA (Substance Abuse and Mental Health Services Administration) cutofffs.
- Shelf-life of 18 – 24 months.
- No more turning, simply put the key in and push.
- Easy to open top for the confirmation lab.
- The collector retains control of the chemistry & can time the results to insure proper interpretation.
- Tests for 5 drugs
  Marijuana (THC) 50 ng/ml
  Cocaine (COC) 300 ng/ml
  Amphetamine (AMP) 1,000 ng/ml
  Phencyclidine (PCP) 25 ng/ml
  Morphine / Opiates (MOR) 2,000 ng/ml

33 12 27	Drug testing cup	Set

Oxygen/Gas Detectors from Various Manufacturers

Type	CODE	Model	O_2 (% by vol)	Combustible Gas			Toxic Gas			Available Sensors
				CH_4	HC	LEL Combustible	H_2S (ppm)	CO (ppm)	CO_2	
Riken Keiki										
Oxygen	**33 05 06**	OX-08	0-25							
Combustible Gas	**33 05 21**	GX-8000 (Type LEL)			0-100%LEL					
2 Gases	**33 05 37**	RX-8000		0-100% LEL to 100 vol %	0-100% LEL to 100 vol %					
	33 05 XX	RX-8000 (HC)	0-25		0-100% LEL to 100 vol %					
	33 05 XX	RX-8000 (CH_4)	0-25	0-100% LEL to 100 vol %						
3 Gases	**33 05 XX**	RX-8700	0-25		0-100% LEL, 2-100% vol		Low: 0-100 High: 0-1,000			
4 Gases	**33 05 27**	GX-2012	0-40	0-100% vol 0-100%LEL	0-100%LEL	0-100% LEL	0-30	0-500		
	33 05 20	GX-2009	0-40	0-100%LEL	0-100%LEL	0-100% LEL	0-30	0-500		
	33 05 21	GX-8000	0-40	0-100%vol 0-100%LEL	0-100%vol 0-100%LEL	0-100% LEL	0-39	0-500		
	33 05 XX	RX-8500	0-25	0-100% LEL, 5-100% vol				0-1,000	0-20% vol, 0-2% vol, 2-5% vol, 5-20% vol	
6 Gases	**33 05 XX**	GX-6000	0-25	0-100% LEL	0-100% LEL		0-30	0-150	0-10% vol	VOC, SO_2 NO_2, HCN, NH_3, CL_2

New Cosmos Electric

Type	CODE	Model	O_2 (% by vol)	Combustible Gas			Toxic Gas			Available Sensors
				CH_4	HC	LEL Combustible	H_2S (ppm)	CO (ppm)	CO_2	
Oxygen	**33 05 16**	Cosmotector XP-3180	0-25							
	33 05 17	OX-326IIsA	0-25							
	33 05 18	OX-326IIsB	0-25							
	33 05 19	OX-326IIsC	0-25							
	33 05 81	XP-3118	0-25			0-100%LEL				
	33 05 36	Tankscope II	0-25		0-25%vol	0-100%LEL	0-200	0-999		

MSA The Safety Company

Type	CODE	Model	O_2 (% by vol)	Combustible Gas			Toxic Gas			Available Sensors
				CH_4	HC	LEL Combustible	H_2S (ppm)	CO (ppm)	CO_2	
Single Gas	**33 05 XX**	Altair	0-25				0-100	0-500		
	33 05 XX	Altair Pro	0-25				0-200	0-1,500		NCN, Cl_2, ClO_2 SO_2, NO_2, NH_3, PH_3
	33 05 XX	Altair 2X					0-200	0-1,999		ClO_2, NH_3, SO_2
	33 05 XX	Altair 2X-P					0-200			
Two Toxic Gases	**33 05 XX**	Altair 2X-T					0-100			SO_2 (0-20 ppm)
Single or Multi Gas (2 Gas / 3 Gas / 4 Gas / 5 Gas / 6 Gas, including IR and PID)	**33 05 98**	Altair 4X	0-30	0-4.4/5 vol %	Butane 1.4 Vol% Hydrogen 4.0 Vol% Nonane 0.7 Vol% Pentane 1.1 Vol% Propane 1.7/2.1 Vol% Heavy Carbons	0-100% LEL	0-200	0-1,999		NO_2: 0-50ppm SO_2: 0-20ppm
	33 05 96	Altair 5X	0-30	0-4.4/5 vol%	Hydrogen 4.0 Vol% Pentane 1.1 Vol%	0-100%LEL	0-200	0-1,999		Cl_2, ClO_2, HCN, NH_3, NO, NO_2, PH_3, SO_2
	33 05 97	Altair 5X-1R	0-30	0-100 vol%			0-200	0-1,999	IR: 0-10 Vol%	Cl_2, ClO_2, HCN, NH_3, NO, NO_2, PH_3, SO_2
Toxic Gases and Vapors	**33 05 XX**	Altair 5X PID	0-30				0-200	0-1,999	PID 0-2000 ppm	Cl_2, ClO_2, HCN, NH_3, NO, NO_2, PH_3, SO_2

Draeger

Type	CODE	Model	O_2 (% by vol)	Combustible Gas			Toxic Gas			Available Sensors
				CH_4	HC	LEL Combustible	H_2S (ppm)	CO (ppm)	CO_2	
Single Gas	**33 05 XX**	Pac 3500	0-25				0-100	0-500		
	33 05 XX	Pac 5500	0-25				0-100	0-500		
	33 05 84	Pac 8500	0-25				0-100	0-500	0-5vol%	Cl_2, HCN, NH_3, NO_2, PH_3, SO_2
Combus-tible Gas	**33 05 82**	X-am 2000	0-25	0-5vol% 0-100%LEL		0-100% LEL				
Multi Gas	**33 05 XX**	X-am 2000	0-25	0-100vol%/ LEL		0-100%LEL	0-200	0-2,000		
	33 06 74	X-am 5000	0-25	0-100vol%/ LEL		0-100% LEL	0-200	0-2,000	0-5vol%	NO, NO_2, SO_2, PH_3, HCN, NH_3, CL_2, H_2, OV
	33 06 75	X-am 5600	0-25	0-100vol%/ LEL		0-100% LEL	0-200	0-2,000	0-5vol%	NO, NO_2, SO_2, PH_3, HCN, NH_3, CL_2, H_2, OV
	33 05 83	X-am 8000	0-25	0-10%LEL	0-100vol%/ LEL Butane	0-100% LEL	0-100	0-2,000	0-5vol%	Amine, Cl_2, CLO_2, $COCL_2$, H_2, HCN
				0-100vol%	0-100vol%/ LEL Propane				0-100 vol%	Hydride, NH_3, NO, NO_2, Odorant, OV, PH_3

Gas Clip Technologies

Type	CODE	Model	O_2 (% by vol)	Combustible Gas			Toxic Gas			Available Sensors
				CH_4	HC	LEL Combustible	H_2S (ppm)	CO (ppm)	CO_2	
Single Gas	**33 05 XX**	SGC-H					0-100			
	33 05 XX	SGC-C						0-300		
	33 05 XX	SGC - O	0-30							
Multi Gas	**33 05 XX**	MGC-IR Pump	0-30	0-5vol%		0-100%LEL	0-100	0-300		
	33 05 XX	MGC-P Pump	0-30	0-5vol%		0-100% LEL	0-100	0-300		
	33 05 XX	MGC	0-30	0-5vol%		0-100% LEL	0-100	0-300		
	33 05 XX	MGC-P	0-30	0-5vol%		0-100% LEL	0-100	0-300		
	33 05 XX	MGC-S	0-30	0-5vol%		0-100% LEL	0-100	0-300		
2 Gases	**33 05 XX**	MGC-2	0-30	0-5vol%		0-100% LEL				
	33 05 XX	MGC-2-P	0-30	0-5vol%		0-100% LEL				

35
HOSE & COUPLINGS

Rubber Hose/P.V.C. Hose

P. 35-1 ~ 7

Hose Nozzles

P. 35-7

Hose Couplings

P. 35-7 ~ 19

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Products with IMPA nos.

1. **Brass Air Hose Couplings**
   35.10.51 to 57
2. **Cam & Groove Coupling**
   Aluminium - 35.17.01 to 35.20.61
   Stainless Steel - 35.17.31 to 35.20.91
3. **Double End Shut off Couplers**
   Steel 35.15.01 to 09, 35.15.31 to 39
   S. Steel 35.15.21 to 29, 35.15.51 to 59
4. **Straub Couplings**
   61.41.31 to 36 / 61.41.41 to 46
5. **Rotary Hand Pumps**
   61.40.06 to 61.40.07
6. **Paint Stirrers**
   27.05.81 to 27.05.82
7. **Pneumatic Deck Scaler**
   59.04.01
8. **Galvanized Oil Funnels**
   23.26.01 to 08
9. **Wing Pumps Hand Operated**
   61.40.14 to 61.40.19
10. **Lock Type Air Hose Couplings**
    35.10.11 to 14
11. **Needle Valves**
    75.62.21 to 45
12. **Copper Sheets**
    67.19.01 to 22 / 67.19.51 to 71
13. **Punching Table Set**
    61.30.56
14. **Marine Refuse Sacks**
    17.41.79 to 17.41.80
15. **Quick Connect Couplers**
    23.23.61 to 64

15A. PF Series Socket

Part No.	Steel	Brass	Stainless Steel
20 PF	35.14.31	35.14.41	35.14.51
30 PF	35.14.32	35.14.42	35.14.52
40 PF	35.14.33	35.14.43	35.14.53
400PF	35.14.34	35.14.44	35.14.54
600PF	35.14.35	35.14.45	35.14.55
800PF	35.14.36	35.14.46	35.14.56

15B. PH Series Socket

20 PH	35.12.31	35.12.41	35.12.51
30 PH	35.12.32	35.12.42	35.12.52
40 PH	35.12.33	35.12.43	35.12.53
400PH	35.12.34	35.12.44	35.12.54
600PH	35.12.35	35.12.45	35.12.55
800PH	35.12.36	35.12.46	35.12.56

16. **Rat Guards**
    23.23.61 to 64
17. **Rubber Hose**
    35.01.01 to 09
18. **Scupper Plugs Brass & Plastic**
    23.24.81 to 88
19. **Four Way Air Distributor**
    59.08.91

15C. PM Series Socket

Part No.	Steel	Brass	Stainless Steel
10PM	35.13.31	35.13.41	35.13.51
20PM	35.13.32	35.13.42	35.13.52
30PM	35.13.33	35.13.43	35.13.53
40PM	35.13.34	35.13.44	35.13.54
400PM	35.13.35	35.13.45	35.13.55
600PM	35.13.36	35.13.46	35.13.56
800PM	35.13.37	35.13.47	35.13.57

15D. SH Series Socket

20 SH	35.12.01	35.12.11	35.12.21
30 SH	35.12.02	35.12.12	35.12.22
40 SH	35.12.03	35.12.13	35.12.23
400SH	35.12.04	35.12.14	35.12.24
600SH	35.12.05	35.12.15	35.12.25
800SH	35.12.06	35.12.16	35.12.26

20. **Lever Type Hand Grease Guns**
    61.77.01 To 61.77.04 & 61.76.07
21. **Steel Line Couplers**
    Star Type 35.16.51
    Line Type 35.16.53
22. **Hand Tools**
    61 Series

15E. SF Series Socket

Part No.	Steel	Brass	Stainless Steel
20SF	35.14.01	35.14.11	35.14.21
30SF	35.14.02	35.14.12	35.14.22
40SF	35.14.03	35.14.13	35.14.23
400SF	35.14.04	35.14.14	35.14.24
600SF	35.14.05	35.14.15	35.14.25
800SF	35.14.06	35.14.16	35.14.26

15F. SM Series Socket

10SM	35.13.01	35.13.11	35.13.21
20SM	35.13.02	35.13.12	35.13.22
30SM	35.13.03	35.13.13	35.13.23
40SM	35.13.04	35.13.14	35.13.24
400SM	35.13.05	35.13.15	35.13.25
600SM	35.13.06	35.13.16	35.13.26
800SM	35.13.07	35.13.17	35.13.27

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www.teryair.com

Rubber Air Hose
Molded & Braided Construction

Black, corrugated or smooth surface, molded and braided construction, for general service.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm		Braid	Working Pressure kgf/cm²	Mtr Per Coil
		I.D.	O.D.			
35 01 01	6	6.3	14.5	2B	15	100
02	9	9.5	18.0	"	"	"
03	12	12.7	24.0	"	10	"
04	15	15.9	27.5	"	"	"
05	19	19.0	30.5	"	"	"
35 01 06	25	25.4	38.0	"	"	"
07	32	31.8	47.0	3B	7	"
08	38	38.1	53.5	"	"	"
09	50	50.8	71.0	"	"	50

Rubber Oxygen Hose
Molded & Braided Construction

For oxygen welding equipment. Lightweight, extremely flexible, and practically non-kinkable. Furnished in black colour to distinguish oxygen lines from acetylene lines.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm		Braid	Working Pressure kgf/cm²	Mtr Per Coil
		I.D.	O.D.			
35 01 16	6	6.5	15.5	2B	15	200
17	8	7.9	16.5	"	"	"
18	9	9.5	18.0	"	"	"

Rubber Acetylene Hose
Molded & Braided Construction

For acetylene welding equipment. Lightweight, extremely flexible, and practically non-kinkable. Furnished in red colour to be distinguished as an acetylene line.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm		Braid	Working Pressure kgf/cm²	Mtr Per Coil
		I.D.	O.D.			
35 01 21	6	6.3	13.5	1B	3	200
22	8	7.9	15.0	"	"	"
23	9	9.5	16.5	"	"	"

Rubber Twin Welding Hose
Molded & Braided Construction

One piece, two-line welding hose, securely joined together to prevent tangling and increase flexibility. One line is red and the other is black to facilitate the welding operation. Usually supplied in 100 mtr coils. This hose is lightweight and easy to move about reducing operator fatigue to a minimun.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm				Braid	W/P kgf/cm²	
		OX		AC				
		I.D.	O.D.	I.D.	O.D.		OX	AC
35 01 26	6 × 9	6.8	13.8	9.5	16.3	1	20	5
27	8 × 8	7.9	14.9	7.9	14.7	"	"	"
28	8 × 9	"	"	9.5	16.3	"	"	"

Corrugated Water Rubber Hose

A popular type of hose for industrial use in plants, and refineries, for construction and general service. Both the inner and outer covers are flexible and rigid in construction and resistant to abrasion, pressure, and general wear.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm		Braid	Working Pressure kgf/cm²	Weight Per Mtr grm.	Mtr Per Coil
		I.D.	O.D.				
35 01 41	12	12.7	20.5	2	5	280	100
42	15	15.9	24.0	"	"	360	"
43	19	19.0	27.5	"	"	440	"
44	25	25.4	35.0	"	"	650	"
45	32	31.8	44.5	"	"	1,190	"
35 01 46	38	38.1	51.5	"	"	1,460	"
47	50	50.8	67.0	"	"	2,300	50

Water Rubber Hose
Wrapped & Fabric Construction

A high quality hose designed to withstand being dragged over any surface. It is also resistant to deterioration from weather and sunlight. Provided with an extra heavy tube cover and cotton duck carcass. Recommended for high pressure service. Furnished in standard lengths of 20 mtr.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm		Braid	Working Pressure kgf/cm²	Weight Per Mtr grm.	Mtr Per Coil
		I.D.	O.D.				
35 01 51	12	12.7	20.5	2	5	320	20
52	15	15.9	24.0	"	"	520	"
53	19	19.0	28.0	"	"	530	"
54	22	22.0	32.0	"	"	680	"
55	25	25.4	35.5	"	4	760	"
35 01 56	32	31.8	43.0	"	"	1,060	"
57	35	35.0	47.0	"	"	1,260	"
58	38	38.1	50.0	"	"	1,360	"
59	45	44.5	58.5	"	"	1,810	"

P. V. C. Water Suction/Delivery Hose
Plastic Coil Reinforced

Made of P. V. C. smooth inner and outer surface. The extreme clarity makes it most suitable for application where visibility of flow is an important requirement. Easy to handle and carry. Designed for both suction and delivery uses, but more suitable for delivery. The plastic coil reinforcement gives it durable strength.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm		Working Pressure kgf/cm²	Weight Per Mtr grm.	Mtr Per Coil
		I.D.	O.D.			
35 01 71	25	25.0	30.0	6.0	270	50
72	32	32.0	37.0	6.0	360	"
73	38	38.0	43.6	4.5	480	"
74	50	50.8	57.8	4.0	820	"
75	65	63.5	72.0	3.5	1,180	20
35 01 76	75	76.2	85.0	3.5	1,440	"
77	100	101.2	113.1	3.5	2,550	"
78	125	127.0	139.0	3.0	3,250	"
79	150	152.4	166.0	2.5	4,250	"

Water Discharge Hose
P. V. C. Synthetic Fiber Braided

P. V. C. and synthetic fibers do not rust, corrode or require cathodic protection. Soft pliable, rolls up easily, requires minimum storage space. Tough, puncture proof, long service life.

Caution:

1. Transferring of paint, thinner, ethylene, gasoline, alcohol and similar chemical substaces is not advisable.
2. Do not use near nails, glass or other pointed objects.

Test Results

Flexibility:	Scott Type Flexibility Tests Operating load x 1,000cycles No change
Resistance to Hight Temperature:	80°C ×168 hrs. No sticking
Resistance to Low Temperature:	-40°C ×168 hrs. No cracking
Resistance to Weathering:	800 hrs. by Sunshine-Weather-O-Meter exposure: No change
Water Absorbency:	Less than 0.9%

Unit Per Mtr.

CODE	Nominal Size mm	Inside Diam mm	Wall Thickness mm	Pressure kgf/cm² Working	Bursting
		Standard Type			
35 01 81	40	40	1.35	5.0	15.0
82	50	52	1.40	4.5	13.5
83	65	65	1.70	4.0	12.0
84	75	77	1,80	4.0	12.0
85	100	103	2.00	4.0	12.0
35 01 86	125	128	2.00	3.0	9.0
87	150	153	2.10	3.0	9.0
88	200	200	2.40	3.0	9.0
		Heavy Duty Type			
35 01 91	40	40.0	1.8	10.5	31.5
92	50	52.5	2.0	10.5	31.5
93	65	66.0	2.1	10.5	31.5
94	75	78.5	2.1	9.0	27.0
95	100	104.0	2.5	9.0	27.0
35 01 96	150	155.0	2.7	7.0	21.0

P. V. C. Hose, Cloth Insertion

Braided cotton fabric layered between the inner and outer vinyl covers for reinforcement. Inside vinyl cover is black colored and outside grass green. Furnished in 50 mtr coils.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm I.D.	O.D.	Working Pressure kgf/cm²	Mtr Per Coil
35 02 01	15	15.0	22.0	10	50
02	19	19.0	27.0	"	"
03	25	25.0	33.0	7	"

P. V. C. Domestic Hose

Used for domestic general purpose. Available in blue, yellow or transparent colour. Fixed length is 50 mtrs.

35 02 06	P.V.C. domestic hose, I.D. 15×O.D. 19 mm	Mtr
07	P.V.C. domestic hose, I.D. 18×O.D. 22 mm	"

Plastic Transparent Hose

The extreme clarity makes It most suitable for application where visibility of flow is an important requirement. It can be easily flushed clean. It is resistant to sunlight and abrasion and is easy to handle. The hose can be twisted or knotted without any damage.

Unit Per Mtr.

CODE	Size I.D. mm	O.D. mm	Mtr Per Coil	CODE	Size I.D. mm	O.D. mm	Mtr Per Coil
35 02 11	2	4	100	**35 02 31**	14	17	50
12	3	5	"	**32**	15	18	"
13	4	6	"	**33**	16	19	"
14	4	7	"	**34**	19	23	"
15	5	7	"	**35**	22	26	"
35 02 16	5	8	100	**35 02 36**	25	29	50
17	6	8	"	**37**	25	30	"
18	6	9	"	**38**	30	36	"
19	7	9	"	**39**	32	38	"
20	7	10	"	**40**	38	44	"
35 02 21	8	10	100	**35 02 41**	50	58	50
22	8	11	"	**42**	63	73	30
23	8	12	"	**43**	75	86	"
24	9	11	"				
25	9	12					
35 02 26	10	12	100				
27	10	13	"				
28	10	14	"				
29	12	14	50				
30	12	15	"				

Steam Rubber Hose
Wrapped & Fabric Construction

A high-quality hose well balanced in construction for its purpose. A heavy gauge tube of heat resistant compounds covered by cotton ducks and insulated to withstand extreme heat, etc. Made in 20 mtrs in length.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm I.D.	O.D.	Braid	Working Pressure kgf/cm²	Mtr Per Coil
35 02 51	12	12.7	24.9	4	4	140
52	15	15.9	28.1	4	4	"
53	19	19.0	33.0	5	4	"
54	25	25.4	41.4	5	4	"
55	32	31.8	49.6	6	3	"
35 02 56	38	38.1	58.5	8	3	140
57	45	44.5	66.9	8	3	"
58	50	50.8	75.2	8	3	"
59	75	75.0	93.0	8	7 bar	170

Rubber Chemical Transfer Hose

Made of chemical resistant rubber reinforced by wrapped fabric plies. Used for delivery service of acid, alkalis and corrosive chemical liquid.

Unit Per Mtr.

CODE	Nominal I.D. mm	Approx. O.D. mm	Weight Per Mtr kgs	Working Pressure
35 02 71	19	30	0.6	5 kgf/cm²
72	25	37	0.7	"
73	32	44	0.9	"
74	38	51	1.3	"
75	45	59	1.5	"
35 02 76	50	66	1.8	5 kgf/cm²
77	55	74	2.2	"
78	65	80	2.6	"
79	75	98	3.8	"

P. V. C. Air Duct Hose

Increased flow capacity with smooth inner surface. Highly flexible and lightweight due to P. V. C. material. Suitable for a variety of uses from ventilation to dust collection. Also suitable for transport of powder and granule.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm I.D.	Actual Size mm O.D.	Working Per Mtr grm.	Mtr Per Coil
35 03 01	32	32.4	38.6	210	50
02	38	37.3	44.5	280	"
03	50	50.6	60.8	440	30
04	65	62.4	72.6	650	"
05	75	76.4	87.0	750	"
35 03 06	90	88.9	100.1	890	"
07	100	101.6	112.8	930	"
08	125	125.9	139.3	1,390	20
09	150	152.4	165.8	1,730	"
10	200	203.7	217.1	2,510	"

P.V.C. Tetoron Reinforced Hose

The flexible, transparent, smooth internal surface of this hose lessens fluid-resistance. For use on various machine tools, and the transport of chemicals. Recommended for use with moderate temperatures, up to 65°C.

Unit Per Mtr.

CODE	Nominal I.D. mm	Actual O.D. mm	Working Pressure kgf/cm²	Weight Per Mtr grm.	Mtr Per Coil
35 03 21	4	9	16	70	100
22	6	11	16	90	"
23	8	13.5	14	120	"
24	9	15	14	150	"
25	10	16	10	160	"
35 03 26	12	18	10	185	"
27	15	22	10	265	50
28	19	26	8	325	"
29	25	33	8	475	"
30	32	41	7	670	40
35 03 31	38	48	7	875	"
32	50	62	7	1,360	"
33	63	80	5	2,250	20
34	75	92	5	2,980	"

P. V. C. Steel Coil Reinforced Hose

Features : Ample flexibility. High external pressure resistance. Good transparency and smooth internal surface.

Application : As an oil hole for machine tools, or as a pressure pipe or suction pipe for various pulverized materials. Recommended for use in moderate temperatures of up to 65°C.

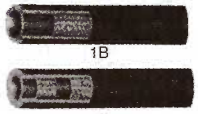
Unit Per Mtr.

CODE	Nominal I.D. mm	Actual O.D. mm	Working Pressure kgf/cm²	Weight Per Mtr grm.	Mtr Per Coil
35 03 51	4	9	15	70	50
52	6	11	15	90	"
53	8	13.5	13	120	"
54	9	15	13	150	"
55	10	16	10	160	"
35 03 56	12	18	10	185	50
57	15	22	7	265	"
58	19	26	7	325	"
59	25	33	6	475	"
60	32	41	6	670	40
35 03 61	38	48	6	875	"
62	50	62	5	1,360	"
63	63	80	5	2,250	20
64	75	92	3	2,980	"

(to be continued)

Rubber Hydraulic Hose

Reinforced with Synthetic Fiber



For use with hydraulic machines of low or medium pressure. Made of oil resistant rubber reinforced by synthetic fiber. Recommended oil temperature is from -30°C up to 88°C.

Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm I.D.	Actual Size mm O.D.	Braid	Working Per Mtr grm.	Mtr Per Coil
Working Pressure 15 kgf/cm²						
35 04 01	6	6.3	12.3	1B	130	100
02	9	9.5	15.9	"	175	"
03	12	12.7	19.7	"	250	"
04	19	19.0	30.0	"	585	"
05	25	25.4	37.0	"	785	"
35 04 06	32	31.8	44.8	2B	1,075	"
07	38	38.1	51.1	"	1,230	"
08	50	50.8	65.4	"	1,720	50
Working Pressure 35 kgf/cm²						
35 04 11	6	6.3	13.0	1B	140	100
12	9	9.5	16.5	"	195	"
13	12	12.7	20.3	"	275	"
14	19	19.0	32.6	2B	755	"
15	25	25.4	39.2	"	960	"
35 04 16	32	31.8	46.0	"	1,100	20
17	38	38.1	52.3	"	1,320	"
18	50	50.8	66.2	"	1,905	"

Rubber Oil Delivery Hose

Reinforced with Synthetic Textile Cord

Used for delivery service of fuel oils, gasoline, diesel oils and other petroleum oils. Made of oil resistant rubber reinforced with strong synthetic textile cords.

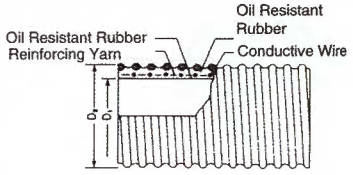
Unit Per Mtr.

CODE	Nominal I.D. mm	Approx. O.D. mm	Weight Per Mtr kgs	Pressure Rating
35 04 26	6	14.3	0.178	20 bar
27	8	15.9	0.235	"
28	9.5	17.5	0.227	15 bar
29	12.5	21.5	0.350	"
30	16	24.7	0.480	"
35 04 31	19	28	0.4	10 kgf/cm²
32	25	35	0.6	"
33	32	42	0.8	"
34	38	49	0.9	"
35	45	56	1.2	"
35 04 36	50	62	1.9	10 kgf/cm²

Rubber Oil Suction & Delivery Hose

Reinforced with Yarn & Electro Conductive Wire

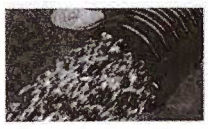
Made of oil resistant rubber together with reinforcing yarn and electro conductive wire. Used for conveyance of crude oil, heavy oil, gasoline, etc.

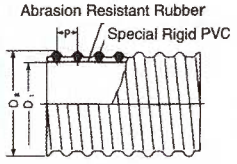


Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm I.D.	Actual Size mm O.D.	Working Pressure kgf/cm²	Weight Per Mtr grm.
35 04 41	75	76.2	98.2	7	2,520
42	100	101.6	129	"	4,100
43	125	125.9	155	"	5,460
44	150	151.0	183	"	7,350
45	200	203.0	244	"	12,600

P. V. C. Abrasion Resistant Hose





Unit Per Mtr.

CODE	Nominal Size mm	Actual Size mm I.D.	Actual Size mm O.D.	Weight Per Mtr grm.	Mtr Per Coil
35 04 51	38	38.0	46.2	490	50
52	50	50.6	59.8	840	"
53	65	62.4	73.0	1,060	20
54	75	76.4	88.8	1,520	"
55	90	88.9	104.3	1,900	"
35 04 56	100	101.6	117.6	2,330	"
57	125	125.9	142.9	3,360	"
58	150	152.4	171.0	4,570	"

7TH 35

Large Bore Hose

for General Chemical and Petroleum Cargo Use

Heavy duty, composite hoses for ship to shore, dockside and general shipboard use. Works in compliance with international standards including IMO standards, BS 5842 and US Coast Guard regulations. Made of polypropylene fabric and films with a weatherproof and abrasion resistant outer cover reinforced with internal and external wire spirals which are electrically bonded to the end connections giving full end-to-end electrical continuity for safety from static discharge.

Suitable for carrying a wide range of aggressive chemicals which require inert materials and can handle cargoes which involve factors of pressure and temperature with cryogenics such as LPG and LNG.

- Liquid and vapor hoses should be compatible with the cargo and suitable to the cargo temperature.
- Hoses subject to tank pressure or discharge pressure of pumps should be designed for a bursting pressure not less than 5 times the maximum pressure the hose will be subjected to during cargo transfer.

For Petroleum Use (In compliance with IMO standard)

How to order : CODE

Hose for petroleum use, DIAM x LENGTH

Unit Per C/L

CODE	35 04 71	35 04 72	35 04 73
Nominal Size	4"	6"	8"
Working Pressure	10.5 kgs/cm²		
Working Temperature	−26°C ~ +82°C		
Minimum Bend Radius mm	400	500	740
Standard Length mtr	18	18	15
Weight kg/mtr	6.5	11.0	15.0

For Hazardous and Corrosive Chemical Use (In compliance with IMO standard)

How to order : CODE

Hose for hazardous and chemical use, KIND OF CHEMICAL, DIAM X LENGTH

Unit Per C/L

CODE	35 04 76	35 04 77	35 04 78
Nominal Size	4"	6"	8"
Working Pressure	10.5 kgs/cm²		
Working Temperature	−26°C ~ +60°C		
Minimum Bend Radius mm	400	500	740
Standard Length mtr	18	18	15
Weight kg/mtr	6.5	11.0	15.0

Note: When ordering, please specify what kind of chemical or material the hose will be used with.

Suction and Discharge Hose

(Built in Fitting)

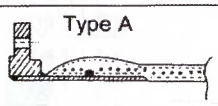
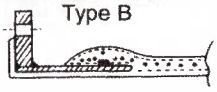
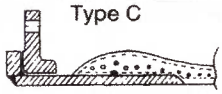
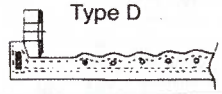
Designed for suction and discharge of air, water, oil, abrasion, chemical, heavy acid, etc. at working pressure of 100 psi, 150 psi, 200 psi, and 300 psi. These hoses are factory coupled, and there is no hose band used. Neither leakage nor flange separation will occur.

The hose details as to construction, flange, and usage are described as follows.

Hose Application & Size Table

W.P. / S&D HOSE	100 psi	150 psi	200 psi	300 psi	FLUCIDS CARRIED
AIR	1"~ 20" (25A~ 500A)			1"~ 12" (25A~ 300A)	Compression Air, etc.
WATER	1"~ 20"			1"~ 12""	Cooling Water, Sea Water, etc.
OIL	1"~ 20"			1"~ 12"	Crude Oil, Heavy Oil, Kerosene, etc.
ABRASION	1"~ 20"			1"~ 12"	Cement, Sand, etc.
CHEMICAL	1"~ 20"			1"~ 12"	Caustic Soda, etc.
HEAVY ACID	1"~ 8" (25A~ 500A)				Hydrochloric Acid, Sulfuric Acid, etc.

Details of Built-in Fittings for Hose End

Type A 	Built-in Nipple Type (Example...Air,Water,Oil,etc.)
Type B 	Rubber Lining Type (Example...Water,Abrasion, Chemical,Heavy Acid,etc.)
Type C 	Lap Joint Flange Type (Example...Air,Water,Oil, etc.)
Type D 	Split Ring Flange Type (Example...Abrasion, Chemical, Heavy Acid,etc.)

Fittings: According to customer's requirements.

Hose Specification

Reinforcement	Synthetic cord fabric plies and helical hard steel wire reinforced
Colour	Black
Maximum Length	Over 1' thru 14'65" (20 mtrs) Over 16' thru 20'20" (6 mtrs)
Remark	The Hose for Rubber Lining Type (B) has Flat Face Flange

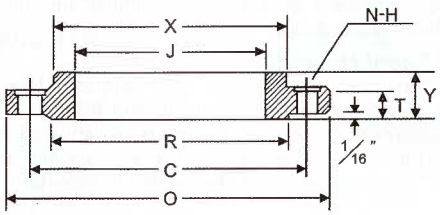
Hose Composition Material

Material / S&D HOSE	Tube	Cover
AIR	Natural rubber	Synthetic rubber, resistance to weathering
WATER	Natural rubber	
OIL	Synthetic rubber, resistance to oil	
ABRASION	Synthetic rubber, resistance to abrasion	
CHEMICAL	Synthetic rubber, resistance to acid	
HEAVY ACID	Special compounded synthetic rubber, resistance to heavy acid	

The following tables are provided to assist you in determining the proper flanges and hoses for safe use at high temperatures and pressures, or when conveying chemicals or toxic material.

Details of Hose Flange Applied

Details of the Flange used for these hoses are as follows: ANSI B 16.5 Forged Flange Slip on Type.



Class 150 lb

(Unit: Inch)

Nominal Pipe Size	Outside Dia. O	Thickness C	Diameter of Hub X	Length Through Hub Y	Bore B	Diameter of Bolt Circles	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolt
2	6	0.75	3.06	1.00	2.44	4.75	0.75	4	5/8
2-1/2	7	0.88	3.56	1.12	2.94	5.50	0.75	4	5/8
3	7.5	0.94	4.25	1.19	3.57	6.00	0.75	4	5/8
3-1/2	8.5	0.94	4.81	1.25	4.07	7.00	0.75	8	5/8
4	9	0.94	5.31	1.31	4.57	7.50	0.75	8	5/8
5	10	0.94	6.44	1.44	5.66	8.50	0.88	8	3/4
6	11	1.00	7.56	1.56	6.72	9.50	0.88	8	3/4
8	13.5	1.12	9.69	1.75	8.72	11.75	0.88	8	3/4
10	16	1.19	12.00	1.94	10.88	14.25	1.00	12	7/8
12	19	1.25	14.38	2.10	12.88	17.00	1.00	12	7/8
14	21	1.38	15.75	2.25	14.14	18.75	1.12	12	1

Various Specifications of Hoses and Applications for the Fluids carried

1. Air & Water Suction & Discharge Hose

SPECIFICATIONS

Working Temperture Range:

−4°F ~ +140°F (-20°C ~ +60°C)

W.P. / Item / Nominal Size (in)	I.D. (mm)	Approx. O.D. (in)	Approx. O.D. (mm)	Approx. Weight (kg/m)	Approx. Weight (lbs/ft)	Min. Bend Radius (mm)	Min. Bend Radius (ft)
	150 psi (10 kgf/cm²)						
2	50.8	2-11/16	68	2.2	1.5	450	1.5
2-1/2	63.5	3-7/32	82	3.1	2.1	600	2.0
3	76.2	3-11/16	94	3.7	2.5	700	2.3
3-1/2	88.9	4-9/32	109	4.9	3.3	800	2.7
4	101.6	4-7/8	124	6.2	4.2	900	3.0
5	127	6	152	9.0	6.0	1,200	4.0
6	152.4	7-5/32	182	13.2	8.8	1,400	4.7
8	200	9-7/32	234	20.5	13.7	1,800	6.0
10	248	11-5/16	287	30.2	20.2	2,300	7.7
12	298	13-1/2	343	40.8	27.3	2,700	9.0
14	356	16	406	55.2	37.0	3,200	10.7

2. Oil Suction & Discharge Hose

SPECIFICATIONS

Working Temperture Range:

−4°F ~ +176°F (-20°C ~ +80°C)

W.P. / Item / Nominal Size (in)	I.D. (mm)	Approx. O.D. (in)	Approx. O.D. (mm)	Approx. Weight (kg/m)	Approx. Weight (lbs/ft)	Min. Bend Radius (mm)	Min. Bend Radius (ft)
	150 psi (10 kgf/cm²)						
2	50.8	2-11/16	68	2.3	1.5	450	1.5
2-1/2	63.5	3-7/32	82	3.2	2.1	600	2.0
3	76.2	3-3/4	95	3.8	2.5	700	2.3
3-1/2	88.9	4-5/16	110	5.2	3.5	800	2.7
4	101.6	4-31/32	126	6.7	4.5	900	3.0
5	127	6-1/32	153	9.3	6.2	1,200	4.0
6	152.4	7-5/32	182	13.4	9.0	1,400	4.7
8	200	9-9/32	236	21.4	14.3	1,800	6.0
10	248	11-13/32	290	30.3	20.3	2,300	7.7
12	298	13-5/8	346	42.6	28.5	2,700	9.0
14	356	16-3/32	409	57.3	38.4	3,200	10.7

3. Abrasion Materials Suction & Discharge Hose

SPECIFICATIONS

Working Temperture Range:

–4°F ~ +176°F (-20°C ~ +80°C)

W.P. / Item / Nominal Size (in)	I.D. (mm)	Approx. O.D. (in)	Approx. O.D. (mm)	Approx. Weight (kg/m)	Approx. Weight (lbs/ft)	Min. Bend Radius (mm)	Min. Bend Radius (ft)
	150 psi (10 kgf/cm²)						
2	50.8	2-25/32	71	2.7	1.8	550	1.8
2-1/2	63.5	3-11/32	85	3.6	2.4	700	2.3
3	76.2	3-29/32	99	4.4	2.9	900	3.0
3-1/2	88.9	4-1/2	114	5.9	4.0	1,000	3.3
4	101.6	5-5/32	131	7.7	5.2	1,100	3.7
5	127	6-7/32	158	10.6	7.1	1,400	4.7
6	152.4	7-3/8	187	14.9	10.0	1,700	5.7
8	200	9-1/2	241	23.4	15.7	2,200	7.3
10	248	11-5/8	295	32.8	22.0	2,800	9.3
12	298	13-27/32	352	46.0	30.8	3,300	11.0
14	356	16-3/8	416	62.1	41.6	3,900	13.0

4. Chemical Suction & Discharge Hose

SPECIFICATIONS

Working Temperture Range:

–4°F ~ +140°F (-20°C ~ +60°C)

W.P. / Item / Nominal Size (in)	I.D. (mm)	Approx. O.D. (in)	Approx. O.D. (mm)	Approx. Weight (kg/m)	Approx. Weight (lbs/ft)	Min. Bend Radius (mm)	Min. Bend Radius (ft)
	150 psi (10 kgf/cm²)						
2	50.8	2-11/16	68	2.3	1.5	450	1.5
2-1/2	63.5	3-7/32	82	3.2	2.1	600	2.0
3	76.2	3-3/4	95	3.8	2.5	700	2.3
3-1/2	88.9	4-5/16	110	5.2	3.5	800	2.7
4	101.6	4-31/32	126	6.7	4.5	900	3.0
5	127	6-1/32	153	9.3	6.2	1,200	4.0
6	152.4	7-5/32	182	13.4	9.0	1,400	4.7
8	200	9-9/32	236	21.4	14.3	1,800	6.0
10	248	11-13/32	290	30.3	20.3	2,300	7.7
12	298	13-5/8	346	42.6	28.5	2,700	9.0
14	356	16-3/32	409	57.3	38.4	3,200	10.7

5. Heavy Acid Suction & Discharge Hose

SPECIFICATIONS

Working Temperture Range:

–4°F ~ +122°F (-20°C ~ +50°C)

W.P. / Item / Nominal Size (in)	I.D. (mm)	Approx. O.D. (in)	Approx. O.D. (mm)	Approx. Weight (kg/m)	Approx. Weight (lbs/ft)	Min. Bend Radius (mm)	Min. Bend Radius (ft)
	150 psi (10 kgf/cm²)						
2	50.8	2-29/32	74	2.6	1.7	600	2.0
2-1/2	63.5	3-15/32	88	3.9	2.6	800	2.7
3	76.2	4	102	4.3	2.9	1,000	3.3
3-1/2	88.9	4-19/32	117	5.9	4.0	1,100	3.7
4	101.6	5-1/4	133	7.3	4.9	1,200	4.0
5	127.0	6-5/16	160	9.8	6.6	1,500	5.0
6	152.4	7-7/16	189	13.9	9.3	1,800	6.0
8	200.0	9-9/16	243	22.2	14.9	2,400	8.0

(to be continued)

Guide of How to Order

Above hoses are described only just for your reference and not coded, but when ordering, please specify exactly the following matters.

CODE	**35 - 05 - 01**
Fluid Carried	Air, Water, Oil Abrasion Chemical, Heavy Acid
×	
Nominal Size	1" ~ 20"
×	
Working Pressure	100 psi, 150 psi
×	
Hose End Fitting & Flange Type	Built-in Nipple Rubber Lining Type & Lap Joint Flange
×	
Working Temperature	-20°C ~ +60°C
×	
Length of Unit	20 Mtrs (1" ~ 14") 6 Mtrs (16" ~ 20")

Reels with Hose

for Petroleum/Grease/Air/Water

Increased frame strength in a single pedestal, composite spool option. Improved spring makes it easy to pull out the last 10 feet. Full-flow swivel maximizes material flow with minimal pressure drop. Larger hose capacity (30-60 foot, 10-20 meters) with smaller profile to fit into tight spaces. Improved latch design prevents lockout and simplifies repositioning the arm.

SD Series

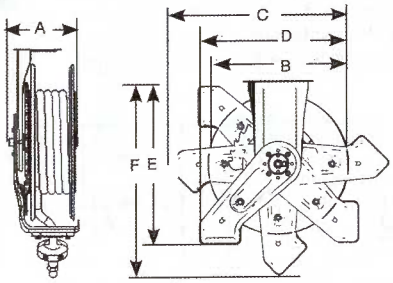
Compact design easily fits in small spaces. Steel spool stands up to demanding use and applications. Can be used either as an open or enclosed reel. Flexible positioning of the guide arm for mounting on bench or ceiling, wall or utility truck. Structurally reinforced frame made from high strength steel won't bend or flex. Baked-on enamel finish protects reel from corrosion for longer life. Now available in six colours (Metallic Blue, White, Red, Black, Dark Blue, or Yellow), but Metallic Blue is supplied unless any colour is not indicated in your order.

Steel Spool Hose Reels

Designed for daily use applications. Long-lasting spring provides constant spring torque through the entire range of motion. Open swivel ports ensure high fluid flowwith minimal pressure loss. Enclosure kits available-ideal when appearance and protection is important.

Dimensions

Size 10		Size 20	
A	7.0" (177 mm)	A	7.0" (177 mm)
B	16.2" (412 mm)	B	18.1" (460 mm)
C	21.0" (533 mm)	C	23.4" (594 mm)
D	17.1" (435 mm)	D	19.2" (488 mm)
E	19.5" (495 mm)	E	21.8" (554 mm)
F	22.5" (571 mm)	F	25.2" (640 mm)



Specifications

Model	Size	Pressure psi (bar)	Hose		Connection Size	
			ID	Length ft (mtr)	Inlet npsm (m)	Outlet npt (m)
Air, Water, Anti-freeze, Windshield Washer Fluid						
HPL 23B	10	300 (20.7)	3/8"	35 (11)	1/2	3/8
HPL 25B			3/8"	50 (15)		3/8
HPL 33B			1/2"	35 (11)		1/2
HPL 65B	20		1/2"	50 (15)		1/2
Petroleum or Synthetic based Oils						
HPM 33B	10	2,000 (138)	1/2"	35 (11)	1/2	1/2
HPM 65B	20			50 (15)		
Grease						
HPH 15B	10	5,000 (345)	1/4"	50 (15)	3/8	1/4
HPH 55B	20	4,000 (276)	3/8"	50 (15)		

Unit Per Pc.

CODE	Model	Size	CODE	Model	Size
35 06 31	HPL 23B	10	**35 06 36**	HPM 33B	10
32	HPL 25B		**38**	HPM 65B	20
33	HPL 33B		**41**	HPH 15B	10
35	HPL 65B	20	**44**	HPH 55B	20

Name of Mfr.: Graco

Plastic Garden Hose Nozzles

Combination nozzle designed for spray or straight delivery by simply adjusting a round screw. Hose end is available in 15 mm size only.

35 10 01	Nozzle, garden hose, plastic hose end 15 mm	Pc.

Cast Aluminium Garden Hose Nozzles with Spray

Made of cast aluminium. Spray flow can be adjusted by turning the nozzle. Two types of nozzles are available : a 9 - 15 mm adjustable hose end and a 25 mm fixed end.

35 10 04	Hose nozzle, adjustable, 9 mm and 15 mm hose end
05	" " fixed, 25 mm hose end

Pistol Grip Hose Nozzles

Brass made and finished with chrome. Furnished with variable spray flow squeeze lever. Nozzle available in 15 mm dia. only.

35 10 08	Nozzle hose, pistol grip, 15 mm hose end	Pc.

Garden Hose Couplings

35 09 01/02	35 09 03	35 09 04	35 09 05	35 09 06
35 09 07	35 09 08	35 09 09		35 09 11

CODE	Size	Material	Type	Alligator No.
Hose Couplings				Unit Per Pc.
35 09 01	13mm	PVC	Gardena	SM21010
02	16/19mm			SM21015
03	13mm Waterstop			SM21040
Tap Connectors				Unit Per Pc.
35 09 04	3/4" female thread	PVC	Gardena	SM21025
Male Couplings				Unit Per Pc.
35 09 05	3/4"	PVC	Gardena	SM21035
Nozzles				Unit Per Pc.
35 09 06	1/2"	PVC	Gardena	SM21050
Hose Connectors				Unit Per Pc.
35 09 07	Hose end: 2x13mm	PVC	Gardena	SM21060
Connections				Unit Per Pc.
35 09 08	1/2"	PVC	Gardena	SM21070
Nozzle Pistol Grip				Unit Per Pc.
35 09 09	1/2"	PVC	Gardena	SM21052
Hose Saddles				Unit Per Pc.
35 09 10	-	PVC	Gardena	SM21090
Nozzle Short				Unit Per Pc.
35 09 11	38 mm	Brass	-	SM21038

Lock Type Air Hose Couplings

The quick lock coupling feature makes it especially efficient and economical for every kind of air and pneumatic service. Press the two fittings together, give a quarter turn to one, and the connection is made. Made of cast brass, with hose ends on both sides. Furnished in sets only.

Unit Per Set

CODE	Hose Size		CODE	Hose Size	
	Nom. mm	Inch		Nom. mm	Inch
35 10 11	9	3/8	**35 10 13**	19	3/4
12	12	1/2	**14**	25	1

Universal Air Hose Couplings with Hose End or Thread End

Brass made couplings forming a positively locked connection that will not break or come apart in service. The locking jaws are heavy with large bulk surfaces which cannot bend or break loose. Couplings are interchangeable between various sizes and combinations according to DIN 3489. 42 mm distance between lugs.

Both hose end

Packing

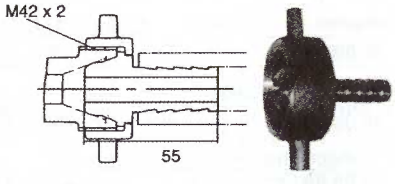
One end Male Thread

One end Female Thread

Unit Per Pc.

CODE	Size		Type
	Nom. mm	Inch	
35 10 21	9	3/8	Hose End
22	12	1/2	
23	19	3/4	
24	25	1	
35 10 26	-	PT 3/8	Male Thread End
27	-	PT 1/2	
28	-	PT 3/4	
29	-	PT 1	
35 10 31	-	PT 3/8	Female Thread End
32	-	PT 1/2	
33	-	PT 3/4	
34	-	PT 1	
35 10 36	Packing for universal coupling		

Cast Bronze Air Hose Couplings M42 x 2



Female thread connection for use with the ship's male thread air outlet. Made of cast bronze with Metric Fine Thread (JIS B 0207) of M42 x 2 for respective hose end connection thread size.

Unit Per Pc.

CODE	Nominal Hose End mm	Connection Thread	CODE	Nominal Hose End mm	Connection Thread
35 10 51	6	M42 x 2	**35 10 55**	15	M42 x 2
52	8	M42 x 2	**56**	19	M42 x 2
53	9	M42 x 2	**57**	25	M42 x 2
54	12	M42 x 2			

Caps for M42x2 Air Hose Coupling

35 10 58	Cap for M42x2 air hose coupling, bronze	Pc.

Brass Screw Air Hose Couplings

Brass air hose screw type couplings. Both ends are of exactly the same straight pipe thread size and cannot be connected to different diameter hoses. These couplings are furnished as a set only.

Unit Per Pr.

CODE	Nominal Hose End mm	Connection Thread	CODE	Nominal Hose End mm	Connection Thread
35 10 61	6	1/4"	**35 10 64**	12	1/4"
62	8	1/4"	**65**	19	1/4"
63	9	1/4"			

Air & Steam Hose Couplings

35 10 71-73

35 10 76/77

35 10 78

35 10 81-84

35 10 86-90

35 10 91-94

CODE	Size	Material	Type	Alligator No.
Air Cocks Single				Unit Per Pc.
35 10 71	1/2", Lug size 42mm	Cast iron	Thread: BSP female	SM245013
72	3/4", Lug size 42mm			SM245019
73	1", Lug size 42mm			SM245025
Air Cocks Double				Unit Per Pc.
35 10 76	3/4", Lug size 42mm	Cast iron	Thread: BSP female	SM250019
77	1", Lug size 42mm			SM250025
Air Hose Couplings - 3-way				Unit Per Pc.
35 10 78	42 mm	Cast iron	-	SM260115
Air Hose Couplings				Unit Per Pc.
35 10 81	10 mm	Cast iron	USA	SM310010
82	13 mm			SM310013
83	19 mm			SM310019
84	25 mm			SM310025
Air Hose Adapters				Unit Per Pc.
35 10 86	1/4"	Cast iron	Thread: NPT female	SM315006
87	3/8"			SM315010
88	1/2"			SM315013
89	3/4"			SM315019
90	1"			SM315025
35 10 91	3/8"	Cast iron	Thread: NPT male	SM320010
92	1/2"			SM320013
93	3/4"			SM320019
94	1"			SM320025

Air & Steam Hose Couplings

35 11 01-07

35 11 08-14

35 11 15-21

35 11 22

35 11 23-30

35 11 31-36

35 11 37-42

35 11 43

35 11 45/46

35 11 51-55

35 11 56-60

CODE	Size	Material	Type	Alligator No.
Water Hose Couplings				Unit Per Pc.
35 11 01	10 mm	Brass	End lug 40 mm	SM211010
02	13 mm			SM211013
03	16 mm			SM211016
04	19 mm			SM211019
05	25 mm			SM211025
06	32 mm			SM211032
07	38 mm			SM211038
Water Hose Adapter				Unit Per Pc.
35 11 08	1/4"	Brass	BSP female, Lug size 40 mm	SM212010
09	3/8"			SM212013
10	1/2"			SM212016
11	3/4"			SM212019
12	1"			SM212025
13	1-1/4"			SM212032
14	1-1/2"			SM212038
35 11 15	1/4"	Brass	BSP female, Lug size 40 mm	SM213010
16	3/8"			SM213013
17	1/2"			SM213016
18	3/4"			SM213019
19	1"			SM213025
20	1-1/4"			SM213032
21	1-1/2"			SM213038
Waterhose Caps				Unit Per Pc.
35 11 22	40 mm	Brass	-	SM214010
Air Hose Couplings				Unit Per Pc.
35 11 23	6 mm (8mm)	Cast iron	Long size 42 mm	SM230006
24	8 mm (9-1/2mm)			SM230008
25	10 mm (12mm)			SM230010
26	13 mm (15mm)			SM230013
27	15 mm (17mm)			SM230015
28	19 mm (21mm)			SM230019
29	25 mm (27.5mm)			SM230025
30	32 mm (34-1/2mm)			SM230032
Air Hose Adapters				Unit Per Pc.
35 11 31	1/4"	Cast iron	BSP female, Lug size 42 mm	SM235006
32	3/8"			SM235010
33	1/2"			SM235012
34	3/4"			SM235019
35	1"			SM235025
36	1-1/4"			SM235030
35 11 37	1/4"	Cast iron	BSP female, Lug size 42 mm	SM240006
38	3/8"			SM240010
39	1/2"			SM240012
40	3/4"			SM240019
41	1"			SM240025
42	1-1/4"			SM240030
Air Hose Caps				Unit Per Pc.
35 11 43	42 mm	Cast iron	-	SM243110
Steam Hose Couplings				Unit Per Pr.
35 11 45	19 mm	-	-	SM670019
46	25 mm			SM670025
Steam Hose Couplings				Unit Per Pc.
35 11 51	19mm	-	BSP male	SM675019
52	25mm			SM675025
53	32mm			SM675030
54	38mm			SM675040
55	50mm			SM675050
35 11 56	19mm	-	BSP female	SM680019
57	25mm			SM680025
58	32mm			SM680030
59	38mm			SM680040
60	50mm			SM680050

(to be continued)

Brass Hose Couplings 2/3
BSP Female Threaded

Unit Per Pc.

CODE	Size	Alligator No.	CODE	Size	Alligator No.
35 11 71	3/8"x 9 mm	GA200010	**35 11 78**	1-1/4"x32 mm	GA200032
72	1/2"x13 mm	GA200014	**79**	1-1/2"x32 mm	GA200038
73	3/4"x13 mm	GA200018	**80**	1-1/2"x38 mm	GA200040
74	3/4"x16 mm	GA200019	**81**	2"x50 mm	GA200050
75	3/4"x19 mm	GA200020	**82**	2-1/2"x63 mm	GA200065
35 11 76	1"x25 mm	GA200025	**35 11 83**	3"x75 mm	GA200075
77	1-1/4"x25 mm	GA200030			

Brass Hose Couplings 1/3
BSP Male Threaded

Unit Per Pc.

CODE	Size	Alligator No.	CODE	Size	Alligator No.
35 11 86	3/8"x 9 mm	GA210010	**35 11 93**	1-1/4"x32 mm	GA210032
87	1/2"x13 mm	GA210014	**94**	1-1/2"x32 mm	GA210039
88	3/4"x13 mm	GA210018	**95**	1-1/2"x38 mm	GA210041
89	3/4"x16 mm	GA210019	**96**	2"x50 mm	GA210052
90	3/4"x19 mm	GA210020	**97**	2-1/2"x63 mm	GA210065
35 11 91	1"x25 mm	GA210026	**35 11 98**	3"x75 mm	GA210075
92	1-1/4"x25 mm	GA210030			

Quick-Connect Couplers
for All Purposes

A general purpose coupling which can close at either end of the connection. It is a convenient, compact coupling set which connects and disconnects easily, providing dependable service for fluid transfer of hydraulic, pneumatic, and vacuum systems.

The flow side coupling has a floating ball valve which will automatically stop the flow of liquid or gas when the coupling is disconnected.

1. Single End Shut Off Coupler

Connect

Disconnect

One way ball locking most ordinary type of sockets & plugs. When these sockets and plugs are disconnected, liquid or gas inside will stop flowing automatically on the socket side.

Pressure Rating & Application

Withstanding capacity of main body materials against pressure is as follows.

Material / Fluid Pressure	Steel	Brass	Stainless Steel
Working pressure	1.5 MPa {15 kgf/cm²}	1.0 MPa {10 kgf/cm²}	1.5 MPa {15 kgf/cm²}
Pressure resistance	2.0 MPa {20 kgf/cm²}	1.5 MPa {15 kgf/cm²}	2.0 MPa {20 kgf/cm²}
Major Applicable Fluid	Air	Air, Water	Air, Water

A. Hose End Type

SH Series Socket

PH Series Plug

How to order : CODE

Coupler, quick-connect, single end shut off, MATERIAL, SOCKET or PLUG, HOSE END SIZE

Unit Per Pc.

Hose End Size	Part No.	Steel CODE	Brass CODE	S. Steel CODE
SH Series Socket				
1/4	20 SH	**35 12 01**	**35 12 11**	**35 12 21**
3/8	30 SH	**02**	**12**	**22**
1/2	40 SH	**03**	**13**	**23**
1/2	400 SH	**35 12 04**	**35 12 14**	**35 12 24**
3/4	600 SH	**05**	**15**	**25**
1	800 SH	**06**	**16**	**26**
PH Series Plug				
1/4	20 PH	**35 12 31**	**35 12 41**	**35 12 51**
3/8	30 PH	**32**	**42**	**52**
1/2	40 PH	**33**	**43**	**53**
1/2	400 PH	**35 12 34**	**35 12 44**	**35 12 54**
3/4	600 PH	**35**	**45**	**55**
1	800 PH	**36**	**46**	**56**

Name of Mfr.: Nitto Kohki Co., Ltd.

B. Male Thread Type

SM Series Socket

PM Series Plug

How to order : CODE

Coupler, quick-connect, single end shut off, MATERIAL, SOCKET or PLUG, male thread end, THREAD SIZE

Unit Per Pc.

Male Pipe Thread	Part No.	Steel CODE	Brass CODE	S. Steel CODE
SM Series Socket				
R 1/8	10 SM	**35 13 01**	**35 13 11**	**35 13 21**
R 1/4	20 SM	**02**	**12**	**22**
R 3/8	30 SM	**03**	**13**	**23**
R 1/2	40 SM	**04**	**14**	**24**
R 1/2	400 SM	**35 13 05**	**35 13 15**	**35 13 25**
R 3/4	600 SM	**06**	**16**	**26**
R 1	800 SM	**07**	**17**	**27**
PM Series Plug				
R 1/8	10 PM	**35 13 31**	**35 13 41**	**35 13 51**
R 1/4	20 PM	**32**	**42**	**52**
R 3/8	30 PM	**33**	**43**	**53**
R 1/2	40 PM	**34**	**44**	**54**
R 1/2	400 PM	**35 13 35**	**35 13 45**	**35 13 55**
R 3/4	600 PM	**36**	**46**	**56**
R 1	800 PM	**37**	**47**	**57**

Name of Mfr.: Nitto Kohki Co., Ltd.

C. Female Thread Type

SF Series Socket

PF Series Plug

How to order : CODE

Coupler, quick-connect, single end shut off, MATERIAL, SOCKET or PLUG, female thread end, THREAD SIZE

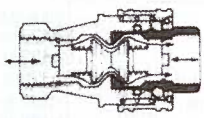
Unit Per Pc.

Female Pipe Thread	Part No.	Steel CODE	Brass CODE	S. Steel CODE
SF Series Socket				
Rc 1/4	20 SF	**35 14 01**	**35 14 11**	**35 14 21**
Rc 3/8	30 SF	**02**	**12**	**22**
Rc 1/2	40 SF	**03**	**13**	**23**
Rc 1/2	400 SF	**35 14 04**	**35 14 14**	**35 14 24**
Rc 3/4	600 SF	**05**	**15**	**25**
Rc 1	800 SF	**06**	**16**	**26**
PF Series Plug				
Rc 1/4	20 PF	**35 14 31**	**35 14 41**	**35 14 51**
Rc 3/8	30 PF	**32**	**42**	**52**
Rc 1/2	40 PF	**33**	**43**	**53**
Rc 1/2	400 PF	**35 14 34**	**35 14 44**	**35 14 54**
Rc 3/4	600 PF	**35**	**45**	**55**
Rc 1	800 PF	**36**	**46**	**56**

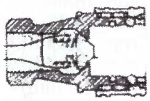
Name of Mfr.: Nitto Kohki Co., Ltd.

Note: 1) Part Nos. 20, 30, and 40 can be connected to each other.
2) Part Nos. 400, 600 and 800 can be connected to each other.
3) Above 1) and 2) can not be connected across each group due to the difference of the coupling body size.

2. Double End Shut Off Coupler
Standard Pressure



Connect



Disconnect

This is a double path switching type coupler having an automatic valve mechanism at both the socket and the plug. Both are sealed instantly on disconnection. A variety of packing materials are permitted in accordance with the type of fluid.

Pressure Rating & Application

Withstanding capacity varies according to the sizes of the main body materials against pressure.

(to be continued)

Material / Size / Pressure MPa (kgf/cm²)	Brass				Steel, Stainless Steel			
	1/8 1/4 3/8	1/2 3/4 1	1-1/4 1-1/2	2	1/8 1/4 3/8	1/2 3/4 1	1-1/4 1-1/2	2
Working Pressure	5.0 (51)	3.0 (31)	2.0 (20)	1.5 (15)	7.5 (76)	4.5 (46)	3.0 (31)	2.0 (20)
Pressure Resistance	7.5 (76)	4.5 (46)	3.0 (31)	2.3 (24)	10.0 (102)	6.5 (66)	4.5 (46)	3.0 (31)
Major Applicable Fluid	Air, Water, Gasoline, Heavy Oil, Kerosene				S.S.: Salt Water Acid, Alkali S.:Operating Oil			

Socket & Plug

S Series Socket

P Series Plug

How to order : CODE

Coupler, quick-connect, double end shut off for standard pressure, MATERIAL, SOCKET or PLUG, female thread end, THREAD SIZE

Unit Per Pc.

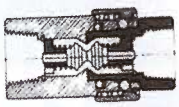
Female Pipe Thread	Part No.	Steel CODE	Brass CODE	S. Steel CODE
S Series Socket				
Rc 1/8	1S-A	**35 15 01**	**35 15 11**	**35 15 21**
Rc 1/4	2S-A	**02**	**12**	**22**
Rc 3/8	3S-A	**03**	**13**	**23**
Rc 1/2	4S-A	**04**	**14**	**24**
Rc 3/4	6S-A	**05**	**15**	**25**
Rc 1	8S-A	**35 15 06**	**35 15 16**	**35 15 26**
Rc 1-1/4	10S-A	**07**	**17**	**27**
Rc 1-1/2	12S-A	**08**	**18**	**28**
Rc 2	16S-A	**09**	**19**	**29**
P Series Plug				
Rc 1/8	1P-A	**35 15 31**	**35 15 41**	**35 15 51**
Rc 1/4	2P-A	**32**	**42**	**52**
Rc 3/8	3P-A	**33**	**43**	**53**
Rc 1/2	4P-A	**34**	**44**	**54**
Rc 3/4	6P-A	**35**	**45**	**55**
Rc 1	8P-A	**35 15 36**	**35 15 46**	**35 15 56**
Rc 1-1/4	10P-A	**37**	**47**	**57**
Rc 1-1/2	12P-A	**38**	**48**	**58**
Rc 2	16P-A	**39**	**49**	**59**

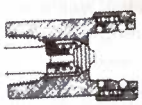
Name of Mfr.: Nitto Kohki Co., Ltd.

Note: Respective sockets can be connected with only respective corresponding numerical plugs as 4S-A with 4P-A.

3. Double End Shut Off Coupler
High Pressure of 210 kgf/cm²

Recommended for high pressure, hydraulic circuit. Made of special steel for high pressure service. Fluid in both socket and plug are stopped automatically by an inner valve when disconnected.





Pressure Rating & Application

Withstanding capacity varies according to the sizes of the main body material against pressure.

Material / Size / Pressure	Special Steel
	1/4, 3/8, 1/2, 3/4, 1
Working pressure	20.6 MPa {210 kgf/cm²}
Pressure resistance	31.0 MPa {316 kgf/cm²}
Major Applicable Fluid	Operating Oil

High Pressure Socket & Plug

HS Series Socket

HP Series Plug

How to order : CODE

Coupler, quick-connect, double end shut off for high pressure, special steel, SOCKET or PLUG, female thread end, THREAD SIZE

Unit Per Pc.

CODE	Part No.	Female Pipe Thread	CODE	Part No.	Female Pipe Thread
35 16 01	Socket 2HS	Rc 1/4	**35 16 11**	Plug 2HP	Rc 1/4
02	Socket 3HS	Rc 3/8	**12**	Plug 3HP	Rc 3/8
03	Socket 4HS	Rc 1/2	**13**	Plug 4HP	Rc 1/2
04	Socket 6HS	Rc 3/4	**14**	Plug 6HP	Rc 3/4
05	Socket 8HS	Rc 1	**15**	Plug 8HP	Rc 1

Name of Mfr.: Nitto Kohki Co., Ltd.

Note: Respective sockets can be connected with only respective corresponding numerical plugs as 2HS with 2HP.

4. Double End Shut Off Coupler
Ultra High Pressure of 700 kgf/cm²

For use on high pressure hydraulic tool oil fittings. Ring lock device has extra durability against shock or vibration.

Connect

Disconnect

Pressure Rating & Application

Withstanding capacity of these couplers against fluid pressure is as follows.

Working Pressure	68.6 MPa {700 kgf/cm²}
Pressure Resistance	98.0 MPa {1,000kgf/cm²}
Major Applicable Fluid	Operating Oil

Ultra High Pressure Socket & Plug

700R Series Socket

700R Series Plug

How to order : CODE

Coupler, quick-connect, double end shut off for ultra high pressure, special hard steel, SOCKET or PLUG, female thread end, THREAD SIZE

Unit Per Pc.

CODE	Part No.	Female Pipe Thread
35 16 21	Socket 700R-3S	Rc 3/8
22	Socket 700R-4S	Rc 1/2
23	Plug 700R-3P	Rc 3/8
24	Plug 700R-4P	Rc 1/2

Name of Mfr.: Nitto Kohki Co., Ltd.

Line Couplers

Branch Piping Couplers for Air

A branch piping coupler is useful for simultaneous connection of multiple hose to a single air supply source. Three types are available, Branch type (Type T), Star type (Type S), and Line type (Type L). Centralized piping can be set-up in any desired location.

T Type

S Type

L Type

Unit Per Set

CODE	Type	Body Mounting		Accessory Socket
		Socket	Plug	
35 16 50	200T	20SM (1/4)×2	20PM (1/4)×1	-
51	200S	20SM (1/4)×4 40SM (1/2)×1	400PM (1/2)×1	400SH (1/2)×1
53	200L	20SM (1/4)×4 40SM (1/2)×1	400PM (1/2)×1	400SH (1/2)×1

Applicable Plug Type: 20 series: 20PH, 20PM, 20PF
30 series: 30PH, 30PM, 30PF
40 series: 40PH, 40PM, 40PF

Name of Mfr.: Nitto Kohki Co., Ltd.

Optional Accessories for Branch Piping Line Couplers

7TH 35

A quick check pressure gauge and drain cock are available in separate order.

Pressure Gauge

Drain Cock

Unit Per Pc.

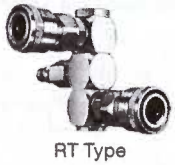
CODE	Description	Type	Plug Size
35 16 58	Pressure gauge with plug	PG-10P	10PF
59	Drain cock with plug	DC-30PF	30PF

Remark: Applicable socket type –
20 series: 20SH, 20SM, 20SF
30 series: 30SH, 30SM, 30SF
40 series: 40SH, 40SM, 40SF

Name of Mfr.: Nitto Kohki Co., Ltd.

Rotary Line Cuplas

Branching coupler with a rotary mechanism allows simultaneous connection of two or three outlet hoses from a single air source. Air inlet socket moves freely in every direction 360°. A swivel mechanism also permits the hoses to swivel freely.



RT Type

RE Type

Unit Per Set

CODE		35 16 56	35 16 57
Type		RT (2-branches)	RE (3-branches)
Size	Inlet	1/4" (20PF)	R 1/2 (Male)
	Outlet	1/4" socket	
Material	Body	Brass (Chrome-plated)	
	Coupler	Steel (Chrome-plated)	
Working Pressure		1.5 MPa (15 kgs/cm²)	
Pressure Resistance		2.0 MPa (20 kgs/cm²)	
Applicable Plug Type		20 series: 20PH, 20PM, 20PF 30 series: 30PH, 30PM, 30PF 40 series: 40PH, 40PM, 40PF	

Name of Mfr.: Nitto Kohki Co., Ltd.

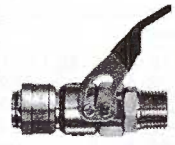
Purge System Hi Couplers and Line Couplers

Push-to-connect operation with valve opening and closing by the purge system lever action, which eliminates unpleasant shock and noise on disconnection.

The lever will never turn to open until plug is connected by means of safety measure.

Purge System Hi Cuplas

Made of chrome plated brass. Can be connected with PH, PM and PF series plugs sized from 1/4" to 3/4".



Unit Per Pc.

CODE	Model	Size Male Thread	Working Pressure	Max. Pressure	Applicable Plug Type
35 16 61	PV-20SM	R1/4"	1.0MPa (10 kgf/cm²)	1.5MPa (15 kgf/cm²)	20, 30, 40 series
62	PV-30SM	R3/8"			
63	PV-40SM	R1/2"			
35 16 64	PV-400SM	R1/2"			400, 600, 800 series
65	PV-600SM	R3/4"			

Name of Mfr.: Nitto Kohki Co., Ltd.

Applicable Plug Type: 20 series: 20PH, 20PM, 20PF
30 series: 30PH, 30PM, 30PF
40 series: 40PH, 40PM, 40PF
400 series: 400PH, 400PM, 400PF
600 series: 600PH, 600PM, 600PF
800 series: 800PH, 800PM, 800PF

* Method of operation

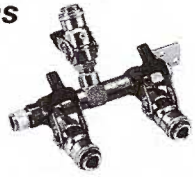
1. Push-to-connect operation.
(In this stage, the valve in the socket is not open.)

2. Turning down the lever opens the valve and allows the fluid to flow.
(The turned-down lever works as a sleeve stopper and prevents disconnection.)

3. When the lever is pulled up, residual air pressure in the plug is purged without an unpleasant popping noise and a hose whip back motion on disconnection. (In this stage, the socket valve is still closed.)

Purge System Line Cuplas

Made of chrome plated brass. Can be connected with PH, PM and PF series plugs sized from 1/4" to 3/4".



Unit Per Set

CODE		35 16 71
Type		RE-PV-30 (3-branches)
Size	Inlet	R 1/2
	Outlet	3/8" Socket (PV-30SM)
Body material		Brass (Chrome plated)
Working pressure		1.0 MPa (10 kgf/cm²)
Pessure resistance		1.5 MPa (15 kgf/cm²)
Applicable Plug Type		20 series: 20PH, 20PM, 20PF 30 series: 30PH, 30PM, 30PF 40 series: 40PH, 40PM, 40PF

Name of Mfr.: Nitto Kohki Co., Ltd.

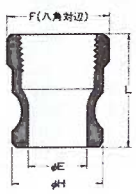
Cam and Groove Couplings

They are quick, tight, leakproof connections to pipe, tubing, hose or tanks and provide quick liquid and material hose connections that seal tight and stay tight. Sizes from 1/2" to 8" are available. They are made of aluminium alloy, brass, stainless steel and other metals for use with liquids, vapors, gases and air-blown dry products. Suitable for use with single connections and where changes in connection to a number of tanks or outlets may be required.

Rated Pressure of Material

Material	Nom. Size Inch	Rated Pressure (kgf/cm²)	Test Pressure (cm²)	Rated Temperature °C
Aluminium Alloy, Brass	1/2 – 2	18	21	107
	2-1/2	11		
	3	9		
	4	7		
Stainless Steel	1/2 – 2	18	21	232
	2-1/2	16		
	3	14		
	4	11		

Type A: Plug (Male Coupler) with Female Thread



Specification

Nom Size		Size mm			
Inch	mm	E	F	H	L
1/2	15	14	35	32	41
3/4	20	20	35	32	41
1	25	24	41	37	50
1-1/4	32	29	48	45	56
1-1/2	40	37	58	53	57
2	50	46	69	63	62
2-1/2	65	56	84	76	92
3	80	72	99	92	71
4	100	98	129	120	81
5	125	121	149	146	85
6	150	149	191	176	86
8	200	203	260	241	111

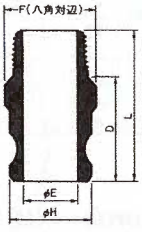
How to order : CODE

Coupling, cam & groove, Type A,
plug (male coupler) with female thread, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	15	**35 17 01**	**35 17 15**	**35 17 31**
3/4	20	**02**	**16**	**32**
1	25	**03**	**17**	**33**
1-1/4	32	**04**	**18**	**34**
1-1/2	40	**05**	**19**	**35**
2	50	**35 17 06**	**35 17 20**	**3517 36**
2-1/2	65	**07**	**21**	**37**
3	80	**08**	**22**	**38**
4	100	**09**	**23**	**39**
5	125	**10**	**24**	**40**
6	150	**35 17 11**	**35 17 25**	**35 17 41**
8	200	**12**	**26**	**42**

Type F : Plug (Male Coupler) with Male Thread



Specification

Nom Size		Size mm				
Inch	mm	D	E	F	H	L
1/2	15	38	14	35	32	59
3/4	20	38	20	35	32	59
1	25	46	24	41	37	72
1-1/4	32	54	29	48	45	80
1-1/2	40	56	37	58	53	79
2	50	62	46	69	63	90
2-1/2	65	70	56	84	76	102
3	80	71	72	99	92	103
4	100	81	98	129	120	119
5	125	82	121	149	146	124
6	150	83	149	196	176	127
8	200	111	203	260	241	169

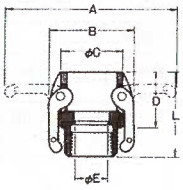
How to order : CODE

Coupling, cam & groove, Type F, plug (male coupler) with male thread, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	15	**35 17 51**	**35 17 65**	**35 17 81**
3/4	20	**52**	**66**	**82**
1	25	**53**	**67**	**83**
1-1/4	32	**54**	**68**	**84**
1-1/2	40	**55**	**69**	**85**
2	50	**35 17 56**	**35 17 70**	**35 17 86**
2-1/2	65	**57**	**71**	**87**
3	80	**58**	**72**	**88**
4	100	**59**	**73**	**89**
5	125	**60**	**74**	**90**
6	150	**35 17 61**	**35 17 75**	**35 17 91**
8	200	**62**	**76**	**92**

Type D: Socket (Female Coupler) with Female Thread



Specification

Nom Size		Size mm					
Inch	mm	A	B	C	D	E	L
1/2	15	116	54	41	32	16	51
3/4	20	116	54	41	32	22	51
1	25	125	61	47	41	25	62
1-1/4	32	181	83	58	49	35	69
1-1/2	40	189	91	65	46	38	72
2	50	199	101	75	52	49	78
2-1/2	65	210	112	91	56	61	89
3	80	254	138	108	59	76	91
4	100	282	166	140	59	94	94
5	125	307	191	165	63	121	103
6	150	409	255	198	74	146	114
8	200	474	320	264	102	203	152

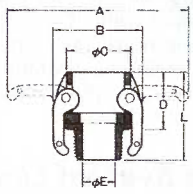
How to order : CODE

Coupling, cam & groove, Type D, socket (female coupler) with female thread, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	15	**35 18 01**	**35 18 15**	**35 18 31**
3/4	20	**02**	**16**	**32**
1	25	**03**	**17**	**33**
1-1/4	32	**04**	**18**	**34**
1-1/2	40	**05**	**19**	**35**
2	50	**35 18 06**	**35 18 20**	**35 18 36**
2-1/2	65	**07**	**21**	**37**
3	80	**08**	**22**	**38**
4	100	**09**	**23**	**39**
5	125	**10**	**24**	**40**
6	150	**35 18 11**	**35 18 25**	**35 18 41**
8	200	**12**	**26**	**42**

Type B: Socket (Female Coupler) with Male Thread



Specification

Nom Size		Size mm					
Inch	mm	A	B	C	D	E	L
1/2	15	116	54	41	32	14	52
3/4	20	116	54	41	32	19	52
1	25	125	61	47	41	25	63
1-1/4	32	181	83	58	46	32	71
1-1/2	40	189	91	65	46	38	69
2	50	199	101	75	52	51	78
2-1/2	65	210	112	90	57	61	89
3	80	254	138	108	58	76	90
4	100	282	166	140	59	94	98
5	125	307	191	165	63	120	106
6	150	409	255	198	73	146	116

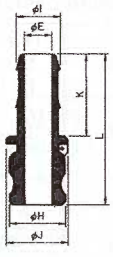
How to order : CODE

Coupling, cam & groove, Type B, socket (female coupler) with male thread, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	15	**35 18 51**	**35 18 65**	**35 18 81**
3/4	20	**52**	**66**	**82**
1	25	**53**	**67**	**83**
1-1/4	32	**54**	**68**	**84**
1-1/2	40	**55**	**69**	**85**
2	50	**35 18 56**	**35 18 70**	**35 18 86**
2-1/2	65	**57**	**71**	**87**
3	80	**58**	**72**	**88**
4	100	**59**	**73**	**89**
5	125	**60**	**74**	**90**
6	150	**35 18 61**	**35 18 75**	**35 18 91**

Type E: Plug (Male Coupler) with Hose End



Specification

Nom Size		Size mm					
Inch	mm	E	H	I	J	K	L
1/2	13	9	22	14	24	38	65
3/4	20	14	32	21	34	51	87
1	25	20	37	27	41	60	103
1-1/4	32	25	45	34	49	57	110
1-1/2	40	32	53	41	57	60	114
2	50	41	63	53	72	70	130
2-1/2	65	57	76	67	86	80	144
3	80	68	92	79	100	100	164
4	100	89	120	105	133	108	178
5	125	114	146	134	160	127	196
6	150	142	176	157	187	146	224
8	200	188	241	207	255	150	266

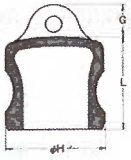
How to order : CODE

Coupling, cam & groove, Type E, plug (male coupler) with hose end, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	13	**35 19 00**	**35 19 14**	**35 19 30**
3/4	20	**01**	**15**	**31**
1	25	**02**	**16**	**32**
1-1/4	32	**03**	**17**	**33**
1-1/2	40	**04**	**18**	**34**
2	50	**35 19 05**	**35 19 19**	**35 19 35**
2-1/2	65	**06**	**20**	**36**
3	80	**07**	**21**	**37**
4	100	**08**	**22**	**38**
5	125	**09**	**23**	**39**
6	150	**35 19 10**	**35 19 24**	**35 19 40**
8	200	**11**	**25**	**41**

Dust Plug



Specification

Nom Size		Size mm		
Inch	mm	G	H	L
1/2	13	9	24	36
3/4	20	12	32	20
1	25	13	37	33
1-1/4	32	14	45	40
1-1/2	40	16	53	41
2	50	19	63	46
2-1/2	65	11	76	51
3	80	11	92	51
4	100	13	120	52
5	125	14	146	55
6	150	16	176	60
8	200	12	241	92

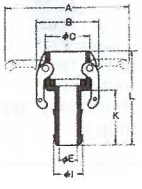
How to order : CODE

Coupling, cam & groove, dust plug, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	13	**35 19 50**	**35 19 64**	**35 19 80**
3/4	20	**51**	**65**	**81**
1	25	**52**	**66**	**82**
1-1/4	32	**53**	**67**	**83**
1-1/2	40	**54**	**68**	**84**
2	50	**35 19 55**	**35 19 69**	**35 19 85**
2-1/2	65	**56**	**70**	**86**
3	80	**57**	**71**	**87**
4	100	**58**	**72**	**88**
5	125	**59**	**73**	**89**
6	150	**35 19 60**	**35 19 74**	**35 19 90**
8	200	**61**	**75**	**91**

Type C: Socket (Female Coupler) with Hose End



Specification

Nom Size		Size mm						
Inch	mm	A	B	C	E	I	K	L
1/2	13	114	42	32	8	15	35	65
3/4	20	116	54	41	14	21	51	83
1	25	125	61	47	20	27	57	98
1-1/4	32	181	83	58	25	34	59	105
1-1/2	40	189	91	65	32	41	61	107
2	50	199	101	75	45	53	70	122
2-1/2	65	210	112	90	57	67	79	135
3	80	254	138	108	67	79	102	161
4	100	282	166	140	89	105	108	167
5	125	307	191	165	114	134	127	189
6	150	409	255	198	142	157	146	214
8	200	474	320	264	188	207	150	252

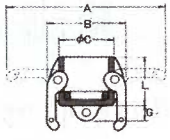
How to order : CODE

Coupling, cam & groove, Type C, socket (female coupler) with hose end, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	13	**35 20 00**	**35 20 14**	**35 20 30**
3/4	20	**01**	**15**	**31**
1	25	**02**	**16**	**32**
1-1/4	32	**03**	**17**	**33**
1-1/2	40	**04**	**18**	**34**
2	50	**35 20 05**	**35 20 19**	**35 20 35**
2-1/2	65	**06**	**20**	**36**
3	80	**07**	**21**	**37**
4	100	**08**	**22**	**38**
5	125	**09**	**23**	**39**
6	150	**35 20 10**	**35 20 24**	**35 20 40**
8	200	**11**	**25**	**41**

Dust Cap



Specification

Nom Size		Size mm				
Inch	mm	A	B	C	G	L
1/2	13	114	42	32	9	47
3/4	20	116	54	41	10	34
1	25	125	61	47	12	41
1-1/4	32	181	83	58	11	47
1-1/2	40	189	91	65	12	46
2	50	199	101	75	12	52
2-1/2	65	210	112	90	14	56
3	80	254	138	108	15	59
4	100	282	166	140	12	59
5	125	307	191	165	13	63
6	150	409	255	198	16	68
8	200	474	320	264	12	105

How to order : CODE

Coupling, cam & groove, dust cap, MATERIAL, SIZE

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
1/2	13	**35 20 50**	**35 20 64**	**35 20 80**
3/4	20	**51**	**65**	**81**
1	25	**52**	**66**	**82**
1-1/4	32	**53**	**67**	**83**
1-1/2	40	**54**	**68**	**84**

(to be continued)

Unit Per Pc.

Nom. Size		CODE		
Inch	mm	Aluminium Alloy	Brass	Stainless Steel
2	50	**35 20 55**	**35 20 69**	**35 20 85**
2-1/2	65	**56**	**70**	**86**
3	80	**57**	**71**	**87**
4	100	**58**	**72**	**88**
5	125	**59**	**73**	**89**
6	150	**35 20 60**	**35 20 74**	**35 20 90**
8	200	**61**	**75**	**91**

Spool Adaptor

Part SA spool adaptor connects two lengths of hose with coupler ends. 1/2" to 6".

Unit Per Pc.

CODE	Nom. Size	Alligator No.	CODE	Nom. Size	Alligator No.
Aluminium Alloy					
35 20 12	1/2"	SM997015	**35 20 29**	2"	SM997050
13	3/4"	SM997020	**42**	2-1/2"	SM997065
26	1"	SM997025	**43**	3"	SM997075
27	1-1/4"	SM997032	**44**	4"	SM997100
28	1-1/2"	SM997040			
Brass					
35 20 45	1/2"	SM996015	**35 20 62**	2"	SM996050
46	3/4"	SM996020	**63**	2-1/2"	SM996065
47	1"	SM996025	**76**	3"	SM996075
48	1-1/4"	SM996032	**77**	4"	SM996100
49	1-1/2"	SM996040	**78**	6"	SM996150
Stainless Steel					
35 20 79	1/2"	SM995015	**35 20 96**	2"	SM995050
92	3/4"	SM995020	**97**	2-1/2"	SM995065
93	1"	SM995025	**98**	3"	SM995075
94	1-1/4"	SM995032	**99**	4"	SM995100
95	1-1/2"	SM995040	**35 21 00**	6"	SM995150

7TH 35

Cam & Groove Rubber Gasket Buna N

Unit Per Pc.

CODE	Size mm	Alligator No.	CODE	Size mm	Alligator No.
35 21 01	13	SM980013	**35 21 07**	65	SM980065
02	19	SM980019	**08**	75	SM980075
03	25	SM980025	**09**	100	SM980100
04	32	SM980032	**10**	125	SM980125
05	40	SM980040	**11**	150	SM980150
35 21 06	50	SM980050			

Cam & Groove PTFE Gaskets

Unit Per Pc.

CODE	Nom. Size	Actual Size mm	Alligator No.
35 21 13	3/4"	23 × 35 × 5	SM988020
14	1"	27 × 40 × 6	SM988025
15	1-1/2"	56 × 41 × 6	SM988040
16	2"	67 × 50 × 6	SM988050
17	2-1/2"	79 × 60 × 6	SM988065
35 21 18	3"	97 × 78 × 6	SM988075
19	4"	125 × 101 × 6	SM988100

Cam & Groove PTFE Gaskets

Enveloppe Open

Enveloppe Closed

Unit Per Pc.

CODE	Size	Alligator No.	CODE	Size	Alligator No.
Enveloppe Open			**Enveloppe Closed**		
35 21 21	1/2"	SM985013	**35 21 31**	1/2"	SM987013
22	3/4"	SM985019	**32**	3/4"	SM987019
23	1"	SM985025	**33**	1"	SM987025
24	1-1/4"	SM985032	**34**	1-1/4"	SM987032
25	1-1/2"	SM985038	**35**	1-1/2"	SM987038
35 21 26	2"	SM985050	**35 21 36**	2"	SM987050
27	2-1/2"	SM985065	**37**	2-1/2"	SM987065
28	3"	SM985075	**38**	3"	SM987075
29	4"	SM985100	**39**	4"	SM987100

Cam & Groove Handle Rings and Pins

Unit Per Pc.

CODE	Size	Alligator No.	CODE	Size	Alligator No.
Brass			**Stainless Steel**		
35 21 41	1"	SM990026	**35 21 51**	1/2"	SM990015
42	1-1/4"	SM990033	**52**	3/4"	SM990020
43	1-1/2"	SM990039	**53**	1"	SM990025
44	2"	SM990051	**54**	1-1/4"	SM990032
45	2-1/2"	SM990066	**55**	1-1/2"	SM990038
35 21 46	3"	SM990076	**35 21 56**	2"	SM990050
47	4"	SM990101	**57**	2-1/2"	SM990065
48	5"	SM990126	**58**	3"	SM990075
49	6"	SM990151	**59**	4"	SM990100
			60	5"	SM990125
			35 21 61	6"	SM990150

Cam & Groove Pins

Made of stainless steel.

Unit Per Pc.

CODE	Size	Alligator No.	CODE	Size	Alligator No.
35 21 71	1/2"	SM994013	**35 21 77**	2-1/2"	SM994065
72	3/4"	SM994020	**78**	3"	SM994075
73	1"	SM994025	**79**	4"	SM994100
74	1-1/4"	SM984032	**80**	5"	SM994125
75	1-1/2"	SM994038	**81**	6"	SM994150
35 21 76	2"	SM994050			

Any of these Adaptors will quick connect to.....

Part A Male coupler / female thread. 1/2" to 8".

Part F Male coupler / male thread.1/2" to 8".

Part E Male coupler / hose end. 3/4" to 8".

Part E reducer or increaser (illustrated). Sizes 3" to 4".

Part AW male adaptor/socket or butt weld.1/2" to 10".

Part AS male adaptor/ straight female pipe thread for dry products 3" to 10".

....any of these couplers of the same size

Part B female coupler/ male thread. 1/2" to 6".	**Part D** female coupler /female thread. 1/2" to 8".	**Part C** female coupler/ hose end. 1/2" to 8".
Part B reducer female coupler/male thread. Sizes 2" to 4". Aluminium, brass.	**Part DW** female coupler/socket or butt weld. 1/2" to 10". All metals.	**Part DS** female coupler/ female straight pipe thread for dry products 3" to 10". All metals.

Coupling Assemblies

Spool Adaptor	Part SA spool adaptor connects two lengths of hose with coupler ends. 1/2" to 6". In all metals except in larger sizes. (Spool couplers are also available.)
Gaskets	Gaskets are of buna composition unless another material is specified. Other available gasket materials include Neoprene, pure gum, butyl, teflon, viton, E.P.T., Thiokol or any other material to meet specifications.
Handles	Handles are stainless steel or forged bronze with stainless steel pins. Cadmium plated rings are supplied on all sizes except 1/2", 3/4", 1", 6", 8", or 10".
Brass Chain	Brass chain, with two "S" hooks for attaching dust caps or dust plugs to adaptors or couplers, is available in any length desired.

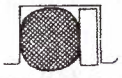
Quick Disconnect Couplings
for Oil pressure and Liquid

A quick connect and disconnect couplings suitable for flowing large spills of general hydraulic oil, water and chemicals by the possible large flow amount. There are three types of material; carbon steel, Brass or Stainless steel (SUS-304).

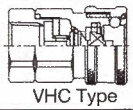
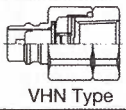
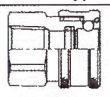
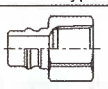
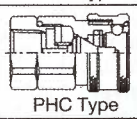
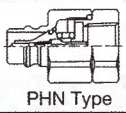
Maximum Usable Pressure of the Seal Material

Material		Working Temp. Range	Max. working pressure MPa (Stillness Pressure)				
Body	Seal		04	06	08	12	16
Carbon Steel	NBR	-30 to +93°C	45.0 (21.0)	32.0 (21.0)	28.0 (21.0)	25.0 (21.0)	14.0 (14.0)
Brass	NBR	-30 to +93°C	7.0	7.0	7.0	7.0	7.0
Stainless Steel	NBR	-30 to +93°C	7.0	7.0	7.0	7.0	7.0

Coupler Side Main Seal Form

Material		Form	Features
Body	Seal		
Carbon Steel	NBR	 Single O ring	It exhibits stable performance specially when under dynamic pressure.
Brass	NBR	U Packer	It exhibits superior sealing performance than that of a single o-ring at less than the maximum usable pressure of 7.0 MPa.
Stainless Steel	NBR	U Packer	

Carbon Steel

	Coupler	Nipple
With Valve	 VHC Type	 VHN Type
Without Valve	 OHC Type	 OHN Type
With PH Valve	 PHC Type	 PHN Type

Remark: PH valve enables connection even with residual pressure. Connection is possible at 17.7N even under the residual pressure of 7.0 MPa. It can be connected when residual pressure is present, but cannot be disconnected under the circumstances.

Carbon Steel Coupler and Nipple Combination List

Type	VHN	OHN	PHN
VHC	o	o	o
OHC	×	o	×
PHC	o	×	×

Remark: o = Applicable, × = Not applicable

Carbon Steel Couplers

Unit Per Pc.

CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
VHC - Female Thread (with Valve)				
35 23 01	VHC4-4F-SO	45.0	Rc 1/4	95
02	VHC6-6F-SO	32.0	Rc 3/8	155
03	VHC8-8F-SO	28.0	Rc 1/2	205
04	VHC12-12F-SO	25.0	Rc 3/4	390
05	VHC16-16F-SO	14.0	Rc 1	550
VHC – Male Thread (with Valve)				
35 23 06	VHC4-4M-SO	45.0	Rc 1/4	98
07	VHC6-6M-SO	32.0	Rc 3/8	158
08	VHC8-8M-SO	28.0	Rc 1/2	218
09	VHC12-12M-SO	25.0	Rc 3/4	400
10	VHC16-16M-SO	14.0	Rc 1	560

(to be continued)

Unit Per Pc.

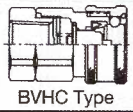
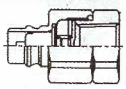
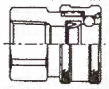
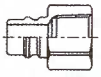
CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
OHC - Female Thread (without Valve)				
35 23 11	OHC4-4F-SO	45.0	Rc 1/4	70
12	OHC6-6F-SO	32.0	Rc 3/8	112
13	OHC8-8F-SO	28.0	Rc 1/2	158
14	OHC12-12F-SO	25.0	Rc 3/4	286
15	OHC16-16F-SO	14.0	Rc 1	425
OHC - Male Thread (without Valve)				
35 23 16	OHC4-4M-SO	45.0	Rc 1/4	75
17	OHC6-6M-SO	32.0	Rc 3/8	120
18	OHC8-8M-SO	28.0	Rc 1/2	160
19	OHC12-12M-SO	25.0	Rc 3/4	274
20	OHC16-16M-SO	14.0	Rc 1	-
PHC - Female Thread (with PH Valve)				
35 23 21	PHC6-6F-SO	32.0	Rc 3/8	-
22	PHC8-8F-SO	28.0	Rc 1/2	-
23	PHC12-12F-SO	25.0	Rc 3/4	-
24	PHC16-16F-SO	14.0	Rc 1	-
PHC - Male Thread (with PH Valve)				
35 23 26	PHC6-6M-SO	32.0	Rc 3/8	-
27	PHC8-8M-SO	28.0	Rc 1/2	-
28	PHC12-12M-SO	25.0	Rc 3/4	-
29	PHC16-16M-SO	14.0	Rc 1	-

Carbon Steel Nipples

Unit Per Pc.

CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
VHN - Female Thread (with Valve)				
35 23 31	VHN4-4F	45.0	Rc 1/4	62
32	VHN6-6F	32.0	Rc 3/8	90
33	VHN8-8F	28.0	Rc 1/2	130
34	VHN12-12F	25.0	Rc 3/4	235
35	VHN16-16F	14.0	Rc 1	395
VHN – Male Thread (with Valve)				
35 23 36	VHN4-4M	45.0	Rc 1/4	68
37	VHN6-6M	32.0	Rc 3/8	102
38	VHN8-8M	28.0	Rc 1/2	142
39	VHN12-12M	25.0	Rc 3/4	245
40	VHN16-16M	14.0	Rc 1	405
OHN - Female Thread (without Valve)				
35 23 41	OHN4-4F	45.0	Rc 1/4	27
42	OHN6-6F	32.0	Rc 3/8	44
43	OHN8-8F	28.0	Rc 1/2	64
44	OHN12-12F	25.0	Rc 3/4	142
45	OHN16-16F	14.0	Rc 1	218
OHN - Male Thread (without Valve)				
35 23 46	OHN4-4M	45.0	Rc 1/4	28
47	OHN6-6M	32.0	Rc 3/8	52
48	OHN8-8M	28.0	Rc 1/2	80
49	OHN12-12M	25.0	Rc 3/4	112
50	OHN16-16M	14.0	Rc 1	170
PHN - Female Thread (with PH Valve)				
35 23 51	PHN6-6F	32.0	Rc 3/8	-
52	PHN8-8F	28.0	Rc 1/2	-
53	PHN12-12F	25.0	Rc 3/4	-
54	PHN16-16F	14.0	Rc 1	-
PHN - Male Thread (with PH Valve)				
35 23 56	PHN6-6M	32.0	Rc 3/8	-
57	PHN8-8M	28.0	Rc 1/2	-
58	PHN12-12M	25.0	Rc 3/4	-
59	PHN16-16M	14.0	Rc 1	-

Brass

	Coupler	Nipple
With Valve	 BVHC Type	 BVHN Type
Without Valve	 BOHC Type	 BOHN Type

Brass Coupler and Nipple Combination List

Type	BVHN	BOHN
BVHC	o	o
BOHC	×	o

Remark: o = Applicable, × = Not applicable

Brass Couplers

Unit Per Pc.

CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
BVHC - Female Thread (with Valve)				
35 23 61	BVHC4-4F-U	7.0	Rc 1/4	95
62	BVHC6-6F-U	7.0	Rc 3/8	155
63	BVHC8-8F-U	7.0	Rc 1/2	205
64	BVHC12-12F-U	7.0	Rc 3/4	390
65	BVHC16-16F-U	7.0	Rc 1	550
BVHC – Male Thread (with Valve)				
35 23 66	BVHC4-4M-U	7.0	Rc 1/4	98
67	BVHC6-6M-U	7.0	Rc 3/8	158
68	BVHC8-8M-U	7.0	Rc 1/2	218
69	BVHC12-12M-U	7.0	Rc 3/4	400
70	BVHC16-16M-U	7.0	Rc 1	560
BOHC - Female Thread (without Valve)				
35 23 71	BOHC4-4F-U	7.0	Rc 1/4	70
72	BOHC6-6F-U	7.0	Rc 3/8	112
73	BOHC8-8F-U	7.0	Rc 1/2	158
74	BOHC12-12F-U	7.0	Rc 3/4	286
75	BOHC16-16F-U	7.0	Rc 1	425
BOHC - Male Thread (without Valve)				
35 23 76	BOHC4-4M-U	7.0	Rc 1/4	75
77	BOHC6-6M-U	7.0	Rc 3/8	120
78	BOHC8-8M-U	7.0	Rc 1/2	160
79	BOHC12-12M-U	7.0	Rc 3/4	274
80	BOHC16-16M-U	7.0	Rc 1	-

Brass Nipples

Unit Per Pc.

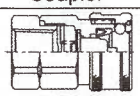
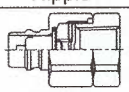
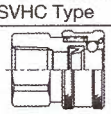
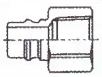
CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
BVHN - Female Thread (with Valve)				
35 23 81	BVHN4-4F	7.0	Rc 1/4	62
82	BVHN6-6F	7.0	Rc 3/8	90
83	BVHN8-8F	7.0	Rc 1/2	130
84	BVHN12-12F	7.0	Rc 3/4	235
85	BVHN16-16F	7.0	Rc 1	395
BVHN – Male Thread (with Valve)				
35 23 86	BVHN4-4M	7.0	Rc 1/4	68
87	BVHN6-6M	7.0	Rc 3/8	102
88	BVHN8-8M	7.0	Rc 1/2	142
89	BVHN12-12M	7.0	Rc 3/4	245
90	BVHN16-16M	7.0	Rc 1	405

(to be continued)

Unit Per Pc.

CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
BOHN - Female Thread (without Valve)				
35 23 91	BOHN4-4F	7.0	Rc 1/4	27
92	BOHN6-6F	7.0	Rc 3/8	44
93	BOHN8-8F	7.0	Rc 1/2	64
94	BOHN12-12F	7.0	Rc 3/4	142
95	BOHN16-16F	7.0	Rc 1	218
BOHN - Male Thread (without Valve)				
35 23 96	BOHN4-4M	7.0	Rc 1/4	28
97	BOHN6-6M	7.0	Rc 3/8	52
98	BOHN8-8M	7.0	Rc 1/2	80
99	BOHN12-12M	7.0	Rc 3/4	112
35 24 00	BOHN16-16M	7.0	Rc 1	170

Stainless Steel (SUS-304)

	Coupler	Nipple
With Valve	 SVHC Type	 SVHN Type
Without Valve	 SOHC Type	 SOHN Type

Stainless Steel Coupler and Nipple Combination List

Type	SVHN	SOHN
SVHC	o	o
SOHC	×	o

Remark: o = Applicable, × = Not applicable

Stainless Steel Couplers

Unit Per Pc.

CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
SVHC - Female Thread (with Valve)				
35 22 01	SVHC4-4F-U	7.0	Rc 1/4	95
02	SVHC6-6F-U	7.0	Rc 3/8	155
03	SVHC8-8F-U	7.0	Rc 1/2	205
04	SVHC12-12F-U	7.0	Rc 3/4	390
05	SVHC16-16F-U	7.0	Rc 1	550
SVHC – Male Thread (with Valve)				
35 22 06	SVHC4-4M-U	7.0	Rc 1/4	98
07	SVHC6-6M-U	7.0	Rc 3/8	158
08	SVHC8-8M-U	7.0	Rc 1/2	218
09	SVHC12-12M-U	7.0	Rc 3/4	400
10	SVHC16-16M-U	7.0	Rc 1	560
SOHC - Female Thread (without Valve)				
35 22 11	SOHC4-4F-U	7.0	Rc 1/4	70
12	SOHC6-6F-U	7.0	Rc 3/8	112
13	SOHC8-8F-U	7.0	Rc 1/2	158
14	SOHC12-12F-U	7.0	Rc 3/4	286
15	SOHC16-16F-U	7.0	Rc 1	425
SOHC - Male Thread (without Valve)				
35 22 16	SOHC4-4M-U	7.0	Rc 1/4	75
17	SOHC6-6M-U	7.0	Rc 3/8	120
18	SOHC8-8M-U	7.0	Rc 1/2	160
19	SOHC12-12M-U	7.0	Rc 3/4	274
20	SOHC16-16M-U	7.0	Rc 1	-

Stainless Steel (SUS-304) Nipples

Unit Per Pc.

CODE	Part No.	Working Pressure MPa	Thread Size	Weight grm
BVHN - Female Thread (with Valve)				
35 22 21	SVHN4-4F	7.0	Rc 1/4	62
22	SVHN6-6F	7.0	Rc 3/8	90
23	SVHN8-8F	7.0	Rc 1/2	130
24	SVHN12-12F	7.0	Rc 3/4	235
25	SVHN16-16F	7.0	Rc 1	395
BVHN – Male Thread (with Valve)				
35 22 26	SVHN4-4M	7.0	Rc 1/4	68
27	SVHN6-6M	7.0	Rc 3/8	102
28	SVHN8-8M	7.0	Rc 1/2	142
29	SVHN12-12M	7.0	Rc 3/4	245
30	SVHN16-16M	7.0	Rc 1	405
BOHN - Female Thread (without Valve)				
35 22 31	SOHN4-4F	7.0	Rc 1/4	27
32	SOHN6-6F	7.0	Rc 3/8	44
33	SOHN8-8F	7.0	Rc 1/2	64
34	SOHN12-12F	7.0	Rc 3/4	142
35	SOHN16-16F	7.0	Rc 1	218
BOHN - Male Thread (without Valve)				
35 22 36	SOHN4-4M	7.0	Rc 1/4	28
37	SOHN6-6M	7.0	Rc 3/8	52
38	SOHN8-8M	7.0	Rc 1/2	80
39	SOHN12-12M	7.0	Rc 3/4	112
40	SOHN16-16M	7.0	Rc 1	170

IMPA
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Maritime Procurement Event

Developing Skills in Procurement
Supplier Presentation Programme
One-to-One Buyer Meets Supplier Programme
IMPA Networking

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Conversion Table

[Length]	m	km	in	ft	yd	mile
m	1	1×10^{-3}	39.37	3.28	1.093	6.214×10^{-4}
km	1×10^{3}	1	3.937×10^{4}	3,280	1,093	0.621
in	0.0254	2.54×10^{-5}	1	1/12	1/36	1.58×10^{-5}
ft	0.305	3.048×10^{-4}	12	1	1/3	1.894×10^{-4}
yd	0.914	9.144×10^{-4}	36	3	1	5.682×10^{-4}
mile	1609	1.609	63,360	5,280	1,760	1

[Mass (Weight)]	g	kg	t	lb	oz
g	1	1×10^{-3}	1×10^{-6}	2.204×10^{-3}	0.0352
kg	1×10^{3}	1	1×10^{-3}	2.204	35.27
t	1×10^{6}	1×10^{3}	1	2,204	35,270
lb	453.6	0.4536	4.536×10^{-4}	1	16
oz	28.35	0.02835	2.835×10^{-5}	1/16	1

[Volume]	cm^3 (cc or ml)	m^3	l	in^3	qt	pt	fl-oz	ft^3	gal
cm^3 (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m^3	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in^3	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
Ft^3	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

[Pressure]	bar	kgf/cm^2	lbf/cm^2	mmHg (0°C)	Pa (SI)
bar	1	1.020	14.50	750.1	100,000
kgf/cm^2	0.9807	1	14.22	753.6	98,066
lbf/cm^2	0.0689	0.0703	1	51.72	6,895
mmHg (0°C)	0.00133	0.0013	0.0193	1	133.3
Pa (SI)	1×10^{-5}	1.02×10^{-5}	1.45×10^{-4}	10.2×10^{-4}	1

[Stress]	Pa (SI)	MPa	kgf/mm^2	kgf/cm^2
Pa (SI)	1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
MPa	1×10^{6}	1	1.01972×10^{-1}	1.01972×10
kgf/mm^2	9.80665×10^{6}	9.80665	1	1×10^{2}
kgf/cm^2	9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

[Force]	kW	kgf · m/sec	HP
kW	1	102.0	1.341
kgf · m/sec	0.009807	1	0.01315
HP	0.7457	76.04	1

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373633	37-32	373806	37-31	373925	37-32	374213	37-33	374486	37-33
373634	37-32	373807	37-31	373927	37-32	374216	37-33	374487	37-33
373637	37-32	373809	37-31	373928	37-32	374220	37-33	374489	37-33
373638	37-32	373810	37-31	373929	37-32	374223	37-33	374492	37-33
373639	37-32	373811	37-31	373930	37-32	374224	37-33	374494	37-33
373640	37-32	373813	37-31	373931	37-32	374226	37-33	374495	37-33
373641	37-32	373814	37-31	373933	37-32	374232	37-34	374497	37-33
373642	37-32	373815	37-31	373935	37-32	374234	37-34	374498	37-33
373644	37-32	373817	37-31	373936	37-32	374239	37-34	374499	37-33
373645	37-32	373818	37-31	373937	37-32	374240	37-34	374505	37-33
373702	37-30	373819	37-31	373938	37-32	374241	37-34	374506	37-33
373704	37-30	373821	37-31	373943	37-32	374242	37-34	374507	37-33
373707	37-30	373822	37-31	374001	37-32	374244	37-34	374514	37-33
373709	37-30	373824	37-31	374003	37-32	374245	37-34	374517	37-33
373710	37-30	373828	37-31	374005	37-32	374302	37-32	374518	37-33
373712	37-30	373830	37-31	374006	37-32	374304	37-32	374519	37-33
373713	37-30	373831	37-31	374008	37-32	374307	37-32	374525	37-33
373715	37-30	373833	37-31	374011	37-32	374309	37-32	374527	37-34
373716	37-30	373834	37-31	374014	37-32	374312	37-32	374533	37-34
373717	37-30	373835	37-31	374020	37-32	374315	37-32	374537	37-34
373718	37-30	373836	37-31	374025	37-32	374316	37-32	374538	37-34
373719	37-30	373837	37-31	374028	37-32	374317	37-32	374543	37-34
373721	37-30	373838	37-31	374030	37-32	374318	37-32	790401	37-15
373722	37-30	373841	37-31	374031	37-32	374319	37-32	790402	37-15
373723	37-30	373843	37-31	374034	37-32	374322	37-32	790403	37-15
373724	37-30	373845	37-31	374035	37-32	374323	37-32	790404	37-15
373726	37-30	373846	37-31	374039	37-32	374324	37-32	790405	37-15
373727	37-30	373847	37-31	374040	37-32	374327	37-32	790406	37-15
373729	37-30	373848	37-31	374041	37-32	374332	37-32	790411	37-15
373732	37-30	373849	37-31	374042	37-32	374336	37-32	790412	37-15
373733	37-30	373851	37-31	374043	37-32	374349	37-32	790413	37-15
373736	37-30	373853	37-31	374046	37-32	374350	37-32	790414	37-15
373737	37-30	373854	37-31	374048	37-32	374353	37-32	790415	37-15
373744	37-30	373855	37-31	374051	37-32	374354	37-32	790416	37-15
373745	37-30	373857	37-31	374056	37-32	374358	37-32		
373747	37-30	373863	37-31	374063	37-32	374360	37-32		
373749	37-30	373864	37-31	374071	37-32	374361	37-32		
373752	37-30	373865	37-31	374072	37-32	374362	37-32		
373753	37-30	373868	37-31	374076	37-32	374367	37-32		
373754	37-30	373869	37-31	374077	37-32	374368	37-32		
373755	37-30	373870	37-31	374085	37-32	374369	37-32		
373757	37-30	373871	37-31	374087	37-32	374370	37-32		
373758	37-30	373872	37-31	374089	37-32	374371	37-32		
373759	37-30	373875	37-31	374092	37-33	374373	37-32		
373760	37-30	373876	37-31	374096	37-33	374378	37-32		
373761	37-30	373877	37-31	374103	37-33	374379	37-32		
373762	37-30	373878	37-31	374108	37-33	374380	37-32		
373764	37-30	373879	37-31	374116	37-33	374382	37-32		
373765	37-30	373880	37-31	374120	37-33	374386	37-32		
373766	37-30	373882	37-31	374123	37-33	374390	37-32		
373767	37-30	373883	37-31	374125	37-33	374391	37-33		
373768	37-30	373886	37-31	374126	37-33	374395	37-33		
373769	37-31	373887	37-31	374127	37-33	374409	37-33		
373770	37-31	373889	37-31	374129	37-33	374410	37-33		
373773	37-31	373891	37-31	374132	37-33	374411	37-33		
373774	37-31	373892	37-31	374139	37-33	374412	37-33		

Signal Bells

Made of cast brass with a highly polished finish. The size is determined by measuring the bell mouth opening. The required size is over 300 mm diameter for the vessels of length greater than 20 mtr.

37 01 01	Bell, signal, cast brass	200 mm	Pc.
02	"	300 mm	"
03	"	400 mm	"

Air Horns

Required installation under the international regulations for prevening collisions at sea. The frequency of the horns shall be between 130 – 350 Hz for a vessel greater than 75 mtrs but less than 200 mtrs in length, and 70 – 200 Hz for a vessel 200 mtrs or more in length.

How to order : CODE

Air horn, 135 Hz for vessels of 75 – 200 mtr in length, LENGTH of VESSEL, TYPE of OPERATION

Unit Per Set

CODE	Frequency	Sound Level	Power Source	Size mm		Weight kgs
				Length	Horn Dia	
Hull Length: from 75 mtr to 200 mtr						
37 01 85	135 Hz	138 dB	AC100V 1P	1,127	580	32
86			AC220V 1P			
87			DC24V			
37 01 88	165 Hz	138 dB	AC100V 1P	963	580	31
89			AC220V 1P			
90			DC24V			
37 01 91	200 Hz	138 dB	AC100V 1P	655	240	19.5
92			AC220V 1P			
93			DC24V			
Hull Length: more than 200 mtr						
37 01 95	128 Hz	143 dB	AC100V 1P	1,215	580	44
96			AC220V 1P			
97			DC24V			

Handheld Marine Radios

A compact, lightweight, handheld marine transceiver providing full communications capabilities aboard large commercial vessels. For use in the pilothouse, on deck during operations, or at the head of the tow.

VX-417

Unit Per Set

CODE	37 01 34	37 01 31
Model	HX-370S VHF	VX-417 UHF
Protetion	Intrinsically safe	
Frequency Range	156MHz-163.275 MHz (Marine Band+WX Band) Channel steps: 25KHz 137MHz-174MHz (LMR) Channel steps: 12.5/25 kHz	400-430 MHz(AS) 420-450 MHz(B) 450-490 MHz(D)
Number of channels	Factory programmed with International Marine channel	32-Channel (16 channel x 2 banks)
Submersible Rating	1 meter 30 minutes continuously	-
Battery Pack	FNB-V57IS(included)	FNB-V57IS(included)
RF Power Output	5W(Hi)/2.5W/1W(Low)	5W/1W
Size mm	H120 x W58 x D30.5	H108.5 x W58 x D30
Weight grm	380	300
Approval	Meet the requirements of ANSI/UL 913-6th Ed. for Division 1, Class 1, Groups C & D, Class II, Groups E,F & G, and Class III for hazardous locations.	Complied with MIL STD 810 D/E/F specification for protection against shock, vibration, high and low temperature, low pressure, rain, humidity, salt fog and dust.
Accessories	*AC charger NC-88C 230 V *Charger cradle CD-30 *Quick draw belt clip CLIP-14	-

(to be continued)

Battery Chargers for Handheld Marine Radio

Unit Per Pc.

CODE	37 01 19	37 01 20	37 01 24	37 01 25
Model	NC-88B	NC-88C	VAC-800B	VAC-800C
Power	110V	230V	110V	230V
For	HX370S		VX-417	
Type of Battery Pack	FNB-V571S		FNB--V571S	

Two-way VHF Radiotelephone Apparatus

According to the 1983 amendment to the SOLAS regulations 1974 in Chapter III Regulation 6, at least 3 two-way radiotelephones shall be provided on every cargo ship of 500 gross tons or more. The two-way radiotelephone enables communication between the survival craft, the ship, and the rescue boat.

Precautions shall be taken to prevent the inadvertent selection of VHF channel 16 on equipment capable of being operated on that frequency. A watertight model is required for satisfying GMDSS requirements (1988 amendment).

Specifications for Reference

Frequency Range	VHF 156.300 - 156.875 MHz
Size & Weight	165 x 64 x 45.5 mm, 600 grm

37 01 33	Two-way VHF radiotelephone conforms to GMDSS	Pc.

Battery Chargers for GMDSS VHF Two-way Radiotelephone

37 01 35	Battery charger for two-way radiotelephone GMDSS AC 110V	Pc.
36	" AC 220V	"

Guidance of Frequency Range

Frequency	Range
HF (High Frequency)	3 - 30 MHz
VHF (Very High Frequency)	30 - 300 MHz
UHF (Ultra High Frequency)	300 - 3,000 MHz

Handheld Marine Radios Intrinsically Safe – USTC Certified

Intrinsically safe radio conforms to all aspect of USTC (U.S. Testing Company) certification for portable used in

hazardous locations. If further exceeds this by being fully submersible to 5 meters depth for up to one hour. Meeting MIL STD 810C/D/E rating for tough, enduring performance, the radio conforms to stringent standards, enabling it to withstand the every day rigorous of shock, vibration and the corrosive action of dust and moisture, ensuring of many years of trouble free use even in a salt water environment. Very simple to use, with the majority of its features accessed by a single key depression. Latest compander noise reduction technology delivers loud and crisp audio no matter what environment you are in.

Unit Per Set

CODE	37 01 15	37 01 16
Model	HT840 (VHF)	HT880 (UHF)
Frequency Range	156-163.275 MHz	457.525 MHz 457.550 MHz 457.575 MHz
Channels	Pre programmed 55 marine channels	128 PC programmable channels
Channel Spacing	12.5 kHz / 25 kHz	
Communication Method	Simplex / semi duplex	
Antenna Impedance	50 ohm	
Antenna	Whip / stubby	
Battery Type	1,800 mAh Li-ion battery pack	
Power Supply Voltage	7.4 VDC	
Current Drain (Nominal)	When transmitting (5W) – 1,800 mA When transmitting (1W) – 850 mA When receiving (0.5W) – 160 mA Receiver standby – 50 mA	
Duty Cycle (5/5/90)	15 hours (High) / 19 hours (Low)	
Approval	SGS Class I,II & III, Groups A,B,C,D,E,F,G Div I & II,T4	
Size (W x H x D)	59 x 130 x 33 mm	
Weight	296 grm with battery and aerial	
Transmitter;		
Power Output	High – 5W, Low – 1W	High – 4W, Low – 1W
Frequency Stability	< ±0.00025% (± 2.5 PPM)	
Receiver;		
Receiver Type	Double super heterodyne type	
Frequency Stability	±0.00025% (± 2.5 PPM)	
Audio Output	1W	
Standard Accessories	CNB840E: 7.4V, 1,800mAh rechargable lithium-ion battery pack CBH940: Spring loaded belt clip	CNB840E: 7.4V, 1,800mAh rechargable lithium-ion battery pack CBH940: Spring loaded belt clip
Standard Accessories	CAT201S: High efficiency helical antenna (Can be exchanged for CAT201S/VS stubby aerial at point of order) CCA230: 230V drop in trickle charger CCA12: 12V charger lead User manual Carry strap	CAT801S: High eficiency helical antenna (Can be exchanged for CAT801S/VS stubby aerial at point of order) User manual

Name of Mfr.: Entel UK Ltd.

Intrinsically Safe Marine UHF Transceivers

400MHz 2W Waterproof

The Maritime Safety Committee (MSC) adopted the following amendment to SOLAS regulation II-2/10 regarding fire fighters' communication: "For ships constructed on or after 1 July 2014, a minimum of two two-way portable radiotelephone apparatus for each fire party for fire-fighter's communication shall be carried on board. Those two-way portable radiotelephone apparatus shall be of an explosion-proof type or intrinsically safe. Ships constructed before 1 July 2014 shall comply with the requirements of this paragraph not later than the first survey after 1 July 2018."

The JHS-431 is a 2 Watt UHF intrinsically safe transceiver designed for on-board communications in ship operations, loading/unloading, and mooring. The JHS-431's intrinsically safe structure meets ATEX Directive 94/9/EC for use when transporting flammable, dangerous materials by Tanker, LPG carrier, LNG carrier and/or LO carrier, and meets above SOLAS amendment by MSC.

3 more communication channels can be installed as a pre-set option.

Unit Per Pc.

CODE	37 01 17
Model	JHS-431
Frequencies	CH1 457.525MHz OP1 467.525MHz CH2 457.550MHz OP2 467.550MHz CH3 457.575MHz OP3 467.575MHz
Emission Type	F3E
Output Power	2W (Low : 0.2W)
Tone Squelch	Up to 2 frequencies
Battery	Li-ion battery (7.4V DC, 1,850 mAh)
Protection Rate	IP67
Intrinsically Safe	ATEX Directive 94/9/EC Gas: II2GD Ex ib IIA T3 Dust:II2GD Ex tD A21 T160°C
Antenna Impedance	50Ω unbalanced
Dimensions	Body: W62.5 x D36.4 x H97.7 mm Antenna: L 174 mm
Weight	285 grm
Standard Accessories	1 each Battery pack, Instruction manual and Inspection data

Name of Mfr.: Japan Radio Co., Ltd.

Communication Systems

L'COM Communication

Communication is getting difficult in a noisiness area

The MSA L'COM Communication system is a complete module with headband system for wearing without helmet.

- 2 x 32 Ω speakers in parallel, max power 100 mW.
- 100Hz-10 kHz electro-dynamic microphone.
- Omnidirectionnal microphone.
- Position of speaker and microphone close to ear, ear remain free.
- Loud and clear communication is possible.

Connection with a wide range of brand and types of radios is possible.

37 01 45	Communication system, headband type, L'com communication (specify brand and type of radio in use)	Set

Name of Mfr.: MSA The Safety Company

Micro Communication

The MSA Micro Communication system is a complete module with clip in system for wearing with helmet in combination with or without full face mask.

<Basic Specifications>
- 32 Ω speaker [one speaker], max power 100 mW.
- Connection in the helmet close to ear [Left or right].
- Possibility to adapt a pouch for use without helmet.

MICRO Built-in Microphone

- Module integrating both Loudspeaker and electret Microphone.
- 50 Hz-12 kHz electro-dynamic microphone.
- Omnidirectional microphone.

MICRO External Microphone

- Module integrating Loudspeaker and external microphone [with flexible arm].
- 50 Hz-12 kHz canceling noise boom microphone.

Connection with a wide range of brand and types of radios is possible.

37 01 49	Communication System, helmet mounted type, Micro built-in microphone (specify brand and type of radio in use)	Set
50	Communication System, helmet mounted type, Micro external microphone (specify brand and type of radio in use)	"

Name of Mfr.: MSA The Safety Company

Osteo Communication

By simultaneous use of a SCBA and a radio, communication is getting difficult in a noisiness area.

The MSA Osteo Communication system is a complete module with headband system for wearing with helmet in combination with or without full face mask.
- Module integrating loudspeaker.
- 32 Ω speaker (one speaker), max power 100 mW.
- Bone conductive microphone, accelerometer 1 mV/mG.
- Bandwidth 20 Hz to 20 kHz.
- Voice transmission by skull vibration.
- Connection in the helmet close to ear (Left or right) for the speaker module and attachment to the cradle net for the Bone microphone.
- Possibility to adapt a pouch for use without helmet.
- Loud and clear communication is possible.

Connection with a wide range of brand and types of radios is possible.

37 01 46	Communication System: helmet mounted type, Osteo communication (specify brand and type of radio in use)	Set

Name of Mfr.: MSA The Safety Company

Ear Muffs with Communication

Highly efficient ear muffs for protection of loud noises of all pitches in factories and areas where air compressors and turbines are used. The challenge is to balance personal attenuation devices with comfort and the ability of communication, so that workers will wear their hearing protectors all the time.

MSA Sordin's Connected by Cable is a comfortable hearing protection line equipped with a noise cancelling microphone and a down lead for connection to a two-way radio.

Product features:
- Can be connected to mobile phones in combination with a separate adapter. Supplied with a 2.5 mm stereo plug.
- Also available for direct connection to communication radios such as Motorola, Kenwood, Icom, etc. and DECT phones.
- Noise cancelling boom microphone permits two-way communication with minimal interference from background noise.
- All electronic features are controlled using three distinct push buttons.
- Certified to EN 352-1 (headband version).
- Certified to EN 352-3 (helm mounted version).
- SNR 28dBA (headband version), 27dBA (helm mounted version).

Unit Per Pr

CODE	Description	Colour	Part No.
37 01 47	Headset, model CC with headband SNR 28 - H/M/L 32/26/18	Blue	SOR41000
48	Headset , model CC, Helm mounted version SNR 27 - H/M/L 30/24/17	Blue	SOR41502

Name of Mfr.: MSA The Safety Company

Ship Borne Telephones

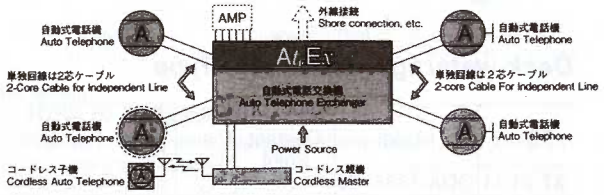
As a wide range of multi-purpose telephone sets for the marine communication fields are available from different manufacturers, the most common types are listed below.

A. Marine Auto Telephones

These sets are built sturdy based on the design to achieve high reliability while also meeting all the requirements for the marine telephone sets to be connected with the marine electronic telephone exchange.

These telephone sets are designed to be compatible with the DP (Dial Pulse) /PB (Push Button) dials to meet the requirements of the various telephone lines. The received indication (Tone-ring & Lamp) is furnished on all models.

These telephone sets have been granted the approval of the JATE (Japan Approvals Institute for Telecommunication Equipment) standards to allow access, via the marine electronics telephone exchange, to the land line including the via-INMARSAT, cellular marine telephone and shore telephone sets.



Non-water-proof Desk/Wall type

Drip-proof Wall Type

Deck-watertight (IP56) Wall Type

Non-water-proof Built-in Type

Non-water-proof Built-in Type (on Wall)

Drip-proof Portable Type

Deck-watertight (IP55) Flush Type

How to order : CODE

Marine auto telephone, TYPE of TELEPHONE, MODEL

7TH 37

Non-water-proof Desk/Wall Type

Unit Per Set

CODE	Model	Noisy Place Use	Round Termi-nal	2-wire (for Independent Line)	Wgt kgs
37 21 01	ODA1183-1	-	-	○	0.7
02	ODA1183-1N	○	-	○	0.7
03	ODA1183-1T	-	○	○	0.7
04	ODA1183-1NT	○	○	○	0.7

Colour: Ivory White for all models.

Drip-proof Wall Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Sub Re-ceiver	Head-set	Wgt kgs
37 21 05	ODA1310-1	○	-	-	-	1.5
06	ODA1310-1N	○	○	-	-	1.5
07	ODA1310-1SR	○	-	○	-	1.6
08	ODA1310-1SN	○	○	○	-	1.6
09	ODA1310-1H	○	-	-	○	1.5
10	ODA1310-1HN	○	○	-	○	1.5

Colour: N7 for all models.

Deck-watertight (IP56) Wall Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs	Remarks
37 21 11	ODA-1385-1N	○	○	3.8	Colour: N3

Non-water-proof Built-in Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Illumi-nation with Dial	Wgt kgs
37 21 12	ODA-1780-1K	○	-	-	1.4
13	ODA-1780-1NK	○	○	-	1.4
14	ODA-1780-2K	○	-	○	1.5
15	ODA-1780-2NK	○	○	○	1.5

Colour: N3 for all models.

Non-water-proof Built-in Type (on Wall)

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs	Remarks
37 21 16	ODA-1781-1K	○	-	2.3	Colour: N3
17	ODA-1781-1NK	○	○	2.3	

Drip-proof Portable Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Headset	Wgt kgs
37 21 18	ODA-1980-1K	○	-	-	4.3
19	ODA-1980-1NK	○	○	-	4.3
20	ODA-1980-1HK	○	○	○	4.3

Colour: 7.5BG7/2 for all models.

Deck-watertight (IP55) Flush Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs	Remarks
37 21 75	ODA-1782-1N	○	○	2.2	Colour: N3

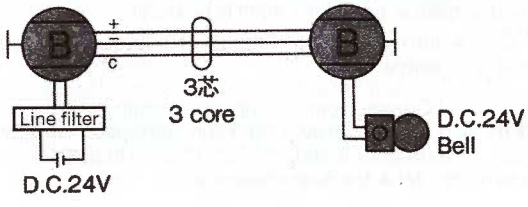
B. Marine Common Battery Telephones

This equipment utilizes the ship's power supply of 24 volts DC to activate the voice communication circuits. With a press of the quick access button, you can communicate with the opposite party.

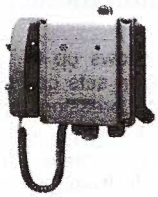
1. Marine Common Battery Telephones (Direct)

1) 1:1 Communication system

This system is used for the limited communicating purposes between two units. Automatic connection is made when one handset is picked up, and causing the second unit to ring. The received indication (Tone-ring & Lamp) is furnished on all models.



Non-water-proof Desk/Wall type

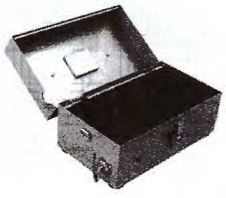


Drip-proof Wall Type

Non-water-proof Wall Type

Non-water-proof Built-in Type

Non-water-proof Built-in Type (on Wall)



Drip-proof Portable Type

How to order : CODE

Marine community battery telephone, direct, TYPE of TELEPHONE, MODEL

Non-water-proof Desk/Wall Type

Unit Per Set

CODE	Model	Output to Contact Point	Noisy Place Use	Wgt kgs	Remarks
37 21 21	ODC-2180-1	-	-	0.9	-
22	ODC-2180-1N	-	○	0.9	
23	ODC-2180-1A	○	-	0.9	Wall-mount
24	ODC-2180-1AN	○	○	0.9	

Colour: Ivory white for all models.

Drip-proof Wall Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Sub Re-ceiver	Head-set	Wgt kgs
37 21 25	ODC2310-1	○	-	-	-	1.3
26	ODC2310-1N	○	○	-	-	1.3
27	ODC2310-1SR	○	-	○	-	1.3
28	ODC2310-1SN	○	○	○	-	1.3
29	ODC2310-1H	○	-	-	○	1.3
30	ODC2310-1HN	○	○	-	○	1.3

Colour: N7 for all models.

Non-water-proof Wall Type

Unit Per Set

CODE	Model	Noisy Place Use	Wgt kgs	Remarks
37 21 31	ODC-2381-1	-	0.7	-
32	ODC-2381-1N	○	0.7	
33	ODC-2381-3	-	1.3	With Terminal
34	ODC-2381-3N	○	1.3	

Colour: Ivory white for all models.

Non-water-proof Built-in Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs
37 21 35	ODC-2780-1K	○	-	1.4
36	ODC-2780-1NK	○	○	1.4

Colour: N3 for all models.

Non-water-proof Built-in Type (on Wall)

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs	Remarks
37 21 37	ODC-2783-1K	○	-	2.3	Colour:N3
38	ODC-2783-1NK	○	○	2.3	

Drip-proof Portable Type

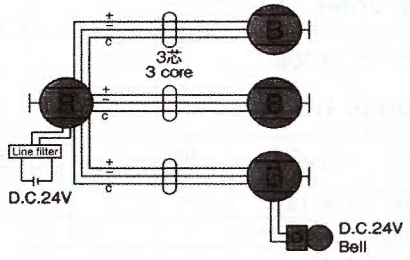
Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Headset	Wgt Kgs
37 21 39	ODC-2980-1K	○	-	-	4.6
40	ODC-2980-1NK	○	○	-	4.6
41	ODC-2980-1HK	○	-	○	4.6
42	ODC-2980-1HNK	○	○	○	4.6

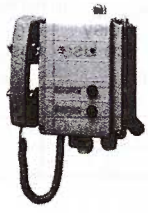
Colour: 7.5BG7/2 for all models.

2) 1:2 and 1:3 Communication systems

Two or three extensions can be connected to a main telephone set. The extension set can be contacted by pressing the push button at the main telephone set. The main set can be contacted by simply lifting the extension handset.



1:2 Master Telephones



Drip-proof Wall Type

Non-water-proof Built-in Type

Non-water-proof Built-in Type (on Wall)

How to order : CODE

Marine community battery telephone, direct, 1:2, TYPE of TELEPHONE, MODEL

7TH 37

Drip-proof Wall Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs
37 21 43	ODC2312-1	○	-	1.3
44	ODC2312-1N	○	○	2.6

Colour: N7 for all models

Non-water-proof Built-in Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs
37 21 45	ODC-2781-1K	○	-	1.4
46	ODC-2781-1NK	○	○	1.4

Colour: N3 for all models.

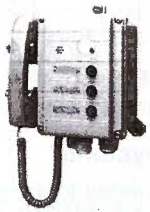
Non-water-proof Built-in Type (on Wall)

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs
37 21 47	ODC-2784-1K	○	-	2.3
48	ODC-2784-1NK	○	○	2.3

Colour: N3 for all models.

1:3 Master Telephones



Drip-proof Wall Type

Non-water-proof Built-in Type

Non-water-proof Built-in Type (on Wall)

How to order : CODE

Marine community battery telephone, direct, 1:3, TYPE of TELEPHONE, MODEL

Drip-proof Wall Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs
37 21 49	ODC2313-1	○	-	1.3
50	ODC2313-1N	○	○	1.3

Colour: N7 for all models

Non-water-proof Built-in Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs
37 21 51	ODC-2782-1K	○	-	1.5
52	ODC-2782-1NK	○	○	1.5

Colour: N3 for all models.

Non-water-proof Built-in Type (on Wall)

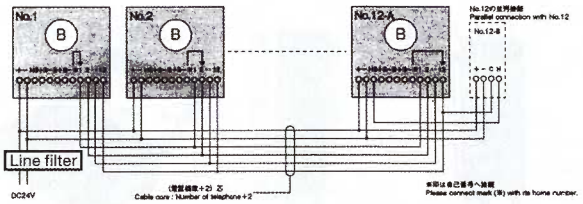
Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs
37 21 53	ODC-2785-1K	○	-	2.4
54	ODC-2785-1NK	○	○	2.4

Colour: N3 for all models.

2. Marine Common Battery Telephones (Multi-link)

This equipment allows up to 12 telephone extension sets. These extension sets can be contacted by turning the rotary switch and pressing push button at this unit. Even if one extension set is busy, remaining five sets can be contacted at the same time. In addition, the following special functions are provided : With two common battery telephone (or multi-link type) sets connected in parallel, both telephone sets can be contacted from outside telephone set at the same time.



Non-water-proof Desk/Wall Type

Drip-proof Wall Type

Non-water-proof Wall Type

Non-water-proof Built-in type

Drip-proof Portable Type

Deck-watertight (IP55) Flush Type

How to order : CODE

Battery telephone, multi-link TYPE of TELEPHONE, MODEL

Non-water-proof Desk/Wall Type

Unit Per Set

CODE	Model	Noisy Place Use	Sub Receiver	Wgt kgs	Remarks
37 21 55	ODC-3180-1	-	-	1.0	-
56	ODC-3180-1N	○	-	1.0	
57	ODC-3180-1A	-	-	1.0	Wall-mount
58	ODC-3180-1AN	○	-	1.0	

Colour: Ivory white for all models.

Drip-proof Wall Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Sub Re-ceiver	Head-set	Wgt kgs
37 21 59	ODC3310-1	○	-	-	-	1.3
60	ODC3310-1N	○	○	-	-	1.3
61	ODC3310-1SR	○	-	○	-	1.4
62	ODC3310-1SN	○	○	○	-	1.4
63	ODC3310-1H	○	-	-	○	1.3
64	ODC3310-1HN	○	○	-	○	1.3

Colour: N7 for all models.

Non-water-proof Wall Type

Unit Per Set

CODE	Model	Noisy Place Use	Wgt kgs	Remarks
37 21 65	ODC-3381-1	-	0.9	-
66	ODC-3381-1N	○	0.9	
67	ODC-3381-3	-	1.4	With Terminal
68	ODC-3381-3N	○	1.4	

Colour: Ivory white for all models.

Non-water-proof Built-in Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Illumination with Dial	Wgt kgs
37 21 69	ODC-3780-1K	○	-	-	1.5
70	ODC-3780-1NK	○	○	-	1.5
71	ODC-3780-2K	○	-	○	1.7
72	ODC-3780-2NK	○	○	○	1.7

Colour: N3 for all models.

Drip-proof Portable Type

Unit Per Set

CODE	Model	Output of Contact Point	Wgt kgs	Remarks
37 21 73	ODC-3980-1K	-	5.3	Colour: 7.5BG7/2
74	ODC-3980-1NK	-	5.3	

Deck-watertight (IP55) Flush Type

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Illumination with Dial	Wgt kgs
37 21 76	ODC3782-1N	○	○	-	2.3

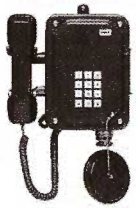
Colour: N3

Intrinsically Safe Auto Telephones

This telephone system is composed of telephones and safety maintaining unit. This telephone set located in explosive hazardous area can be connected to the telephone lines of marine telephone exchange, PABX (Private Automatic Branch Exchange) or analog telecom network via Buffer Unit.

With its safe security system, the equipment can be operated for a long period of time in a dangerous environment such as oil carrier ships, LNG/LPG carrier ships, chemical carrier ships. Specified to the intrinsically safe explosion proof construction grade that satisfies the ia standard, assuming two accidents, in compliance with the IEC specification, meets the requirement of the Ex ia IIBT4 class of equipment in terms of explosion proof and inflammable nature. The authentication of the IECEx has acquired.

Ex. Protection:
ODA-1371-1A & 1AH (Ex ia II BT4 Ga Ta= –20°C ~ +55°C)
ODZ-9440-1A ([Ex ia] II B Ta= –20°C ~ +60°C)



Intrinsically Safe Auto telephone ODA-1371-1A

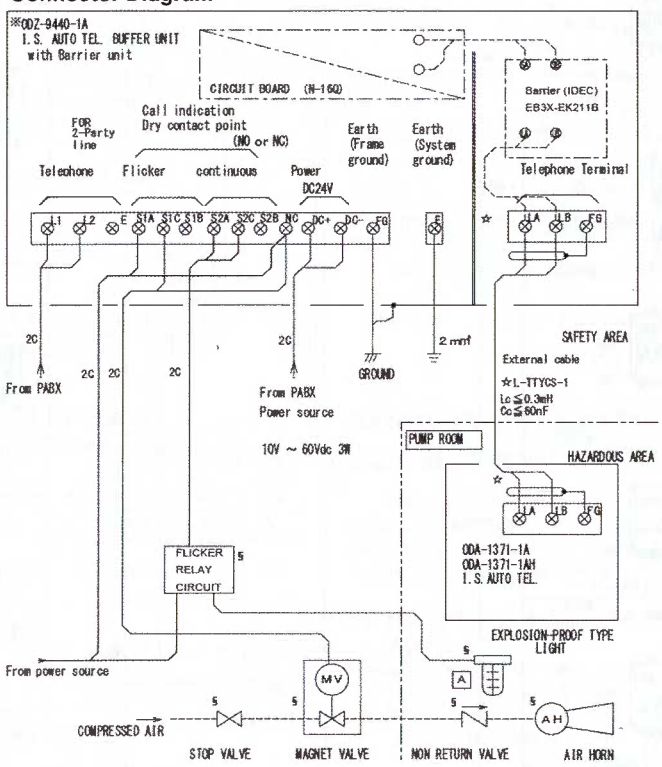
Intrinsically Safe Auto telephone Buffer Unit ODZ-9440-1A

Head Set ODZ 9210-1

Specifications

Power Supply: 24V DC/48V DC 0.5A, Colour: N3.5,
Dial: PB/DP, Analogue Telephone Line
Relay Contact Output:
Dry contact: 250VAC 5A/30VDC 5A, Continue C Contact, Flicker C Contact

Connector Diagram



Note: This drawing shows an sample of wiring. Please contact your local supplier for more information of your preferable wiring.

Unit Per Pc.

CODE	Model	Dimensions mm	Wgt kgs	Remarks
37 21 77	ODA-1371-1A	W240×H265×D132	2.8	Without Head Set
78	ODA-1371-1AH			With Head Set
79	ODZ-9440-1A	W300×H400×D155	8.3	-
80	ODZ-9210-1	Head Set	-	-

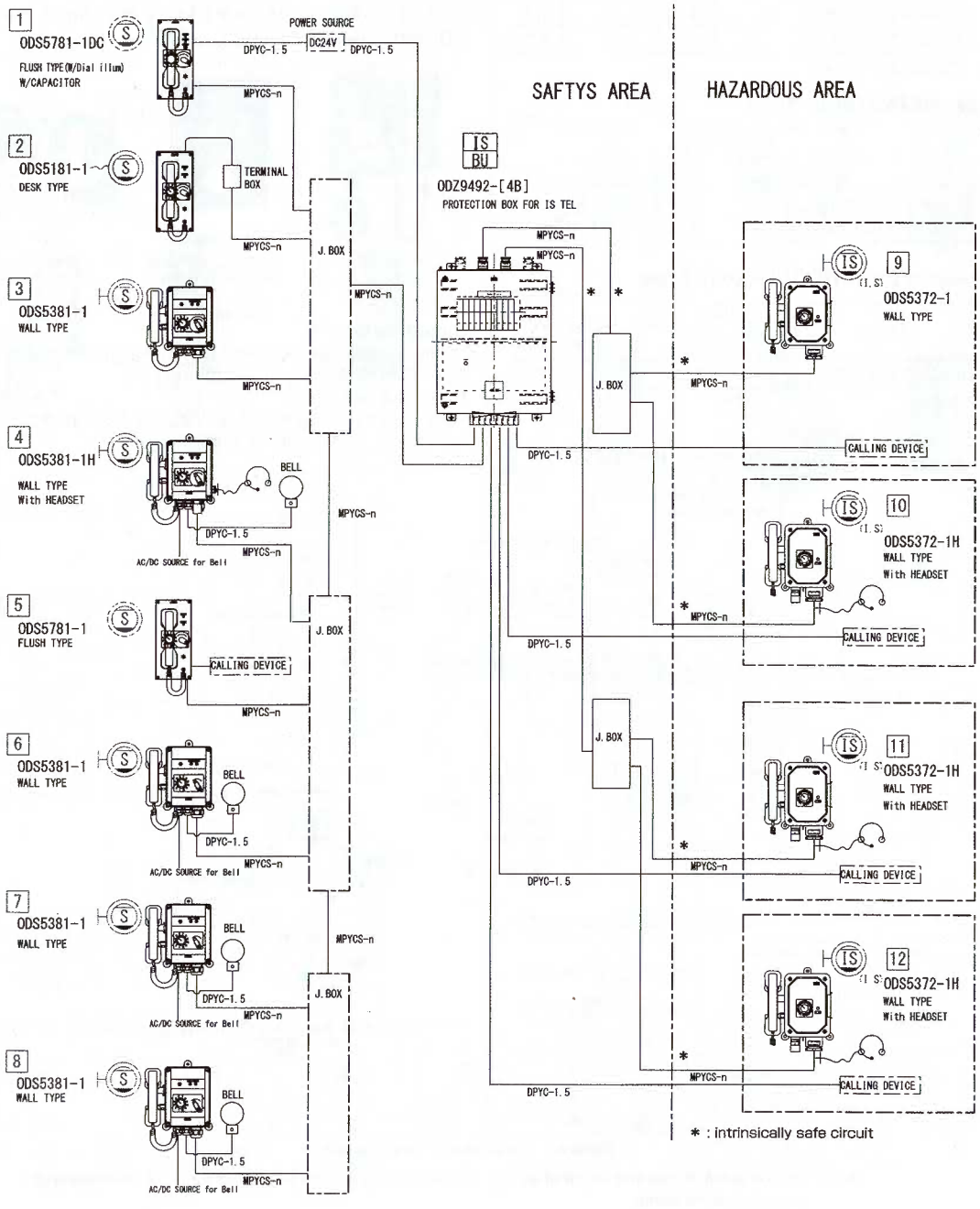
Colour: Nippon Hakuyo Electronics Ltd.

Marine Battery-less Telephones

These telephones do not require a source of electric power for calling and communication. Rotating handle will generate electric power to ring the other station, and accumulated power is used to amplify acoustic sounds to make conversation loud and clear.

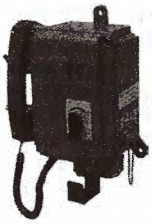
They are roughly classified into two systems; Direct Telephone and Selective Telephone. The latter allows maximum 12/24 telephones to configure (one conversation link). And they are possible to connect to Intrinsically Safe Types, shown in the layout drawing below. Each telephone has relay inside terminal so that optional devices such as bells can be equipped.

INTRINSICALY SAFE BATTERY LESS TELEPHONE SYSTEM (Example) (12 stations)



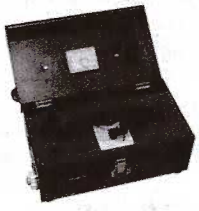
Desk Type

Wall Type



Wall type w/receptacle

Flush Type



Portable Type

Direct Telephones

Unit Per Pc.

CODE	Type	Model No.	Dimensions WxHxD mm	Weight kgs	Colour
37 21 81	Desk type	ODS4181-1	130x280x130	2.4	N3
82	Wall type	ODS4381-1	230x246x119	1.9	N7
83	Wall type w/ receptacle for head set	ODS4381-1H	230x246x119	1.9	N7
84	Flush type	ODS4781-1	125x280x148	1.7	N4
85	Portable type	ODS4981-1	290x162xx168	3.8	N4

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Selective Telephones 12 Stations

Unit Per Pc.

CODE	Type	Model No.	Dimensions WxHxD mm	Weight kgs	Colour
37 21 86	Desk type	ODS5181-1	130x280x130	2.4	N3
87	Wall type	ODS5381-1	230x246x119	1.9	N7
88	Wall type w/ receptacle for head set	ODS5381-1H	230x246x119	1.9	N7
89	Flush type	ODS5781-1	125x280x148	1.8	N3
90	Flush type w/dial illumination	ODS5781-1D			
91	Portable type	ODS5981-1	290x162x168	3.8	N3

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

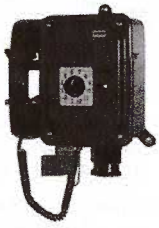
Selective Telephones 24 Stations

Unit Per Pc.

CODE	Type	Model No.	Dimensions WxHxD mm	Weight kgs	Colour
37 21 92	Desk type	ODS5181-2	130x280x130	2.4	N3
93	Wall type	ODS5381-2	230x246x119	1.9	N7
94	Wall type w/ receptacle for head set	ODS5381-2H	230x246x119	1.9	N7
95	Flush type	ODS5781-2	125x280x148	1.8	N3
96	Flush type w/dial illumination	ODS5781-2D			
97	Portable type	ODS5981-2	290x162x168	3.8	N3

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Marine Intrinsically Safe Construction Battery-less Telephones



These telephones are of Intrinsically Safe construction. They can be used in hazardous areas and allow to connect to the telephones in the safety areas, shown in the layout drawing shown on the previous "Marine Battery-less Telephone". IS Barrier shall be equipped intermediate for safety connection between two areas (Marine battery less telephones and Marine intrinsically safe construction battery less telephones). This system is roughly classified into two systems; Direct Telephone and Selective (12/24 stations) Telephone.

As they do not have devices to tell the reception, other devices such as Air horn, Whistle, and/or Beacon should be equipped.

The authentication of the IECEx has acquired.

IECEx Certificate No.: IECEx TIIS 16.0003X
Ex Protection: Exia II BT4 Ga Ta=55°C

Direct Telephones

Unit Per Pc.

CODE	Type	Model No.	Dimensions WxHxD mm	Weight kgs	Colour
37 21 98	Wall type	ODS4372-1	226x279x122	2.7	N3.5
99	Wall type w/ receptacle for head set	ODS4372-1H	226x279x138	2.9	

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Selective Telephones 12 Stations

Unit Per Pc.

CODE	Type	Model No.	Dimensions WxHxD mm	Weight kgs	Colour
37 22 00	Wall type	ODS5372-1	226x279x130	2.7	N3.5
01	Wall type w/ receptacle for head set	ODS5372-1H	226x279x122		

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Selective Telephones 24 Stations

Unit Per Pc.

CODE	Type	Model No.	Dimensions WxHxD mm	Weight kgs	Colour
37 22 02	Wall type	ODS5372-2	226x279x130	2.7	N3.5
03	Wall type w/ receptacle for head set	ODS5372-2H	226x279x122		

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Safety Protection Unit for Intrinsically Safe Battery-less Telephones

This unit intervenes between I.S. Battery-less Telephones in hazardous areas and telephones in safety areas to establish safety connection.

For calling device Relay contact Ratings:
AC/DC 6A
Power supply for barrier:
DC 24V, max. 0.5A
Ex. Protection:
[Exia] II B Ta=60°C

Please specify the model number as below
Model ODZ9492-[① ②]

① Maximum number of telephones possible to equip at hazardous area:
1: equip 1 unit, 2: equip 2 units, 3: equip 3 units,
4: equip 4 units

② Maximum number of telephones possible to equip at safe area in total
A: 8 stations, B: 16 stations, C: 24 stations

Example) 1 × telephone in hazardous area, 8 telephone system in safe area should be "ODZ9492-1A"

Unit Per Pc.

CODE	Type	Model No.	Dimensions W×H×D mm	Weight kgs	Colour
37 22 04	Protection Box	ODZ9492-[① ②]	400×500×150	11	N3.5

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Waterproof Microphones

Waterproof type microphone to be used for ship's radio amplifier. Available as microphone only or with curl cord with capacity 40 Ω or 600 Ω. Please specify the length of curl cord if required.

Unit Per Pc.

CODE	37 01 81	37 01 82	37 01 83	37 01 84
Curl Cord	With	Without	With	Without
Impedance	40 Ω		600 Ω	
Frequency	100 - 8,000 Hz		100 - 8,000 Hz	
Switch Circuit Capacity	AC 125V 5A DC 115V 0.5A		AC 125V 5A DC 115V 0.5AC	

7TH
37

Radio Room Clocks

For use in radio rooms. The diameter of the dial is 200 mm with the numerals 1 - 12 on the outer edge and the numerals 13 - 00 on the inner side showing international time. Seconds are marked clearly in red between the hour numerals. There are two 3 minute silent periods at 15 and 45 minutes past the hour marked in red for emergency signals, and two 3 minute silent periods at 0 and 30 minutes in green for distress signals. The clock has 2 hour hands, one to be set in Greenwich Mean Time and the other to indicate local time.

A Vapour-Proof type(IP54) with Stainless Steel Casing is also available.

37 02 01	Clock, radio room, quartz 200 mm dia.	Pc.
02	Clock, radio room, stainless steel casing, vapour-proof	Pc.

Marine Clocks

A quartz, battery operated clock. The case is backed with rubber to provide resistance to shock and dust.

A Vapour-Proof type(IP54) with Stainless Steel Casing is also available.

37 02 04	Clock, marine, quartz 200 mm	Pc.
05	Clock, marine, stainless steel casing, vapour-proof	Pc.

Quartz Chronometers

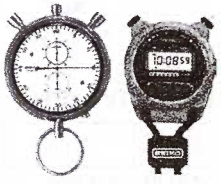
Highly accurate quartz crystal timekeeper. Water-resistant and unaffected by humidity, shock, and magnetic force. The clock will still operate when replacing the battery on a 40 hour back-up battery.

Specification

Power Source	R20P (UM-1) × 3 pcs for 1 year battery life
Accuracy	Average daily error within ±0.1 sec.
Action of Hand	0.5 second leap
Dimensions	184 (W) × 215 (D) × 76 (H) mm
Weight	2.2 kgs

37 02 07	Chronometer quartz	Pc.

Stopwatches



Precision stopwatches which can time to the accuracy of 1/5 and 1/10 of a second on an analogue watch and 1/100 of a second on a digital watch.

Analogue Digital

Unit Per Pc.

Analogue		Digital	
CODE	Second	CODE	Second
37 02 11 12	1/5 1/10	37 02 13	1/100

Stopwatches and Time Printers

A 1/100 second digital stopwatch which can be connected to a time recording printer. The printer runs on 4 R6P (UM-3) dry batteries. Furnished with two 38 mm wide rolls of printing paper.

Stopwatch Printer

37 02 16	System stopwatch digital 1/100 second	Pc.
37 02 17	Time printer for system digital stopwatch	Pc.
37 02 18 19	Roll paper for digital stopwatch printer 38 mm wide × 2.5 mtr L 2's " 5's	Pkt "

Astro-Navigation Calculators

Digital navigation calculators for assessing the ship's position by simple operation with built-in programs. Easy-to-understand dialogue system telling what input data is required, and what output data is displayed.

Major navigation functions are;
- Simple operation with built-in programs
- Course and Distance computation
- Dead Reckoning computation
- Great Circle computation
- ETA computation
- Current computation

- LOP computation.
- Meridian Passage computation.
- Convenient conversions for to HMS and to HHHH.
- Long term Nautical Almanac for the Sun, Moon, Venus, Mars, Jupiter, Saturn and 63 stars. The built-in Almanac is usable until 2100, and it is good with accuracy better than 0'.2.
- Twilight time mode computes times of rise or set, civil twilight and azimuth for the Sun and rise or set, age and azimuth for the Moon.
- Prediction/identification mode computes azimuth and altitude for all celestial bodies and displays any usable bodies above the horizon.
- Can input Latitude and Longitude from optional GPS receiver.

Specifications

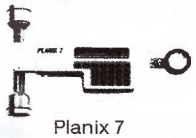
Operation	Touch panel with stylus pen
Power Source	Lithium-ion battery and AC adaptor (AC100-240V)
Operating Time	Approx. 5 hours for continuous operation
Charging Time	Approx. 4 hours for full charging
Display	Liquid crystal display (65,536 colours) 240 x 320 dots
OS	Microsoft Windows Mobile 6 Classic
Size	W72 x D125x H14 mm
Weight	Ap.165 grm (without battery)
Accessories	AC adaptor and stylus pen

37 02 27	Astro - navigation calculator	Pc.

Digital Planimeters

A very precise instrument for quick and accurate determination of area on blueprints, maps, photographs, drawings, etc.

Simply follow the outline of the area. The revolution of the measuring wheel in either direction is sensed by the electro shaft-encoder which generates pulses which are processed by the custom-made LSI.



Planix 7

Planix 10S marble

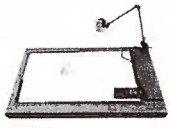
Unit Per Pc.

CODE	**37 02 31**	**37 02 32**
Model	Planix 7	Planix 10S marble
Measurement Range	300 mm x 3 mtr	300 mm x 10 mtr
Measurement Functions	8 digitds output/ input HOLD, MEMO, BATTE, READY, cm^2, in^2, SCALE, m^2, km^2, ft^2, acre	Area, Line length, Side length with the following measuring units : mm, cm, m km, in, ft, acre/yd, user-defined units
Display	LCD with zero suppression	LCD 16 digits x 2 lines
Resolution	One digit corresponds to 0.1 cm^2 or 0.01 in^2	Linear: 0.05 mm
Accuracy	Better than ±0.2% (±2/1,000 pulses)	±0.1% (100 x 100 mm area measurement)
Power	Internal NiCd or AC adaptor	Internal nickel metal hydride battery or AC charger/adaptor
Operating Hours	30 hours (after 15 hours recharge)	20 hours (after 15 hours recharge)
Dimensions (Body)	150 x 240 x 39 mm	250 x 110 x 40 mm
Weight	650 grm	630 grm
Accessories	-	Storage case, AC charger/adaptor, Gauge template

Name of Mfr. : Tamaya

(to be continued)

Automatic Chart Plotters



Automatic chart plotter continuously lights up ship's precise position on ordinary charts according to longitude and latitude signals from the GPS (Global Positioning System) or other position reference systems, contributing to ship operation labor-savings as well as safe navigation.

A convenient operation panel lets you register any chart for use in the system. The panel includes display functions for longitude, latitude, heading and speed. Additional interfaces receive data from an onboard gyrocompass and speed log for a high-accuracy position indication.

Also the automatic plotter has route planning and memory card storage functions.

When ordering, please ask for brochures or consult with a sales engineer from the local distributor for further information.

Specifications

Accuracy	±0.3 mm
Diameter of Light Mark	10 mm
Liquid Crystal Display	Alphanumeric, 16 characters x 2 lines
Display Information	Longitude, Latitude, Heading and Speed
Power Consumption	300 VA

37 02 36	Automatic chart plotter AC 110 volt	Set
37	" AC 220 volt	"

Clinometers

A clinometer is required for positioning a vessel on a proper trim. It also indicates the correct heel angle and is helpful in determining the appropriate locations for cargo and equipment. A pair of clinometers, one installed on the keel axis and the other on the beam axis, will give the necessary and accurate indications for adjustment of the trim angle.

Dial Type

Tube Type

Unit Per Pc.

CODE	Type	Specification
37 02 41	Dial Type	Heavy glass front, 200 mm dial, graduated 0 - 50 on each side of the vertical plane in 5 integrals, 80 mm pointer and two maximum indicators with reset device and stop to hold movable pointer when not in use. Weight 1.5 kgs.
37 02 42	Tube Type	Single tube clinometer with a bubble type spirit filled glass tube on a 160 × 35 × 25 mm plastic graduated panel. The tube is graduated 0 - 40 on each side of vertical in 1 integrals. Weight 1.5 kgs.

Azimuth Circles

The Azimuth Circle is mounted on the repeater compass. By means of a prism and reflection mirror, sunlight is projected in the form of a line on to the compass card through a slit, thus making it possible to observe the sun. The most common types are listed below. When ordering, please specify the name of the manufacturer.

How to order : CODE

Azimuth circle, MANUFACTURER'S NAME & MODEL of repeater compass

Unit Per Pc.

CODE	Manufacturer	Model	Size mm			Graduation
			I.D	O.D	H	
37 03 21	Tokimec	-	246	260	120	Nil
22	Yokogawa-Navitek	KX-603				Graduated
23	Others	-	-			-

Marine Aneroid Barometers

Specially designed for marine use. It will withstand the vessels vibration without losing accuracy. Available in 150 mm and 200 mm dial size.

37 02 46	Barometer, aneroid, marine use 150 mm dia.	Pc.
47	" 200 mm dia.	Pc.

Hygrometers

Wet & Dry Bulb Hygrometer

Consisting of dry and wet alcohol filled glass thermometers fixed on a panel. By differential indication between these thermometers, humidity can be read from the table mounted on a panel. Range –10 to 50°C in 1° integrals. Panel size 280 × 80 mm.

37 02 51	Hygrometer, wet & dry	Pc.

Dial Thermo-Hygrometers

Wall mounted bimetallic dial thermometer with hair hygrometer. Standard dial diameter is 100 mm. Best for cabin use.

37 02 56	Dial thermo-hygrometer wall-mount 100 mm	Pc.

Sling Psychrometers (Hygrometers)

Two similar balanced thermometers mounted on brass panel with chain. A metal handle enables the instrument to be whirled. Furnished with psychrometeric table and leather case. Range –20 to 50°C in 1/2° div. Case size is 200 × 40 × 40 mm.

37 02 61	Psychrometer, sling type, complete	Set

Hair Hygrometers (Lambreht's Polymeters)

This instrument, known as a polymeter, measures temperature, humidity, vapour tension and dew point. A mercury filled glass thermometer is attached. The humidity element is a bundle of human hair. The dial which indicates selective humidity is 80 mmø. Temperature range –20 to 50°C in 1° div. and Humidity scale 0 to 100 % 0.18 kgs in weight. 263 mm in length.

37 02 66	Hair hygrometer (polymeter) with mercury thermometer	Pc.

Digital Thermo-Hygrometers

A compact, portable thermo-hygrometer that monitors atmospheric temperature and humidity by single unit.

Pen Type

Pocketable Type

Unit Per Pc.

CODE		37 02 58	37 02 59
Type		Pen Type	Pocketable Type
Measuring Range	Temp.	-10°C – 50°C	0°C – 50°C
	Humi.	5.0 – 95.0 %rh	10.0 – 95.0 %rh
Display		LCD	
Power Requirement		1 × Lithium battery CR2032	2 × LR03 type alkaline battery
Size		W167 × H33 × D15mm	W48.4 × H178.5 × D24.7mm
Weight		49 grm	100 grm

Hand Anemometers

This portable wind speed indicator can be held easily in one hand. The pointer returns to 0 after 30 seconds after which a lever at the bottom of the dial is pulled. The pointer will stop on the value indicating the mean wind velocity in a period of 30 seconds. No power supply is required for use. Velocity range is from 0 to 22 m/s. The dial is 100 mm in diameter and the instrument is 300 mm in length.

37 02 71	Anemometer, hand, with dial gauge up to 22 m/s	Pc.

Digital Anemometers

A portable digital anemometer with integrated vane or with remote vane extended by curled cord.

With Integrated Vane

With Remote Vane extended by Curled Cord

Unit Per Pc.

CODE	37 02 73	37 02 74
Type	With integrated vane	With remote vane extended by curled cord
Measuring Range	1.1 - 20.0 m/s -15 - 50.0°C	0.70 - 25.00 m/s -10.0 - 50.0°C
Power Requirement	1 × Lithium battery CR2032	1 × 9V (6F22) battery
Size	W144×H47×D26 mm	W71×H181×D38 mm
Curled Cord	-	L: 500 mm
Weight	95 grm	360 grm

Barographs

A newly designed self recording barometer. Very compact with a wide recording range. Can be installed in an indoor or outdoor instrument shelter. Provides an inked record of the station pressure for 24 hours or 7 days. Furnished with 7 days revolution recording paper for one year (55 sheets) and gear for one day drum rotation. One day recording paper is available upon request.

37 02 86	Barograph, 940-1,045 mb, with recording paper for one year	Set
87	Recording paper 7 days for barograph 55 sheets	Pad
88	Recording paper 1 day for barograph 400 sheets	"

Specifications

Sensor	14 cell, 2 in. dia. aneroid
Sensitivity	±0.2 millibar
Accuracy	±0.2% of range
Lag Time	0.1 sec.
Temperature Compensation	Bimetallic Strip
Chart Scales	940 to 1,045 millibars 705 to 785 mm/Hg
Chart Drive	8-day spring wound
Drum Rotation	1 day & 7 day by gear change
Weight	3.5 kgs
Size	325L x 155W x 240H mm

Sounding Leads

Designed for measuring sea depth. Has a hole at one end for connecting rope. Furnished without attached line.

Unit Per Pc.

CODE	Lead Weight kgs	Description
37 03 01	3.2	Hand Lead
02	12.7	Deep Sea Lead

Sounding Rods

A graduated square or round straight or jointed folding brass rod with attached ring; used for measuring the depth of liquid contained in a space. When ordering, specify the shape of the rod, the length, and the number of folds.

How to order: CODE

Sounding rod, NUMBER of FOLDING, SHAPE of ROD, LENGTH, GRADUATION

Unit Per Pc.

CODE	No.of Folding	Shape of Rod	Length	Graduation
37 03 06	Straight	Round	1 mtr	Metric
07	3	"	"	"
08	4	"	"	"
09	5	Square	"	Metric & inch
10	6	Round	3 ft	"

Nautical Sextants

A sextant is an instrument for measuring the angle between two objects by bringing into coincidence to the eye of the observer, rays of light received directly from one object and reflected from the other. Its principal use is to measure the altitudes of celestial bodies above the visible sea horizon. Available in various types. When ordering, specify telescope (magnifying & lens diameter) and whether the sextant should be with or without illumination. Furnished with a wooden or plastic case.

Unit Per Pc.

CODE	37 03 31	37 03 32	37 03 33	37 03 34
Star Telescope	4 × 40 mm	4 × 40 mm	7 × 35 mm	7 × 50 mm
	Galilean Monocle		Prismatic Monocle	
Illumination	W/O Light		With Light	
Radius	162 mm			
Graduation	–5 ~ 125 into 1 on the arc			
Weight	1.4 kgs	1.9 kgs	2.0 kgs	2.2 kgs

Binoculars

A wide variety of binoculars are available. The most popular types in the marine field are listed below. Furnished with a case.

How to order: CODE

Binocular, MAGNIFICATION, LENS DIAM mm, FEATURES

Unit Per Pr.

CODE	Magnification & Lens Diam.	Features
37 03 41	7× 35	CF
42	7× 50	CF
43	7× 50	IF
44	7× 50	IF, WP
45	7× 50	IF, WP, with Scale

Remark: CF=Center Focus, IF=Individual Focus, WP=Water Proof

All-Weather Stand Type Binoculars

An airtight, waterproof, large binocular suitable for bridge use. Can be fixed with bolts onto a deck plate or bridge counter top. Specify the required magnification and lens diameter when ordering. The most common model is: Magnification 15, Lens Diameter 80 mm.

37 03 48	Binocular, stand type, 15 x 80 IF water-proof	Pr.

Internal Gyro-stabilized Binoculars

This waterproof binocular makes the target easier to acquire and track even if it is moving at a high rate of speed, because of the prism, installed on a freely rotating gimbaled frame equipped with a high speed gyro motor. The observer will have little problem keeping the target centered in the field of view.

Simply switch the power on and wait a moment until the gyro motor reaches operating speed. Focusing is achieved by adjusting each eyepiece. Foldback rubber eye cups permit eyeglass wearers to use this gyro-stabilized binoculars and still see a full field of view. To allow for individual differences in the distance between the eyes, an interpupilary control is provided. Finally simply lift the locking lever to free the gimbaled erecting prism assembly.

It can be operated with either 4AA batteries or 1 lithium battery, and also operated on 12-32 volt DC power sources when used with the supplied DC regulator, where auxiliary power is available.

7TH
37

Figure 1.

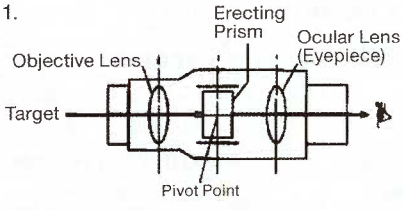
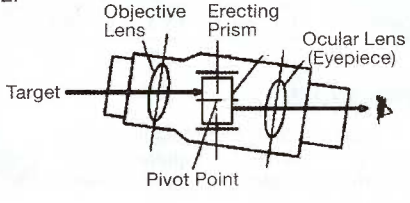


Figure 2.



Unit Per Pc.

CODE	**37 03 51**	**37 03 52**
Model	S-1240	S-1640
Magnification	12X	16X
Objective Lens (Diameter)	40 mm	40 mm
Exit Pupil	3.3 mm	2.5 mm
Eye Relief	17 mm	12 mm
Field of View - Actual	4.7°	3.4°
Field of View - Apparent	56.4°	54.4°
Field fo View - 1,000 mtr	82 mtr	60 mtr
Relative Brightness	11.1	6.25
Eyepiece Focusing Adjustment	± 5 diopters	
Interpupilary Adjustment	60 - 70 mm	
Stabilization Freedom	± 5° in any direction	
Size (L x W x H) mm	210 x 200 x 90	
Weight	1.8 kgs	
Battery	4AA alkaline or 1 2CR5 lithium battery	
External Power Source	12 - 32V (Use with supplied Deregulator)	
Name of Mfr.	Fuji Photo Optical Co., Ltd.	

(to be continued)

Digital Binoculars with HD Video Recording

Designed to combine the magnification capabilities of binoculars with the recording capabilities of a camcorder.

- 1,920x1,080 Full HD 60i/24i recording with 7MP still image capture
- 3D viewing directly through EVF, no need for 3D glasses
- 10x Seamless Zoom with AutoFocus
- Optical Steady Shot image stabilization with Active Mode

Unit Per Pc.

CODE	**37 03 53**
Protection	IPX4 (Rain), IP5X (Dust)
Memory Card	SD/SDHC/SDXC/Memory Stick
Dimension	148.5 x 72.5 x 157.5mm
Weight	765 grm

Night Vision Binoculars for Anti-piracy

An optical instrument that you can see a night view even in a moonless, cloudy night.

Bushell Night Vision

- Night vision: Generation 1
- Infrared illuminator: Built-in
- Water resistant
- Great for close-range viewing (Security). Long-range viewing (Wildlife observation)
- Magnification x objective lens: 2.5 x 42

Yukon Night Vision

- Day and night operation
- Higher resolution than Gen. 1
- Effective over 300 yards
- Brightness adjustment control
- Stealth IRTM operation with invisible, powerful dual IR illuminators
- Direct video output capability
- Magnification x objective lens: 5 x 42

Nikon Ocean Pro

- Multiple layers of anti-reflective compounds offer excellent brightness and resolution
- Fast range of focus for quick viewing
- 22.7 mm of eye relief provides comfortable viewing for eyeglass wearers.
- Maximum exit pupil ensures you catch the image, even with motion at sea
- Magnification x objective lens: 7 x 50

Unit Per Pr.

CODE	Model	Capacity Magnification×Objective Lens
37 03 55	Bushell night vision	2.5 × 42
56	Yukon night vision	5 × 42
57	Nikon oceanpro	7 × 50

Navigation Lights

All lights comply with the requirements of "Convention on the International Regulations for Preventing Collisions at Sea, 1972" of IMCO (Inter-governmental Maritime Consultative Organization). Available with a polycarbonate lens and polycarbonate case or a glass lens and a metal case. Both types meet the regulations for A-2 Class vessels.

Navigation Light Classification

Class	No. of Light	Application
A-2	Double & Single	For vessels of 50 mtr or more in length
B-1	Double & Single	For vessels of 20 mtr or more but less than 50 mtr in length
B-2	Single	For vessels of less than 20 mtr in length
B-3	Single	

Class A-2
Polycarbonate Lens & Case

Masthead Light

Side Light

White Light

Red Light

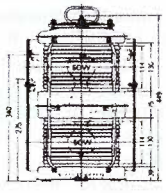
How to order: CODE

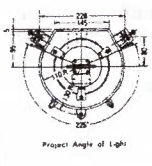
ITEM, class A-2, polycarbonate lens & case, NUMBER of LIGHTS

Unit Per Pc.

CODE	Item	No. of Light	Project Angle	Visibility (n.m)	Bulb (Watt)	Weight (kgs)
37 04 21	Masthead Light, Clear	Double	225	Over 6	60	2.1
22	Side Light, Green (Starboard)	"	112.5	Over 3	"	"
23	Side Light, Red (Port)	"	112.5	"	"	"
24	Stern Light, Clear	"	135	"	40	"
25	Towing Light	Single	135	"	"	1.2
26	White Light (Anchor Light)	"	360	"	"	1.1
27	Red Light (Not Under Command Light)	"	360	"	60	"
28	Green Light	"	360	"	"	"

Glass Lens & Metal Case





How to order : CODE

ITEM, class A-2, glass lens & metal case, NUMBER of LIGHTS

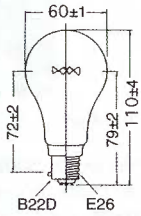
Unit Per Pc.

CODE	Item	No. of Light	Project Angle	Visibility (n.m)	Bulb (Watt)	Weight (kgs)
37 04 41	Masthead Light, Clear	Double	225	Over 6	60	6.2
42	Side Light, Green (Starboard)	"	112.5	Over 3	"	5.0
43	Side Light, Red (Port)	"	112.5	"	"	"
44	Stern Light, Clear	"	135	"	40	5.3
45	Towing Light	"	135	"	"	"
46	White Light (Anchor Light)	Single	360	"	"	3.4
47	Red Light (Not Under Command Light)	"	360	"	60	3.5
48	Green Light	"	360	"	"	"

Note: White light, red light and green light are available for suspended or fixed.

Navigation Lamps

Specially designed for use with navigation lights. Made of electrolysis glass with special constructed filament to withstand varying voltages. Can be used also with direct current. Low voltage bulbs can run on battery (emergency) power.



How to order : CODE

Lamp, navigation, VOLTAGE, TYPE of BASE, WATTAGE

Unit Per Pc.

24V		110-115V		220V	
CODE	Watts	CODE	Watts	CODE	Watts
E-26 Screw Base					
79 04 01	40	**79 04 03**	40	**79 04 05**	40
02	60	**04**	60	**06**	60
B-22 Bayonet Base					
79 04 11	40	**79 04 13**	40	**79 04 15**	40
12	60	**14**	60	**16**	60

Green Flashing Lights

Signal lights for large ships not less than 200 mtrs in length. All these lights conform to the Maritime Traffic Safety Law.

One all-round green flashing light, with 2 mile range visibility, flashes at regular intervals at a frequency of between 180 and 200 flashes per minute. Available with a glass or polycarbonate lens.

Polycarbonate Lens & Case

Glass Lens & Metal Case

How to order: CODE

Green flashing light, MATERIAL of LENS and CASE, VOLTAGE, TYPE of SOCKET

Unit Per Pc.

CODE	37 04 61	37 04 64	37 04 62	37 04 63
Lens	Polycarbonate		Glass	
Case	Polycarbonate		Brass plate	
Voltage	100/110/115V	220V	100/110/115V	220V
Socket	E-26		B-22	
Watt	60W		100W	
Weight	1.2 kgs		4.9 kgs	

Red Flashing Lights

Signal lights for cargo ships carrying dangerous cargoes (the explosive and organic peroxide cargo ships over 300 G.T., high pressure gas and ignitable liquid bulk cargo ships over 1,000 G.T.). These lights conform to the Maritime Traffic Safety Law.

One all-round red flashing light, with 2 mile range visibility, flashes at regular intervals at a frequency of between 120 and 140 flashes per minute. Available with a glass or polycarbonate lens.

Polycarbonate Lens & Case

Glass Lens & Metal Case

How to order: CODE

Red flashing light, MATERIAL of LENS and CASE, VOLTAGE, TYPE of SOCKET

Unit Per Pc.

CODE	37 04 66	37 04 69	37 04 67	37 04 68
Lens	Polycarbonate		Glass	
Case	Polycarbonate		Brass plate	
Voltage	100/110/115V	220V	100/110/115V	220V
Socket	E-26		B-22	
Watt	60W		100W	
Weight	1.2 kgs		4.9 kgs	

Spare Bulbs for Flashing Light

Clear glass bulbs suitable for both green and red flashing lights of the aforementioned types.

How to order: CODE

Spare bulb for flashing light, VOLTAGE, WATTAGE, TYPE of SOCKET

Unit Per Pc.

CODE	Voltage	Wattage	Socket
37 04 71	100V	60W	E-26
72		100W	B-22
73	115V	60W	E-26
74		100W	B-22
76	220V	60W	E-26
75		100W	B-22

Marine Searchlights

Multi-purpose search-light, suitable for many types of ocean-going vessels. Used with a halogen lamp. Made of seawater resistant aluminium with toughened front glass.

How to order: CODE

Marine searchlight, MODEL, POWER SOURCE VOLTAGE, WATTAGE, RANGE

Unit Per Set

CODE	37 04 81	37 04 82	37 04 85	37 04 86
Model	LSW 450/2000		DS 463 HGS	DS 525 HGS
Power Source	AC 110V	AC 220V	AC 220 V	
Wattage	2,000W		2,000 W	
Range	1,730 mtr	1,430 mtr	1,300 mtr	1,500 mtr
Diam. of Reflector	450 mm		360 mm	420 mm
Lamp Holder	GY-16		GY-16	
Material	Seawater resistant aluminium		Seawater resistant aluminium	
Fixing Method	Mounting bracket		Flange base (Diam: 260 mm)	
Weight	36.3 kgs		22 kgs	26 kgs
Name of Mfr.	WISKA		Pesch Seematz	

Xenon Searchlights

A compact searchlight "U-beam" mounted with a 150 W high performance xenon short-arc lamp of high luminous intensity and low energy consumption. The searchlight radiates a powerful white beam with a luminous intensity of 1,500,000 candela and colour temperature of 6,000°K, similar to sunlight.

Two beam angle types are available. Use of the remote control allows for easy, simultaneous control of the horizontal and elevational angle of the lamp head.

How to order: CODE

Xenon Searchlight, BEAM ANGLE, LUMINOUS INTENSITY cd., POWER SOURCE VOLTAGE

Unit Per Set

CODE	37 04 91	37 04 92
Beam Angle	5	10
Center Luminous Intensity cd.	1.5 millon	1 million
Lamp Model	UXR-150MA	UXR-150A/W
Depression/elevation Angle	Upward : 5 Downward : 35	
Material	Anti - corrosion aluminium	
Power Source	DC 24V, 7.8A	
Weight	9 kgs	

Suez Canal Searchlights

Complying with the "Rules of Navigation" established by The Suez Canal Authority, which states that ships which go through the canal during the night must be equipped with The Suez Canal Searchlight. The lamp must have a luminous intensity of a single light beam not less than 3×10^6 (3 million) candela, which is equivalent to a high efficiency lamp of 2,000 watts for vessels up to 30,000 S.C. tons gross and 3,000 watts for vessels over 30,000 S.C. tons gross. The searchlights must have a certificate issued by one of the Classification Societies such as N.K., Lloyd, etc. and must be equipped with a 2 lamp carrier that can be turned into position to let the lamp focus directly on the reflector. Available in a floor mounting type or ceiling mounting type. The most popular model is the floor mounting, manual operated type as listed below. This type is also available for use with incandescent lamps or halogen lamps.

Specifications

Kind of Lamp		Incandescent lamp	Halogen lamp
Lamp	Voltage	100V, 110V, 115V, 220V, 230V	
	Watt	2,000W, 3,000W	2,000W
Reflector		550 mm	640 mm
Form of Control		Manual Operation	
Elevation Angle		Up above 30 deg. down below 30 deg.	Up above 20 deg. down below 20 deg.
Horizontal Turning Angle		360 deg.	
Height from the floor to the center of lamp		650 mm	
Temperature range		–25°C to 45°C	
Material		Stainless Steel 1.4301 (V2A)	
Weight		40 kgs	

How to order: CODE

Searchlight, Suez Canal, KIND of LAMP, POWER SOURCE VOLTAGE, WATTAGE

Unit Per Pc.

Incandescent Lamp Type			Incandescent Lamp Type		
CODE	Voltage	Wattage	CODE	Voltage	Wattage
37 05 01 02	100V	2,000W 3,000W	**37 05 11**	100V	2,000W
37 05 03 04	115V	2,000W 3,000W	**37 05 12**	115V	2,000W
37 05 05 06	220V	2,000W 3,000W	**37 05 13**	220V	2,000W
37 05 07 08	230V	2,000W 3,000W	**37 05 14**	230V	2,000W

Incandescent Lamps
for Suez Canal Searchlight

Spare incandescent lamps for the incandescent lamp searchlight mentioned above. When ordering, specify the voltage and wattage of the lamp.

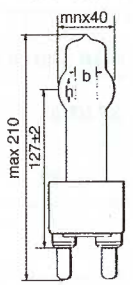
Unit Per Pc.

CODE	37 05 21	37 05 22	37 05 23	37 05 24	37 05 25	37 05 26
Type	A 100V 2,000W	A 115V 2,000W	Z 220V 2,000W	Z 100V 3,000W	Z 115V 3,000W	Z 220V 3,000W
Rated Voltage	100V	110-115V	220V	100V	110-115V	220V
Lamp Capacity	2,000 W			3,000 W		
Base	G 150					

Halogen Lamps
for Suez Canal Searchlight

Spare halogen lamps for the halogen lamp type searchlights mentioned above. When ordering, specify the voltage of the lamp.

6994Z
6994Z-CYX



Unit Per Pc.

CODE	37 05 31	37 05 32	37 05 33
Type	100V 2,000W	120V 2,000W	220V 2,000W
Rated Voltage	100V	110-120V	220V
Lamp Capacity	2,000W		
Base	G 38		

Camera Monitoring System
Compliant with ISPS Code

Carrying Case

The conference of SOLAS '74 signatory governments adopted the International Ship and Port Facility Security Code (ISPS Code) in December 2002 which entered into force on July 1, 2004. An ISPS Code – compliant camera monitoring system, as a device for monitoring access to the whole it is at berth, is intended to meet a recommendation found in part B of the ISPS Code with the following major features; (a) For temporary, rather than permanent, installation at the time of berthing. (b) Tough structured to be waterproof (IP65). (c) Less expensive because the compact camera is integrated with their housings. (d) The system requires no elaborate installation work due to a coaxial multiplex arrangement, requiring only coaxial cable to start operation. (e) Equipped with an automatic black-and-white photographic mode, which is particularly effective for night-time shooting, the system can perform continuous monitoring night and day. (f) The cameras use varifocal lenses with a wide range of horizontal shooting angles, from 24° to 93°. Standard power source is AC 100 volt, and AC 220 volt type increased by transformer is also available if required.

Unit Per Set

CODE	37 05 41
Model	ISPS-850K-S
Minimum Object Luminance	1.3 luxes
Waterproof	IP65
Power Source	AC 100 Volt
Size	760 × 410 × 510 mm (Case)
Weight	Total about 20 kgs (Camera only : 2.2 kgs)
Consists of;	2 units : Housing-integrated cameras TK-S850K-S 1 unit : Sequential switcher (4CCU) TK-U1403 1 unit : Liquid crystal monitor LC-13S4-S 1 unit : Carrying case (wooden box) 1 set : Connecting plugs

Name of Mfr.: Kyokuyo Electric Co., Ltd.

Note:
The ISPS Code consists of;
Part A (compulsory provisions) and Part B (recommendatory provisions).
The code is applicable to ;

1. Vessels of the following categories engaged or seeking to engage in international navigation:
   (1) Passenger ships including high-speed passenger craft;
   (2) Cargoships of 500 GT and upward including high-speed craft, and
   (3) Movable subsea resources drilling units
2. Port facilities to serve applicable vessels which engage in international navigation.

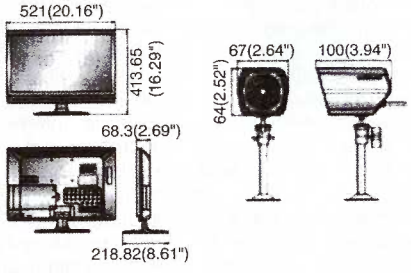
Exceptions : The code does not apply to warships, auxiliary naval vessels or vessels owned and operated by any signatory government solely for use in non-commercial activities of the government.

Camera Monitoring System

with Infrared Illuminators

Camera monitoring system provides maximum protection for any spot 24 hours a day, 7 days a week. Simple to set up, you can monitor any time from anywhere around the world. All four cameras are waterproof to IP66, compact and highly durable to achieve clear stable video, even in harsh outdoor conditions. Single cable to each camera cover all wiring needs including power so you have the freedom to place them anywhere, even if there is no electrical outlet in the area. The four night vision cameras are equipped with 30 infrared LEDs which allow them to detect and show objects as far as 50 feet, even in the darkest conditions. The built in 500 GB hard drive allows for extended recording time and is expandable to 1 TB for maximum data capacity. Please contact your local supplier about more details.

Dimensions



Main Feature:

- Smart phone ready
- 4 × infra red night vision cameras – 600TV lines of high super resolution
- H.264 high performance compression
- 8 channel digital video recorder
- Vivid 22" LCD display
- 500GB of storage USB 2.0

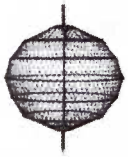
Accessories;

4 pcs.	Camera & bracket	1 pc.	Power cable
4 pcs.	60ft. extension cable	1 pc.	Remote control
1 pc.	User manual	1 pc.	Quick guide
1 pc.	VGA cable	1 pc.	Mouse
1 pc.	Network setup guide	1 pc.	Ethernet cable
2 pcs.	Battery		

37 05 43	Camera monitoring system with infrared illuminators Samsun model SME-4220	Set

Day Signals

Equipment required on board by the International Regulations for Preventing Collisions at Sea, 1972. The standard size is 610 mm (24") in diameter in a net folding type.



Black Bal

Black Cylindrical Shape

Black Conical Shape

Double Conical Shape (Black Drum Type)

Diamond Shape

37 05 81	Black ball	Net diam, 610 mm		Pc.
82	Black cylindrical shape,	"	610 "	"
83	Black conical shape,	"	610 "	"
84	Double conical shape,	"	610 "	"
85	Diamond shape,	"	610 "	"

Nautical Publications

Publications from various countries are available. The most popular publications are listed below. If your requirement is not listed, specify the name of the publication and the published year.

How to order: CODE

TITLE, PUBLISHED YEAR

British Publications

Unit Per Vol

CODE	Titles
Nautical Almanac	
37 06 01	Brown's Nautical Almanac
03	GP 100 The Astronomical Almanac
04	GP 200 Astronomical Phenomena
05	AP 1602 The UK Air Almanac
Misc . Publications	
37 06 66	Guide to Port Entry
67	International Code of Signal
69	Nories Tables
70	Notice to Mariners
72	Petroleum Measurement Tables
37 06 74	International Medical Guide for Ships
75	Merchant Shipping Medical Scale
76	Ships Captain's Medical Guide
77	Supplement for Ship Captain's Medical Guide
78	Ship's Routing and Supplements
37 06 80	Medical First Aid Guide
81	International Health Regulations
82	Vaccination Certificate Requirements and Health Advice
83	Tanker Safety Guide Chemicals
84	Mooring Equipment Guidelines 4th Edition OCIMF
37 06 85	Survival at Sea BROW091
86	The Ships Atlas 10th ed SHIP002
87	Reeds Marine Distance Tables REED016
88	Collision Regulations
89	Tank Cleaning Guide Dr. Verways TCG001
37 06 90	Stowage & Segregation Guide to the IMDG SSG001
91	Clean Seas Guide for Oil Tankers 4th/1994

American Publications

Unit Per Vol

CODE	Stock No.	Titles
NGA List of Lights		
37 07 21	PUB110	Greenland, the East Coasts of North and South America
22	PUB111	The West Coasts of North and South America
23	PUB112	Western Pacific and Indian Ocean Including the Persian Gulf & Red Sea

(to be continued)

CODE	Stock No.	Titles	Unit Per Vol
37 07 24	PUB113	The West Coasts of Europe and Africa, the Mediterranean Sea, Black Sea and Azovskoye more	
25	PUB114	British Isles, English Channel, and North Sea	
26	PUB115	Norway, Iceland and Arctic Ocean	
27	PUB116	Baltic Sea, Kattegat, Belts and Sound and Gulf of Bothnia	
NGA Sight Reduction Tables For Marine Navigation			
37 07 31	PUB229 Vol. 1	0° - 15° Latitude	
32	PUB229 Vol. 2	15° - 30° Latitude	
33	PUB229 Vol. 3	30° - 45° Latitude	
34	PUB229 Vol. 4	45° - 60° Latitude	
35	PUB229 Vol. 5	60° - 75° Latitude	
36	PUB229 Vol. 6	75° - 90° Latitude	
NGA Sight Reduction Tables for Air Navigation			
37 07 38	PUB249 Vol 1	Selected Stars	
39	PUB249 Vol. 2	Latitudes 0-40°, Declination 0-29	
40	PUB249 Vol. 3	Latitudes 39-89°, Declination 0-29	
NGA Atlas of Pilot Charts			
37 07 41	PUB105	South Atlantic Ocean	
42	PUB106	North Atlantic Ocean	
43	PUB107	South Pacific Ocean	
44	PUB108	North Pacific Ocean	
45	PUB109	Indian Ocean	
NGA Sailing			
37 07 48	PUB123 to 195	NGA Sailing Directions	
Note: As to NGA Sailing Directions, specify NGA stock number or title when ordering.			
NGA Misc. Publications			
37 07 53	PUB117	Radio Navigational Aids	
56	PUB102	International Code of Signals	
59	PUB150	World Port Index	

Note : NGA – National Geospatial-Intelligence Agency

Japanese Publications

CODE	Stok No.	Titles	Unit Per Vol
Tide Tables			
37 07 86	No. 781	Vol-1 Japan & its Vicinities	
87	No. 782	Vol-2 Pacific & Indian Ocean	
Misc. Publications			
37 07 88	No. 411	Light Lists	
89	No. 681	Nautical Almanac	

Panama Publications

CODE	Stok No.	Titles	Unit Per Vol
37 07 90	MROPC	Maritime Regulations for transiting the Panama Canal	

Egyptian Publications

CODE	Stok No.	Titles	Unit Per Vol
37 07 97	-	Suez Canal Rules of Navigation (2nd Edition, December 2015)	

ITU Publications

CODE	ITU Article No.	Titles	Unit Per Vol
37 07 91	41745	List of Ship Stations and Maritime Mobile Service Identity Assignments, CD-ROM	
93	41421	List of Coast Stations and Social Service Stations, CD-ROM	
95	40511	Manual for use by the Maritime Mobile & Maritime Mobile-Satellite Services	
96	-	Radio Regulations	

Note : ITU – International Telecommunication Union

CODE	Ref No.	Title	Unit
IMO Publications			
37 16 77	ID 100E	IBC Code	Vol
37 16 01	IF110E	SOLAS (Consolidated edition)	"
37 06 74	I 115E	International Medical Guide for Ships	"
37 16 73	IA 116E	Guide to Maritime Security and the ISPS Code	"
37 16 02	IC 117E	ISM Code (International Safety Management Code) and Revised Guidelines on Implementation of the ISM Code by Administrations	"
37 16 78	E 128E	Casualty Investigation Code	"
37 16 03	IB155E	International Code for Fire Safety Systems (F.S.S. Code)	"
37 16 75	I 171E	SOLAS Amendments	"
37 16 79	E 190E	Guidelines for Ships Operating in Polar Waters	"
37 16 80	I 191E	Polar Code	"
37 16 07	IK 200E	International Maritime Dangerous Goods Code (IMDG Code) (Two Vols)	"

(to be continued)

CODE	Ref No.	Title	Unit
37 16 11	II 210E	IMDG Code Supplement	Vol
37 16 81	I 240E	International Grain Code (1991 Edition)	"
37 16 13	IH 260E	IMSBC Code and Supplement	"
37 16 82	EA 266E	BLU Code (including BLU Manual) (2011 Edition)	"
37 16 83	IA 275E	Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 2011 (2012 Edition)	"
37 16 84	IC 284E	IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units (CTU Code) (2014 Edition)	"
37 16 85	I 288E	OSV Code (2000 Edition)	"
37 16 72	IB 292E	CSS Code – Code of Safe Practice for Cargo Stowage and Securing	"
37 16 16	I 500E	Int. Convention for the Prevention of Pollution of the Sea by Oil (OILPOL)	"
37 16 17	I 504E	Supplement Relating to the International Convention for the Prevention of Pollution of the Sea by Oil (1954)	"
37 16 19	IA 516E	Provisions Concerning the Reporting of Incidents involving Harmful Substances under MARPOL 73/78	"
37 16 20	ID 520E	MARPOL (Consolidated Edition 2017)	"
37 16 86	IA 531E	Waste Assessment Guidelines under the London Convention and Protocol (2014 Edition)	"
37 16 22	IB 532E	London Convention 1972. 2016 Edition and 1996 Protocol	"
37 16 87	I 533E	The London Protocol – What it is and how to implement it (2014 Edition)	"
37 16 88	I 538M	London Convention and Protocol: Guidance for the Development of Action Lists and Action Levels for Dredged Material (2009 Edition)	"
37 16 89	K 545E	PSSA (Particularly Sensitive Sea Areas) (2007 Edition)	"
37 16 90	I 546E	Carbon Dioxide Sequestration (2016 Edition)	"
37 16 23	I 556E	OPRC/HNS Protocol 2000	"
37 16 91	IA 557E	Manual on Oil Pollution: Section I – Prevention (2011 Edition)	"
37 16 92	I 558E	Response to a Marine Oil Pollution Incident (2016 Edition)	"
37 16 24	IA 560E	Manual on Oil Pollution Section II - Contingency Planning	"
37 16 25	IA 566E	Manual on Oil Pollution Section III - Salvage	"
37 16 26	IA 569E	Manual on Oil Pollution Section IV - Combating Oil Spills	"
37 16 27	IA 572E	Manual on Oil Pollution - Section V. Administrative Aspects of Oil Pollution Response	"
37 16 28	IA 575E	IMO/UNEP Guidelines on Oil Spill Dispersants	"
37 16 29	I 578E	Manual on Oil Pollution - Section VI. IMO Guidelines for the Sampling & Identification of Oil Spills.	"
37 16 93	I 579E	Manual on Oil Spill Risk Evaluation and Assessment of Response Preparedness (2010 Edition)	"
37 16 94	I 580E	IMO/UNEP Guidance Manual on the Assessment and Restoration of Environmental Damage Following Marine Oil Spills (2009 Edition)	"
37 16 95	I 582E	Guideline for Oil Spill Response in Fast Currents (2013 Edition)	"
37 16 96	E 584E	Bioremediation in Marine Oil Spills (2004 Edition)	"
37 16 97	IB 586E	Guidelines for the Development of Shipboard Marine Pollution Emergency Plans (2010 Edition)	"
37 16 98	E 590E	IMO/FAO Guidance on Managing Seafood Safety During and after Oil Spills (2002 Edition)	"
37 16 67	IB 597E	Comprehensive Manual on Port Reception Facilities	"
37 16 99	E 598E	Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities (2000 Edition)	"
37 17 00	IA 617E	Crude Oil Washing Systems (2000 Edition)	"
37 17 64	I 619E	Dedicated Clean Ballast Tanks (1982 Edition)	"
37 17 65	I 620M	Ballast Water Management Convention (2004 Edition)	"
37 17 66	I 621E	Ballast Water Management Convention and the Guidelines for its Implementation (2009 Edition)	"
37 16 30	IA 630E	Manual on Chemical Pollution Section I - Problem Assessment and Response Arrangements	"
37 16 31	IA 633E	Manual on Chemical Pollution Section II - Search and Recovery of Packaged Goods Lost at Sea.	"

(to be continued)

CODE	Ref No.	Title	Unit
37 16 32	IB 636E	MARPOL - How to do it	Vol
37 17 67	I 637E	Manual on Chemical Pollution: Section 3 – Legal and Administrative Aspects of HNS Incidents (2015 Edition)	"
37 16 33	IA 646E	Pollution Prevention Equipment under MARPOL	"
37 16 34	I 649E	Field Guide for Oil Spill Response in Tropical Waters	"
37 16 35	IB 650E	Procedures for Port State Control	"
37 16 36	I 653E	Guidelines for the Provisional Assessment of Liquids Transported in Bulk	"
37 16 37	IB 656E	Guidelines for the Implementation of Annex V of MARPOL	"
37 17 68	I 659E	Poster: MARPOL Annex V Discharge Provisions	"
37 16 38	I 661E	Guidelines for the Control and Management of Ships Ballast Water to minimize the Transfer of Harmful Aquatic organisms and Pathogens.	"
37 17 69	I 662E	Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (2012 Edition)	"
37 16 39	IB 664E	Annex VI of MARPOL 73/78. Regulations for the Prevention of Air Pollution from Ships.	"
37 17 70	I 665E	Bunkers Sampling Guidelines (2005 Edition)	"
37 17 71	IA 680E	International Convention on the Control of Harmful Anti-Fouling Systems (AFS) on Ships, 2001 (2005 Edition)	"
37 17 72	I 685E	IMO Guidelines on Ship Recycling (2006 Edition)	"
37 17 73	I 686E	Use of Sorbents for Spill Response – an Operational Guide (2016 Edition)	"
37 16 68	IB 701E	International Conference on Loadlines Consolidated Edition 2002	"
37 17 74	I 713E	International Conference on Tonnage Measurement of Ships, 1969 (1970 Edition)	"
37 16 69	IC 772E	BCH-Code for the Construction and Equipment	"
37 16 40	I 782E	Code for Construction & Equipment of Ships Carrying Liquified Gases in Bulk	"
37 17 75	I 817E	Code on Noise Levels on Board Ships (2014 Edition)	"
37 17 76	IA 820E	Code of Safety for Special Purpose Ships (2008 Edition)	"
37 17 77	IC 844E	2010 FTP Code (2012 Edition)	"
37 16 41	IA 847E	Graphical Symbols for Shipboard Fire Control Plans	"
37 17 78	IB 867E	Code on Alerts and Indicators, 2009 (2010 Edition)	"
37 16 43	IB 904E	Convention on the International Regulations for Preventing Collisions at Sea, 1972	"
37 17 79	IB 908E	International Safety NET Manual (2011 Edition)	"
37 17 80	I 915E	International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995 (STCW-F) (1996 Edition)	"
37 16 44	IF 927E	Ship's Routeing	"
37 16 45	IC 938E	STCW Convention and STCW Code - 2001 Consolidated	"
37 16 46	I 942M	1989 Amendments to the Convention and to the Operating Agreement on the International Maritime Satellite Organization (INMARSAT).	"
37 17 81	IB 946E	Pocket Guide for Cold Water Survival (2012 Edition)	"
37 17 82	ID 951E	NAVTEX Manual (2012 Edition)	"
37 16 49	IB 955E	SAR Convention. International Conference on Maritime Search and Rescue, 1979	"
37 16 50	II 960E	International Aeronautical and Maritime Search and Rescue Manual. (IAMSAR - Volume I)	"
37 16 51	IF 961E	International Aeronautical and Maritime Search and Rescue Manual. (IAMSAR - Volume II)	"
37 16 52	II 962E	International Aeronautical and Maritime Search and Rescue Manual. (IAMSAR - Volume III)	"
37 17 83	I 966E	IAMSAR Manual, Volume III – Action Cards (2016 Edition)	"
37 16 55	I 969E	GMDSS Operating Guidance Card	"
37 16 57	IG 970E	GMDSS Manual	"
37 16 66	IB 977.E	2002-2004 Amendment to Performance Standards	"
37 16 70	IE 978E	Performance Standards for Shipborne Radio-Communication and Navigational Equipment	"
37 16 59	IB 981E	Poster: Life-Saving Appliances Symbols	"
37 16 60	IE 982E	Life-Saving Appliances (LSA Code)	"
37 16 71	IA 987E	Standard Marine Communication Phrases	"
37 06 67	IA 994E	International Code of Signals	"

(to be continued)

CODE	Ref No.	Title	Unit
37 16 63	IMOCAT	IMO Publications Catalogue	Vol
37 17 84	TC 102E	Advanced Training for Oil Tanker Cargo Operations (Model course 1.02)	"
37 17 85	TA 103E	Advanced Training for Chemical Tanker Cargo Operations (Model course 1.03)	"
37 17 86	T 105E	Advanced Training for Liquefied Gas Tanker Cargo Operations (Model course 1.05)	"
37 17 87	TA 114E	Medical First Aid (Model course 1.14 plus compendium)	"
37 17 88	TA 127E	Operational Use of Electronic Chart Display and Information Systems (ECDIS) (Model course 1.27)	"
37 17 89	TA 203E	Advanced Training in Fire Fighting (Model course 2.03 plus compendium)	"
Sailing Directions			
37 09 21	NP001	Africa Pilot Volume I	Vol
37 09 22	NP002	Africa Pilot Volume II	"
37 09 23	NP003	Africa Pilot Volume III	"
37 09 24	NP004	South East Alaska Pilot	"
37 09 25	NP005	South America Pilot Volume I	"
37 09 26	NP006	South America Pilot Volume II	"
37 09 27	NP007	South America Pilot Volume III	"
37 09 28	NP007a	South America Pilot Volume IV	"
37 09 29	NP008	Pacific Coasts of Central America and United States Pilot	"
37 09 30	NP009	The Antarctic Pilot	"
37 09 31	NP010	Arctic Pilot Volume I	"
37 09 32	NP011	Arctic Pilot Volume II	"
37 09 33	NP012	Arctic Pilot Volume III	"
37 09 34	NP013	Australia Pilot (Replaces old edition & NP017) Vol I	"
37 09 35	NP014	Australia Pilot Vol II	"
37 09 36	NP015	Australia Pilot Vol III	"
37 09 38	NP018	Baltic Pilot Vol I	"
37 09 39	NP019	Baltic Pilot Vol II	"
37 09 40	NP020	Baltic Pilot Vol III	"
37 09 41	NP021	Bay of Bengal Pilot	"
37 09 42	NP022	Bay of Biscay Pilot	"
37 09 43	NP023	Bering Sea and Strait Pilot	"
37 09 44	NP024	Black Sea and Sea of Azov Pilot	"
37 09 45	NP025	British Columbia Pilot Vol I	"
37 09 46	NP026	British Columbia Pilot Vol II	"
37 09 47	NP027	Channel Pilot	"
37 09 48	NP028	Dover Strait Pilot	"
37 09 49	NP030	China Sea Pilot Vol I	"
37 09 50	NP031	China Sea Pilot Vol II	"
37 09 51	NP032	China Sea Pilot Vol III	"
37 09 52	NP033	Philippine Islands Pilot	"
37 09 53	NP034	Indonesia Pilot Volume II	"
37 09 54	NP035	Indonesia Pilot Volume III	"
37 09 55	NP036	Indonesia Pilot Volume I	"
37 09 56	NP037	West Coast of England and Wales Pilot	"
37 09 57	NP038	West Coast of India Pilot	"
37 09 58	NP039	South Indian Ocean Pilot	"
37 09 59	NP040	Irish Coast Pilot	"
37 09 60	NP041	Japan Pilot Volume I	"
37 09 61	NP042a	Japan Pilot Volume II	"

(to be continued)

CODE	Ref No.	Title	Unit
37 09 62	NP042b	Japan Pilot Volume III	Vol
37 09 95	NP042c	Japan Pilot Volume IV	"
37 09 63	NP043	South and East Coasts of Korea, East Coast of Siberia and Sea of Okhotsk Pilot	"
37 09 64	NP044	Malacca Strait and West Coast of Sumatera Pilot	"
37 09 65	NP045	Mediterranean Pilot Volume I	"
37 09 66	NP046	Mediterranean Pilot Volume II	"
37 09 67	NP047	Mediterranean Pilot Volume III	"
37 09 68	NP048	Mediterranean Pilot Volume IV	"
37 09 69	NP049	Mediterranean Pilot Volume V	"
37 09 70	NP050	Newfoundland and Labrador Pilot	"
37 09 71	NP051	New Zealand Pilot	"
37 09 72	NP052	North Coast of Scotland Pilot	"
37 09 73	NP054	North Sea (West) Pilot	"
37 09 74	NP055	North Sea (East) Pilot	"
37 09 75	NP056	Norway Pilot Volume I	"
37 09 76	NP057a	Norway Pilot Volume IIA	"
37 09 77	NP057b	Norway Pilot Volume IIB	"
37 09 78	NP058a	Norway Pilot Volume IIIA	"
37 09 79	NP058b	Norway Pilot Volume IIIB	"
37 09 80	NP059	Nova Scotia and Bay of Fundy Pilot	"
37 09 81	NP060	Pacific Islands Pilot Volume I	"
37 09 82	NP061	Pacific Islands Pilot Volume II	"
37 09 83	NP062	Pacific Islands Pilot Volume III	"
37 09 84	NP063	Persian Gulf Pilot	"
37 09 85	NP064	Red Sea and Gulf of Aden Pilot	"
37 09 86	NP065	St. Lawrence Pilot	"
37 09 96	NP066a	South West Coast of Scotland Pilot	"
37 09 97	NP066b	North West Coast of Scotland Pilot	"
37 09 88	NP067	West Coast of Spain and Portugal Pilot	"
37 09 89	NP068	East Coast of the United States Pilot Volume I	"
37 09 90	NP069	East Coast of the United States Pilot Volume II	"
37 09 91	NP069a	East Coast of Central America and Gulf of Mexico Pilot	"
37 09 92	NP070	West Indies Pilot (North Western Part) Volume I	"
37 09 93	NP071	West Indies Pilot Volume II	"
37 09 94	NP072	Southern Barents Sea & Beloye More Pilot	"
37 06 11	NP074	British Isles and North Coast of France Volume. A	"
37 06 12	NP075	Southern & Eastern Sides of the North Sea Volume. B	"
37 06 13	NP076	Baltic Sea including Kattegat, Belts and Sound Volume. C	"
37 06 14	NP077	Eastern Side of Atlantic Ocean, Western Indian Ocean & Arabian Sea Volume. D	"
37 06 15	NP078	Mediterranean, Black & Red Sea Volume. E	"
37 06 16	NP079	Bay of Bengal and North Pacific Ocean Volume. F	"
37 06 17	NP080	Western Side of South Atlantic Ocean & East Pacific Ocean Volume. G	"
37 06 18	NP08I	North & East Coast of Canada incl. St. Lawrence & Seaway Volume. H	"
37 06 19	NP082	Western Side of the North Atlantic Ocean Volume. J	"
37 06 20	NP083	Indian & Pacific Oceans South of the Equator Volume. K	"
37 06 21	NP084	Northern Seas: Coast of Norway north of latitude 60°55' N Volume. L	"
37 06 57	NP085	Western Side of North Pacific Ocean Volume, M	"
37 06 58	NP086	East Mediterranean and Black Seas Volume, N	"
37 06 59	NP087	North Part of South China and Eastern Archipelagic Seas Volume P	"

(to be continued)

CODE	Ref No.	Title	Unit
U.K. Publications			
37 06 68	NP100	Mariners Hand Book	Vol
37 17 44	NP120	Admiralty Manual of Tides	"
37 17 48	NP122(1)	Admiralty Tidal Handbook No.1	"
37 17 49	NP122(2)	Admiralty Tidal Handbook No.2	"
37 17 50	NP122(3)	Admiralty Tidal Handbook No.3	"
37 17 45	NP133A	Paper Chart Maintenance Record	"
37 17 51	NP133C	ENC Maintenance Record	"
37 06 71	NP136	Ocean Passages of the World	"
37 17 46	NP160	Tidal Harmonic Constants(European Waters), Edition 6 2015	"
37 17 14	NP164	Dover, Times of High Water and mean range (published annually)	"
37 06 24	NP201A	Admiralty Tide Tables – United Kingdom – English Channel to River Humber (Including Isles of Scilly, Channel Islands and European Channel Ports)	"
37 06 25	NP201B	Admiralty Tide Tables – United Kingdom and Ireland(excluding Iles of Scilly, English Channel to River Humber, Channel Islands and European Channel Ports)	"
37 06 07	NP202	Admiralty Tide Tables – North Atlantic Ocean and Arctic Regions	"
37 06 08	NP203	Admiralty Tide Tables - Indian Ocean(including Tidal Stream Tables)	"
37 06 09	NP204	Admiralty Tide Tables – South Pacific Ocean(including Tidal Stream Tables)	"
37 06 10	NP205	Admiralty Tide Tables – South China Sea and Indonesia(Including Tidal StreamTable)	"
37 06 23	NP206	Admiralty Tide Tables - North Pacific Ocean	"
37 06 49	NP207	Admiralty Tide Tables – South West Atlantic Ocean and South America	"
37 06 50	NP208	Admiralty Tide Tables – South East Atlantic Ocean, West Africa and Mediterranean (including Tidal Stream Tables)	"
37 17 16	NP209	Tidal Stream Atlas - Orkney and Shetland Islands	"
37 17 17	NP214	Co-Tidal Atlas - Persian Gulf	"
37 17 18	NP215	Co-Tidal Atlas - South East Asia	"
37 17 19	NP218	Tidal Stream Atlas - North Coast of Ireland and West Coast of Scotland	"
37 17 20	NP219	Tidal Stream Atlas - Portsmouth Harbour & Approaches	"
37 17 21	NP220	Tidal Stream Atlas - Rosyth Harbour & Approaches	"
37 17 22	NP221	Tidal Stream Atlas - Plymouth Harbour & Approaches	"
37 17 23	NP222	Tidal Stream Atlas - Firth of Clyde & Approaches	"
37 17 52	NP231	Guide to the Practical Use of ENCs used in ECDIS	"
37 17 53	NP232	Guide to ECDIS Implementation, Policy and Procedures	"
37 17 24	NP233	Tidal Stream Atlas - Dover Strait	"
37 17 25	NP234	Cumulative BA Notices to Mariners - Jun. 2011	"
37 17 26	NP247(1)	Annual Summary of Admiralty Notices to Mariners T & P Notices	"
37 17 54	NP247(2)	Annual Summary of Admiralty Notices to Mariners Updates to Sailing Directions	"
37 17 27	NP249	Tidal Stream Atlas - Thames Estuary (with Co-Tidal chart)	"
37 17 28	NP250	Tidal Stream Atlas – The English Channel	"
37 17 29	NP251	Tidal Stream Atlas - North Sea - Southern Portion	"
37 17 30	NP252	Tidal Stream Atlas - North Sea – North-Western Part	"
37 17 31	NP253	Tidal Stream Atlas - North Sea - Eastern Part	"
37 17 55	NP254	Tidal Stream Atlas – The West Country, Falmouth to Teignmouth	"
37 17 56	NP255	Tidal Stream Atlas – Falmouth to Padstow including Isles of Scilly	"
37 17 32	NP256	Tidal Stream Atlas - Irish Sea and Bristol Channel	"
37 17 33	NP257	Tidal Stream Atlas - Approaches to Portland	"
37 17 57	NP258	Tidal Stream Atlas – Bristol Channel(Ludy to Avonmouth)	"
37 17 58	NP259	Tidal Stream Atlas – Irish Sea, Eastern Part	"
37 17 59	NP263	Tidal Stream Atlas – Lyme Bay	"

(to be continued)

CODE	Ref No.	Title	Unit
37 17 34	NP264	Tidal Stream Atlas – The Channel Islands and Adjacent Coasts of France	Vol
37 17 35	NP265	Tidal Stream Atlas - France - West Coast	"
37 06 26	NP281(1)	Admiralty Lists of Radio Signals Vol. 1 Part 1 : Maritime Radio Stations: Europe, Africa & Asia	"
37 06 27	NP281(2)	Admiralty Lists of Radio Signals Vol. 1 Part 2 : Maritime Radio Stations: The Americas, Far East and Oceania	"
37 06 28	NP282	Admiralty Lists of Radio Signals Vol. 2 : Radio Aids to Navigation, Differential GPS (DGPS), Legal Time, Radio Time Signals & Electronic Position Fixing System	"
37 06 30	NP283(1)	Admiralty Lists of Radio Signals Vol. 3 Part 1 : Maritime Safety Information Services: Europe, Africa and Asia	"
37 06 31	NP283(2)	Admiralty Lists of Radio Signals Vol. 3 Part 2 : Maritime Safety Information Services: The Americas, Far East and Oceania	"
37 06 32	NP284	Admiralty List of Radio Signals Vol. 4 : Meteorological Observation Stations	"
37 06 33	NP285	Admiralty List of Radio Signals Vol. 5 : Global Maritime Distress & Safety Systems (GMDSS)	"
37 06 35	NP286(1)	Admiralty List of Radio Signals Vol. 6 Part 1 : Pilot Services, Vessel Traffic Services & Port Operations: United Kingdom & Europe	"
37 06 36	NP286(2)	Admiralty List of Radio Signals Vol. 6 Part 2 : Pilot Services, Vessel Traffic Services & Port Operations: Europe, Arctic & Baltic Coasts	"
37 06 37	NP286(3)	Admiralty List of Radio Signals Vol. 6 Part 3 : Pilot Services, Vessel Traffic Services & Port Operations: Mediterranean Sea, Black Sea, Caspian Sea & Suez Canal	"
37 06 38	NP286(4)	Admiralty List of Radio Signals Vol. 6 Part 4 : Pilot Services, Vessel Traffic Services & Port Operations: Indian sub-continent, South East Asia & Australasia	"
37 06 39	NP286(5)	Admiralty List of Radio Signals Vol. 6 Part 5 : Pilot Services, Vessel Traffic Services & Port Operations: North America, Canada & Greenland	"
37 06 46	NP286(6)	Admiralty List of Radio Signals Vol. 6 Part 6 : Pilot Services, Vessel Traffic Services & Port Operations: North East Asia & Russia	"
37 06 47	NP286(7)	Admiralty List of Radio Signals Vol. 6 Part 7 : Pilot Services, Vessel Traffic Services & Port Operations: Central & South America & the Caribbean	"
37 06 48	NP286(8)	Admiralty List of Radio Signals Vol. 6 Part 8 : Pilot Services, Vessel Traffic Services & Port Operations: Africa, Red Sea and the Persian Gulf	"
37 17 36	NP289	Admiralty Maritime Communications - United Kingdom & the Mediterranean (Comprehensive Guide for the Yachtsman)	"
37 17 37	NP290	Admiralty Maritime Communication - Caribbean (Comprehensive Guide for the Yachtsman)	"
37 17 38	NP291	Admiralty Maritime Communication - UK & Baltic (Comprehensive Guide for the Yachtsman)	"
37 17 39	NP294	How to keep Your Admiralty Products Up-to-Date	"
37 17 60	NP303(1)	Rapid Sight Reduction Tables for Navigation Vol. 1	"
37 17 61	NP303(2)	Rapid Sight Reduction Tables for Navigation Vol. 2	"
37 17 62	NP303(3)	Rapid Sight Reduction Tables for Navigation Vol. 3	"
37 06 02	NP314	The Nautical Almanac	"
37 17 47	NP321	The Star Almanac for Land Surveyors	"
37 06 73	NP323	The Star Finder & Identifier	"
37 17 40	NP337	Tidal Stream Atlas - The Solent and Adjacent Waters	"
37 06 41	NP350	Distance Tables - Atlantic Ocean	"
37 06 42	NP350(1)S	Supplement to Admiralty Distance Tables - Atlantic Ocean	"
37 06 43	NP350(2)	Admiralty Distance Tables - Indian Ocean	"
37 06 45	NP350(2)S	Supplement to Admiralty Distance Tables - Indian Ocean	"
37 06 44	NP350(3)	Admiralty Distance Tables - Pacific Ocean	"
37 06 51	NP401(1)	Sight Reduction Tables for Marine Navigation Latitudes 0 -15 degrees	"
37 06 52	NP401(2)	Sight Reduction Tables for Marine Navigation Latitudes 15 - 30 degrees	"
37 06 53	NP401(3)	Sight Reduction Tables for Marine Navigation Latitudes 30 - 45 degrees	"
37 06 54	NP401(4)	Sight Reduction Tables for Marine Navigation Latitudes 45 - 60 degrees	"
37 06 55	NP401(5)	Sight Reduction Tables for Marine Navigation Latitudes 60 - 75 degrees	"

(to be continued)

CODE	Ref No.	Title	Unit
37 06 56	NP401(6)	Sight Reduction Tables for Marine Navigation Latitudes 75 - 90 degrees	Vol
37 17 41	NP5011	Symbols and Abbreviations Used on Admiralty Paper Charts	"
37 17 63	NP5012	Guide to ENC Symbols Used in ECDIS	"
37 17 42	NP735	IALA Maritime Buoyage System	"
37 06 66	SHIP001	Guide to Port Entry	"
37 06 60	XC268	Code of Practice for Controlling Risks due to Noise on Ships	"
37 06 63	XC269	Code of Practice for Controlling Risks due to Whole-body Vibration in Ships	"
37 06 64	XC270	Code of Practice for Controlling Risks due to Hand-transmitted Vibration on Ship	"
US Publications			
37 07 01	US TC1	U.S. Tidal Current Tables - Atlantic Coast of North America	Vol
37 07 02	US TC2	U.S. Tidal Current Tables - Pacific Coast of North America	"
37 07 71	US LL1	U.S. Light Lists VOL.1 - Atlantic Coast - St. Croix, River Marine to Shrewsbury River, New Jersey	"
37 07 72	US LL2	U.S. Light Lists VOL.2 - Atlantic Coast - Shrewsbury River, New Jersey to Little River, S.Carolina	"
37 07 73	US LL3	U.S. Light Lists VOL.3 - Atlantic & Gulf Coasts - Little River, S.Carolina to Econfina River, Florida	"
37 07 74	US LL4	U.S. Light Lists VOL.4 - Gulf of Mexico - Econfina River, Florida to Rio Grande, Texas	"
37 07 75	US LL5	U.S. Light Lists VOL.5 - Mississippi River System	"
37 07 76	US LL6	U.S. Light Lists VOL.6 - Pacific Coast & Pacific Islands	"
37 07 77	US LL7	U.S. Light Lists VOL.7 - Great Lakes & The St. Lawrence River above the St. Regis River	"
37 07 21	US LL110	U.S. List of Lights - Greenland, the East Coasts of North & South America & the West Indies	"
37 07 22	US LL111	U.S. List of Lights - The West Coasts of North & South America. Australia. Tasmania. New Zealand. & the Isla	"
37 07 23	US LL112	U.S. List of Lights - Western Pacific and Indian Ocean Including the Persian Gulf & Red Sea	"
37 07 24	US LL113	U.S. List of Lights - The West Coasts of Europe and Africa, the Mediterranean Sea. Black Sea & Azovskoye More	"
37 07 25	US LL114	U.S. List of Lights - British Isles, English Channel, and North Sea	"
37 07 26	US LL115	U.S. List of Lights - Norway, Iceland and Arctic Ocean	"
37 07 27	US LL116	U.S. List of Lights - Baltic Sea with Kattegat, Belts and Sound and Gulf of Bothnia	"
37 07 06	US TT1	U.S. Tide Tables - Europe	"
37 07 07	US TT2	U.S. Tide Tables - East Coast	"
37 07 09	US TT3	U.S. Tide Tables - West Coast	"
37 07 08	US TT4	U.S. Tide Tables - Central & Western Pacific	"
37 07 11	US CP1	U.S. Coast Pilot Vol. 1- Eastport to Cape Cod	"
37 07 13	US CP3	U.S. Coast Pilot Vol. 3 -Sandy Hook to Cape Henry	"
37 07 14	US CP4	U.S. Coast Pilot Vol. 4- Atlantic Coast Cape Henry to Key West	"
37 07 15	US CP5	U.S. Coast Pilot Vol. 5 - Gulf of Mexico, Puerto Rico and Virgin Islands	"
37 07 16	US CP6	U.S. Coast Pilot Vol. 6 – Great Lakes & Their Connecting Waterways	"
37 07 17	US CP7	U.S. Coast Pilot Vol. 7- Pacific Coast: California. Oregon. Washington. Hawaii & Pacific Islands	"
37 07 18	US CP8	U.S. Coast Pilot Vol. 8 – Alaska: Dixon Entrance to Cape Spencer	"
37 07 19	US CP9	U.S. Coast Pilot Vol. 9 - Pacific & Arctic Coast Alaska : Cape Spencer to Beaufort Sea	"
37 07 03	US 5090	Radar Maneuvering Board	"
37 07 04	US 9998	9998 Chart Correction Template	"
37 07 05	US NV9	American Practical Navigator "Bowditch" (CD-ROM)	"
37 07 56	US NV102	International Code of Signals (U.S)	"
37 07 41	US NV105	Atlas of Pilot Charts – South Atlantic Ocean	"
37 07 42	US NV106	Atlas of Pilot Charts – North Atlantic Ocean(Including Gulf of Mexico)	"

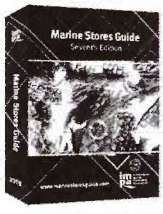
(to be continued)

CODE	Ref No.	Title	Unit
37 07 43	US NV107	Atlas of Pilot Charts – South Pacific Ocean	Vol
37 07 44	US NV108	Atlas of Pilot Charts – North Pacific Ocean	"
37 07 45	US NV109	Atlas of Pilot Charts – Indian Ocean	"
37 07 53	US RA117	Radio Navigational Aids	"
37 07 59	US NV150	World Port Index	"
37 07 57	US NV151	Distance Between Ports	"
37 07 58	US NR1	Navigation Rules and Regulations Handbook	"
37 07 48	US SD125	U.S. Sailing Directions - West Coast of South America	"
37 07 31	US SR229-1	Sight Reduction Tables Marine Navigation Vol 1 Lat.0 to 15 Inclusive	"
37 07 32	US SR229-2	Sight Reduction Tables Marine Navigation Vol 2 Lat. 15 to 30 Inclusive	"
37 07 33	US SR229-3	Sight Reduction Tables Marine Navigation Vol 3 Lat. 30 to 45 Inclusive	"
37 07 34	US SR229-4	Sight Reduction Tables Marine Navigation Vol 4 Lat. 45 to 60 Inclusive	"
37 07 35	US SR229-5	Sight Reduction Tables Marine Navigation Vol 5 Lat. 60 to 75 Inclusive	"
37 07 36	US SR229-6	Sight Reduction Tables Marine Navigation Vol 6 Lat. 75 to 90 Inclusive	"
37 07 38	US SR249-1	Sight Reduction Tables for Air Navigation Vol 1 Selected Stars	"
37 07 39	US SR249-2	Sight Reduction Tables for Air Navigation Vol 2 Lat. 0 to 40	"
37 07 40	US SR249-3	Sight Reduction Tables for Air Navigation Vol 3 Lat. 40 to 89	"
37 18 01	US CFR33-1	U.S. Code of Federal Regulations (Part 1 to 124)	"
37 18 02	US CFR33-2	U.S. Code of Federal Regulations (Part 125 to 199)	"
37 18 03	US CFR33-3	U.S. Code of Federal Regulations (Part 200 to end)	"
37 18 04	US CFR35	U.S. Code of Federal Regulations - Panama Canal Regulation	"
37 18 05	US CFR46-1	U.S. Code of Federal Regulations - 46 (Part 1 - 40)	"
37 18 06	US CFR46-2	U.S. Code of Federal Regulations - 46 (Part 41 - 69)	"
37 18 07	US CFR46-3	U.S. Code of Federal Regulations - 46 (Part 70 - 89)	"
37 18 08	US CFR46-4	U.S. Code of Federal Regulations - 46 (Part 90 - 139)	"
37 18 09	US CFR46-5	U.S. Code of Federal Regulations - 46 (Part 140 - 155)	"
37 18 10	US CFR46-6	U.S. Code of Federal Regulations - 46 (Part 156 - 165)	"
37 18 11	US CFR46-7	U.S. Code of Federal Regulations - 46 (Part 166 - 199)	"
37 18 12	US CFR46-8	U.S. Code of Federal Regulations - 46 (Part 200 - 499)	"
37 18 13	US CFR46-9	U.S. Code of Federal Regulations - 46 (Part 500 - END)	"
37 18 44	US CG515	CG-515 + Foreign Vessel Rules A Complication of Applicable CFR33 & CFR46	"
37 18 14	US CFR47-1	U.S. Code of Federal Regulations - 47 (Part 1 - 19) 1997	"
37 18 15	US CFR47-2	U.S. Code of Federal Regulations - 47 (Part 20 - 39) 1997	"
37 18 16	US CFR47-3	U.S. Code of Federal Regulations - 47 (Part 40 - 69) 1997	"
37 18 17	US CFR47-4	U.S. Code of Federal Regulations - 47 (Part 70 - 79) 1997	"
37 18 18	US CFR47-5	U.S. Code of Federal Regulations - 47 (Part 80 - END) 1997	"
37 18 19	US CFR49-1	U.S. Code of Federal Regulations - 49 (Part 1 to 99)	"
37 18 20	US CFR49-2	U.S. Code of Federal Regulations - 49 (Part 100 to 177)	"
37 18 21	US CFR49-3	U.S. Code of Federal Regulations - 49 (Part 178 to 199)	"
37 18 22	US CFR49-4A	U.S. Code of Federal Regulations - 49 (Part 200 - 299)	"
37 18 42	US CFR49-4B	U.S. Code of Federal Regulations - 49 (Part 300 - 399)	"
37 18 23	US CFR49-5A	U.S. Code of Federal Regulations - 49 (Part 400- 571)	"
37 18 43	US CFR49-5B	U.S. Code of Federal Regulations - 49 (Part 572 - 999)	"
37 18 24	US CFR49-6	U.S. Code of Federal Regulations - 49 (Part 1000 - 1199)	"
37 18 25	US CFR49-7	U.S. Code of Federal Regulations - 49 (Part 1200 - End)	"
37 18 45	US PUB NO.1	Chart No. 1 Nautical Charts Symbols & Abbreviations and Terms	"
37 18 46	US PUB 241	Garbage Record Book	"
37 18 47	US PUB 242	Ballast Water Record Book(For All U.S. and Foreign Vessel in U.S. Water)	"

(to be continued)

CODE	Ref No.	Title	Unit
37 18 48	US PUB 248	Chemical Data Guide for Bulk Shipment by Water USCG CIM 16616.6A	Vol
37 18 26	ASTM101	A.S.T.M. Petroleum Measurement Tables Vol.1, Generalized Crude Oils(Tables 5A & 6A)	"
37 18 27	ASTM102	A.S.T.M. Petroleum Measurement Tables Vol.2, Generalized Products(Tables 5B & 6B)	"
37 18 28	ASTM103	A.S.T.M. Petroleum Measurement Tables Vol.3, Individual and Special Applications (Tables 6C)	"
37 18 29	ASTM104	A.S.T.M. Petroleum Measurement Tables Vol.4, Generalized Crude Oils(Tables 23A & 24A)	"
37 18 30	ASTM105	A.S.T.M. Petroleum Measurement Tables Vol.5, Generalized Products(Tables 23B & 24B)	"
37 18 31	ASTM106	A.S.T.M. Petroleum Measurement Tables Vol.6, Individual and Special Applications (Tables 24C)	"
37 18 32	ASTM107	A.S.T.M. Petroleum Measurement Tables Vol.7, Generalized Crude Oils(Tables 53A & 54A)	"
37 18 33	ASTM108	A.S.T.M. Petroleum Measurement Tables Vol.8, Generalized Products(Tables 53B & 54B)	"
37 18 34	ASTM109	A.S.T.M. Petroleum Measurement Tables Vol.9, Individual and Special Applications (Tables 54C)	"
37 18 35	ASTM110	A.S.T.M. Petroleum Measurement Tables Vol.10, Background Development and Computer Documentation	"
37 18 36	ASTM111	A.S.T.M. Petroleum Measurement Tables Vol.11 & 12, Intraconversion between Volume & Density Measures	"
37 18 40	ASTM 1155M	Standard Test Method for Calculation of Volume and Weight of Industrial Aromatic Hydrocarbons and Cyclohexane	"
37 18 38	M.E.T.516	US Port State Control	"
37 18 39	M.E.T.515	Rules and Regulations for Foreign Vessels Operating in the Navigable Waters of the US	"

Marine Stores Guide



A reference book for international marine ships stores. This catalogue is published for ship owners, ship's officers and ship suppliers.

37 08 03	Marine stores guide	Vol.

Chart Catalogues

Many chart catalogues are available as per list below. American chart catalogues have 10 volumes. Specify volume number when ordering.

37 08 06	British admiralty chart catalogue NP-131	Vol.
07	NIMA chart catalogue No. CATP2V01U	"
08	Australian chart catalogue	"
09	Japanese chart catalogue No. 900	"
10	Canadian chart catalogue	"
11	New Zealand chart catalogue	"

Nautical Charts

Most popular charts are listed below without chart numbers.

When ordering, specify the type and number of the chart required.

	British	
37 08 16	Admiralty chart	Sht
17	Admiralty chart folio	Set
19	Loran C navigator chart	Sht
20	Omega navigator chart	"
	American	
37 08 23	NIMA (National Imagery and Mapping Agency) chart	Sht
24	NOS (National Ocean Survey) chart	"
	Japanese	
37 08 26	Japanese chart	Sht
28	Loran C navigator chart	"
	Australian	
37 08 31	Australian chart	Sht
	Canadian	
37 08 36	Canadian chart	Sht
38	Loran-C navigator chart	"
	Other Countries	
37 08 41	New Zealand chart	Sht
42	Chinese chart	"

Marine Forms

Various kinds of marine forms are published. The most popular items are listed below.

Unit Per Vol

CODE	Description	Size
	For Deck Dept.	
37 08 51	Ship's log book (0010)	B-4
52	Noon report (for deck use) (0150)	B-6
53	Oil record book (for tankers) (0210)	B-4
54	Bell book (for deck use) (0160)	-
71	Official log book (0030)	A-4
37 08 72	Deck abstract log (0040)	B-3
73	Commander's daily report (0070)	B-6
74	Quarter master's daily report (0080)	B-6
75	Bridge daily report (0090)	B-6
76	Chronometer journal (0100)	B-5

(to be continued)

37 08 77	Compass journal (0110)	B-5
78	Bridge order book (0140)	B-5
79	Radar log (0170)	A-4
80	Radar log	B-4
81	Night order book (0180)	A-4
37 08 82	Sight observation note book (0190)	A-4
83	Compass Error Log Book	-
	For Engine Dept.	
37 08 57	Chief engineer's log book (1020)	A-3
60	Noon report (for engine use) (1250)	B-6
61	Oil record book (for all ships) (1160)	B-4
62	Bell book (for engine use) (1260)	A-5
95	Dynamo & auxiliary log book (1080)	A-4
37 08 96	Dynamo engine diary (1090)	A-4
97	Chief engineer's abstract log (1100)	B-3
98	Chief engineer's log book of refrigerating machinery (1130)	B-5
99	Chief engineer's daily report (1140)	B-6
	For Radio Room	
37 08 66	Radio log book (2205)	A-4
67	Radar log book	A-4
68	GMDSS radio log (English) (2207)	A-4
69	VHF radio telephone log (2211)	B-5
70	Bridge report (2250)	B-5
86	Inventory (2550)	A-4
	Custom Forms	
37 09 01	Declaration inward / outward of vessel	A-4
02	Cargo manifest	A-3
03	Crew manifest	A-4
04	Parcel list (4830)	A-4
05	Declaration of crew's baggages	A-4
	Sanitary Forms	
37 09 06	Sanitary Log Book (2710)	A-4
	IMO Forms	
37 09 11	General declaration (IMO371.E)	A-4
12	Freight/cargo manifest	A-3
13	Ship's stores declaration (IMO373.E)	A-4
14	Crew's effects declaration (IMO374.E)	A-4
15	Crew list (IMO375.E)	A-4
16	Passenger list (IMO376.E)	A-4

Marine Forms for Panamanian Flag Vessel

The following marine forms for Panamanian flag vessel must be authenticated by the Panamanian Consulate before delivery on board.

37 08 87	Oil record book authenticated by the Panamanian Consulate	Vol.
88	Official log book authenticated by the Panamanian Consulate	"
89	Vessel crew logbook authenticated by the Panamanian Consulate	"

Parallel Rules

Made of transparent plastic in wooden case. Available in plain or with semi circular protractor.

Plain

with Protractor

Unit Per Pc.

Plain		with Protractor	
CODE	Length mm	CODE	Length mm
37 10 01	450	**37 10 03**	450
02	600	**04**	600

Nautical Triangles
(Set Squares)

"Inoue" and "Kent" types are available.

1. Inoue Type

A

B

Nautical Triangles, a position finder for the navigator, consisting of a danger-angle triangle (A) and a protractor triangle (B) made of transparent plastic, 36 cm.

2. Kent Type

Two 45° triangles provide an easy method for plotting position and course and doing other chart work. Using protractor scales, the triangle is easily aligned in any direction with a chart meridian. Direction is maintained as one triangle is slid along the other to the desired position. Durable, clear, vinylite. Long side length 30 cm.

CODE	Type	Function	Size mm	Unit
37 10 07	Inoue	Danger angle and protractor	360 mm	Pr.
08	Kent	Protractor	300 mm	Pc.

Chart Dividers

An instrument for chart work and other marine and engineering requirements. Made of brass with sharp steel points.

Unit Per Pc.

CODE	**37 10 11**	**37 10 12**	**37 10 13**
Length	150 mm	170 mm	200 mm

Chart Room Compasses

Extendible arm with a pencil lead point. The maximum circle diameter is 380 mm. 170 mm in overall length.

37 10 16	Compass, chart room, 170 mm	Pr.

Chart Weights

Designed to keep charts firmly in place on the chart table. Backed with soft cloth in order not to scratch or harm charts and other papers.

Unit Per Pc.

CODE	**37 10 21**	**37 10 22**	**37 10 23**
Weight	550 grm	930 grm	1,300 grm

Magnifying Glasses
(Round Readers)

Ordered by lens diameter. Available in lens sizes from 50 mm to 150 mm, but the most popular sizes are listed below.

Unit Per Pc.

CODE	37 10 26	37 10 27	37 10 28
Lens Diam.	75 mm	90 mm	100 mm

Chart Brushes

A feather brush with grip. Overall length 270 mm.

37 10 31	Chart brush, feather 270 mm	Pc.

Illuminated Magnifiers

The illuminated magnifier equipped with a wide apertured (130 mm) lens and 20 W circle lamp (option) to facilitate the examination of a document, inspection and assembling of precision instruments, etc. A wide range of models are available, but the most common types are listed below.

Flexible Arm Type Fixed Type

How to order : CODE

Illuminated magnifier, TYPE, VOLTAGE

Unit Per Pc.

CODE		37 10 51	37 10 52	37 10 53	37 10 54	37 10 55	37 10 56
Type		Flexible Arm Type			Fixed Type		
Voltage		100V	110V	220V	100V	110V	115V
Lens	Diam.	130 mm					
	Magnification	× 3					
	Focus Length	90 mm					
Box Size		110 × 140 × 80 mm					
Arm Overall Length		1,000 mm			-		
Height		-			330 mm		
Weight		4 kgs			3.5 kgs		
Main Usage		Intricate work and drafting.			Instrument works		

Flags

National Flag

Ensign

A ship hoists her National flag (Sometimes "Civil Ensign") at ship's stern to denote nationality and hoists a national flag of a country where ship called as a matter of courtesy at ship's foremasthead. Few countries, such as the United Kingdom, have national flags for land purpose and ensign for maritime purpose with different pattern and they hoist ensign as ship's own national flag at ship's stern. When ordering please do not confuse this matter.

Flags are made of warp-knitting polyester, if not any other material are specially required. The flag hook is normally separate order.

National Flags

How to order: CODE

Flag, NATIONALITY, SIZE

Size: 2' × 3', 3' × 4' and 3' × 5'

Unit Per Sht

CODE 2' × 3'	CODE 3' × 4'	CODE 3' ×5'	Country Name
-	37 34 01	-	Afghanistan
37 31 02	02	37 37 02	Albania
-	03	-	Alderney
37 31 04	37 12 83	37 37 04	Algeria
-	37 34 05	-	American Samoa
-	37 34 06	-	Andorra
37 31 07	37 12 84	37 37 07	Angola
-	37 34 08	-	Anguilla
37 31 09	09	37 37 09	Antigua & Barbuda
10	37 12 01	10	Argentina
-	37 34 11	-	Armenia
37 31 12	12	37 37 12	Aruba
13	37 12 02	13	Australia
-	37 34 14	-	Austria
37 31 15	15	37 37 15	Republic of Azerbaijan
37 31 16	37 34 16	37 37 16	The Bahamas
17	17	17	Bahrain
18	37 12 85	18	Bangladesh
19	37 34 19	19	Barbados
-	20	-	Belarus
37 31 21	37 12 03	37 37 21	Belgium
22	37 34 22	22	Belize
23	23	23	Benin
24	24	24	Bermuda
-	25	-	Bhutan
37 31 26	37 12 04	37 37 26	Bolivia
27	37 34 27	27	Bosnia & Herzegovina
-	28	-	Botswana
37 31 29	37 12 05	37 37 29	Brazil
-	37 34 30	-	British Antarctic Territory
-	37 34 31	-	British Indian Ocean Territory
37 31 32	37 12 86	37 37 32	Brunei
33	06	33	Bulgaria
-	37 34 34	-	Burkina Faso
-	35	-	Burundi
37 31 36	37 34 36	37 37 36	Cambodia
-	37	37	Cameroon
37 31 38	37 12 08	-	Canada
40	37 34 40	-	Cape Verde
41	41	-	Cayman Islands
-	37 34 42	-	Central African Republic
-	43	-	Republic of Chad
37 31 44	37 12 09	37 37 44	Chile
45	10	45	China (People's Republic of China)
-	37 34 46	-	Christmas Island
37 31 47	37 12 11	37 37 47	Colombia
-	37 34 48	-	Comoros
37 31 49	37 12 87	37 37 49	Congo, Democratic Republic
50	88	-	Congo, Republic
-	37 34 51	-	Cook Islands
37 31 52	37 12 12	37 37 52	Costa Rica
53	95	53	Cote D'Ivoire
54	37 34 54	54	Croatia
55	37 12 13	55	Cuba
57	14	57	Cyprus
37 31 58	37 34 58	37 37 58	The Czech Republic
59	37 12 16	59	Denmark
60	89	60	Djibouti
61	37 34 61	61	Dominica (Commonwealth of)
62	62	62	Dominican Republic
37 31 64	37 12 17	37 37 64	Ecuador
65	18	65	Egypt
66	19	66	El Salvador
67	90	67	Equatorial Guinea
68	91	68	Eritrea

(to be continued)

Unit Per Sht

CODE 2' x 3'	CODE 3' x 4'	CODE 3' x5'	Country Name
37 31 69	37 34 69	37 37 69	Estonia
37 31 70	37 34 70	37 37 70	Ethiopia
37 31 71	37 34 71	-	Falkland Islands
-	37 34 72	-	Faroe Islands
37 31 73	37 34 73	37 37 73	Fiji
37 31 74	37 12 20	37 37 74	Finland
75	21	75	France
-	37 34 76	-	French Polynesia
-	77	-	French Southern & Antarctic Land
78	37 12 92	37 37 78	Gabon
37 31 79	37 34 79	37 37 79	Republic of The Gambia
80	80	80	Georgia
81	37 12 23	81	Germany, (Federal Republic of)
82	37 34 82	82	Ghana
83	37 12 93	83	Gibraltar
37 31 84	37 12 24	37 37 84	Greece
-	37 34 85	-	Greenland
37 31 86	86	37 37 86	Grenada
-	87	-	Guam
37 31 88	37 12 25	37 37 88	Guatemala
-	37 34 89	-	Guernsey
37 31 90	90	37 37 90	Republic of Guinea
91	91	91	Republic of Guinea-Bissau
92	92	-	Guyana
93	37 12 26	37 37 93	Haiti
37 31 94	37 12 27	37 37 94	Honduras
95	94	95	Hong Kong
-	37 34 96	-	Hungary
37 31 97	37 12 28	37 37 97	Iceland
98	29	98	India
37 31 99	37 12 30	37 37 99	Indonesia
37 32 00	31	37 38 00	Iran
01	32	01	Iraq
02	33	02	Ireland
03	37 35 03	-	Isle of Man
37 32 04	37 12 34	37 38 04	Israel
05	35	05	Italy
06	36	06	Jamaica
07	37	07	Japan
-	37 35 08	-	Jersey
37 32 09	37 12 96	37 38 09	Jordan
10	37 35 10	10	Kazakhstan
11	11	11	Kenya
12	12	-	Kiribati
13	37 12 38	37 38 13	Korea, North (Democratic People's Republic of Korea)
37 32 14	37 12 39	37 38 14	Korea, South (Republic of Korea)
15	40	15	Kuwait
-	37 35 16	-	Kyrgyzstan
37 32 17	17	37 38 17	Laos
18	18	18	Latvia
37 32 19	37 12 41	37 38 19	Republic of Lebanon
-	37 35 20	-	Lesotho
37 32 21	37 12 42	37 38 21	Liberia
22	43	22	Libya
-	37 35 23	-	Liechtenstein
37 32 24	37 35 24	37 38 24	Lithuania
-	25	-	Luxembourg
37 32 26	26	-	Macao
-	27	-	Macedonia
37 32 28	28	37 38 28	Madagascar
-	37 35 29	-	Malawi
37 32 30	37 12 44	37 38 30	Malaysia
31	37 35 31	31	Republic of Maldives
-	32	-	Mali
37 32 33	33	37 38 33	Malta

(to be continued)

37 32 34	37 35 34	37 38 34	Marshall Islands
35	35	35	Mauritania
36	36	36	Mauritius
37	37 12 45	37	Mexico
38	37 35 38	38	Micronesia
-	37 35 39	-	Midway Island (Atoll)
-	40	-	Moldova
37 32 41	41	37 38 41	Monaco
-	42	-	Mongolia
37 32 43	43	37 38 43	Montenegro
-	37 35 44	-	Montserrat
37 32 45	37 12 46	37 38 45	Morocco
46	47	46	Mozambique
47	37 35 47	47	Myanmar
48	37 12 97	48	Namibia
37 32 49	37 35 49	37 38 49	Nauru
-	50	-	Nepal
37 32 51	37 12 48	51	TheNetherlands
53	37 35 53	53	New Caledonia
54	37 12 49	54	New Zealand
37 32 55	37 12 50	37 38 55	Nicaragua
-	37 35 56	-	Niger
37 32 57	37 12 51	37 38 57	Nigeria
-	37 35 58	-	Niue
-	59	-	Norfolk Islands
-	37 35 60	-	Northern Cyprus
-	61	-	Northern Ireland
-	62	-	Northern Marianas
37 32 63	37 12 52	37 38 63	Norway
64	98	64	Oman
37 32 65	37 12 53	37 38 65	Pakistan
-	37 35 66	-	Palau
-	67	-	Palestine
68	37 12 54	37 38 68	Panama
69	37 35 69	69	Papua New Guinea
37 32 70	37 12 55	37 38 70	Paraguay
71	56	71	Peru
72	57	72	Philippines
-	37 35 73	-	Pitcairn Islands
37 32 75	37 12 58	37 38 75	Poland
37 32 76	37 12 59	37 38 76	Portugal
77	60	77	Puerto Rico
78	99	78	Qatar
79	61	79	Romania
80	37 35 80	80	Russian Federation
-	37 35 81	-	Rwanda
37 32 82	82	37 38 82	Saint Christopher and Nevis
83	83	83	Saint Lucia
-	84	-	St. Helena & Dependencies
-	85	-	St. Pierre & Miquelon
37 32 86	37 15 91	37 38 86	Saint Vincent and the Grenadines
87	37 35 87	87	Samoa
-	88	-	San Marino
37 32 89	89	37 38 89	Sao Tome & Principe
-	90	-	Sark
37 32 91	37 12 62	37 38 91	Saudi Arabia
92	37 15 92	92	Senegal
-	37 35 93	-	Republic of Serbia
37 32 94	94	37 38 94	Seychelles
95	95	95	Sierra Leone
37 32 96	37 12 63	37 38 96	Singapore
97	37 35 97	97	Slovak Republic
98	98	98	Slovenia
99	99	99	Solomon Islands
37 33 00	37 12 64	37 39 00	Somalia
-	37 36 01	-	Somaliland
37 33 02	37 12 65	37 39 02	South Africa
-	37 36 03	-	South Georgia & South Sandwich Islands
37 33 04	37 12 66	37 39 04	Spain
05	37 15 93	05	Sri Lanka

(to be continued)

INTERNATIONAL MARINE PURCHASING ASSOCIATION

Unit Per Sht

CODE 2' x 3'	CODE 3' x 4'	CODE 3' x5'	Country Name
37 33 06	37 15 94	37 39 06	The Sudan
07	37 36 07	07	Suriname
-	08	-	Swaziland
09	37 12 67	37 39 09	Sweden
10	68	10	Switzerland
37 33 11	37 12 69	37 39 11	Syria
12	70	12	Taiwan (Republic of China)
-	37 36 13	-	Tajikistan
37 33 14	14	37 39 14	Tanzania
15	37 12 71	15	Thailand
-	37 36 16	-	Timor-Leste
37 33 17	17	37 39 17	Togo
18	18	18	Tonga
19	19	19	Trinidad & Tobago
-	20	-	Tristan Da Cunha
37 33 21	37 12 72	37 39 21	Tunisia
22	73	22	Turkey
-	37 36 23	-	Turkmenistan
-	24	-	Turks & Caicos Islands
37 33 25	25	37 39 25	Tuvalu
-	37 36 26	-	Uganda
37 33 27	27	37 39 27	Ukraine
28	37 12 75	28	United Arab Emirates
29	74	29	U. K. (United Kingdom of Great Britain and Northern Ireland)
30	78	30	U. S. A. (United State of America)
37 33 31	37 12 76	37 39 31	Uruguay
-	37 36 32	-	Uzbekistan
37 33 33	33	37 39 33	Vanuatu
-	34	-	Vatican City
37 33 35	37 12 79	37 39 35	Venezuela
37 33 36	37 12 80	37 39 36	Vietnam
37	37 36 37	37	Virgin Islands (British)
38	38	38	Virgin Islands (U.S.A.)
-	39	-	Wake Island
-	40	-	Wales
-	37 36 41	-	Wallis & Futuna
-	42	-	Sahrawi Arab Democratic Republic
37 33 43	37 15 95	37 39 43	Yemen
-	37 36 44	-	Zambia
-	45		Zimbabwe

7TH
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Size: 4' x 6' and 6' x 8'

Unit Per Sht

CODE 4' x 6'	CODE 6' x 8'	Country Name
37 40 01	-	Afghanistan
37 11 87	37 43 02	Albania
37 40 03	-	Alderney
37 11 01	37 43 04	Algeria
37 40 05	-	American Samoa
37 40 06	-	Andorra
37 11 02	37 43 07	Angola
37 40 08	-	Anguilla
37 11 03	37 43 09	Antigua & Barbuda
37 13 01	37 14 01	Argentina
37 40 11	-	Armenia
37 11 73	37 43 12	Aruba
37 13 02	37 14 02	Australia
37 40 14	-	Austria
37 11 04	37 43 15	Republic of Azerbaijan
37 11 05	37 43 16	The Bahamas
06	17	Bahrain
07	18	Bangladesh
74	19	Barbados
37 40 20	-	Belarus
37 13 03	37 14 03	Belgium
37 11 08	37 43 22	Belize
51	23	Benin
52	24	Bermuda
37 40 25	-	Bhutan
37 13 04	37 14 04	Bolivia
37 11 09	37 43 27	Bosnia & Herzegovina
37 40 28	-	Botswana
37 13 05	37 14 05	Brazil
37 40 30	-	British Antarctic Territory
37 40 31	-	British Indian Ocean Territory
37 11 10	37 43 32	Brunei
37 13 06	37 14 06	Bulgaria
37 40 34	-	Burkina Faso
35	-	Burundi
37 11 11	37 43 36	Cambodia
53	-	Cameroon
37 13 08	37 14 08	Canada
37 40 39	-	Canary Island
40	-	Cape Verde
37 40 41	-	Cayman Islands
42	-	Central African Republic
43	-	Republic of Chad
37 13 09	37 14 09	Chile
10	10	China (People's Republic of)
37 40 46	-	Christmas Island
37 13 11	37 14 11	Colombia
37 40 48	-	Comoros
37 11 88	37 43 49	Congo, Democratic Republic
89	50	Congo, Republic
37 40 51	-	Cook Islands
37 13 12	37 14 12	Costa Rica
37 11 55	37 43 53	Cote D'Ivoire
12	54	Croatia
37 13 13	37 14 13	Cuba
37 40 56	-	Curacao
37 13 14	37 14 14	Cyprus
37 11 13	37 43 58	The Czech Republic
37 13 16	37 14 16	Denmark
37 11 56	37 43 60	Djibouti
37 11 14	37 43 61	Dominica (Commonwealth of)
15	62	Dominican Republic
37 40 63	-	Dubai
37 13 17	37 14 17	Ecuador
18	18	Egypt
37 13 19	37 14 19	El Salvador
37 11 75	37 43 67	Equatorial Guinea
57	68	Eritrea
16	69	Estonia
58	70	Ethiopia
37 40 71	37 43 71	Falkland Islands
72	-	The Faroes
37 11 17	37 43 73	Fiji
37 13 20	37 14 20	Finland
21	21	France
37 40 76	-	French Polynesia
77	-	French Southern & Antarctic Lands
37 11 59	37 43 78	Gabon
90	79	Republic of The Gambia
18	80	Georgia
37 13 23	37 14 23	Germany, (Federal Republic of)
37 11 60	37 43 82	Ghana
76	37 14 83	Gibraltar
37 13 24	24	Greece
37 40 85	-	Greenland
37 11 19	37 43 86	Grenada
37 40 87	-	Guam
37 13 25	37 14 25	Guatemala
37 40 89	-	Guernsey
37 11 21	37 43 90	Republic of Guinea

(to be continued)

(to be continued)

Unit Per Sht

CODE 4' x 6'	CODE 6' x 8'	Country Name
37 11 20	37 43 91	Republic of Guinea-Bissau
37 40 92	-	Guyana
37 13 26	37 14 26	Haiti
27	27	Honduras
37 11 91	37 43 95	Hong Kong
37 40 96	-	Hungary
37 13 28	37 14 28	Iceland
29	29	India
30	30	Indonesia
31	31	Iran
37 13 32	37 14 32	Iraq
33	33	Ireland
37 41 03	-	Isle of Man
37 13 34	37 14 34	Israel
35	35	Italy
37 13 36	37 14 36	Jamaica
37	37	Japan
37 41 08	-	Jersey
37 11 23	37 44 09	Jordan
24	10	Kazakhstan
37 11 25	37 44 11	Kenya
61	12	Kiribati
37 13 38	37 14 38	Korea, North (Democratic People's Republic of Korea)
39	39	Korea, South (Republic of Korea)
40	40	Kuwait
37 41 16	-	Kyrgyzstan
37 11 26	37 44 17	Laos
27	18	Latvia
37 13 41	37 14 41	Republic of Lebanon
37 41 20	-	Lesotho
37 13 42	37 14 42	Liberia
43	43	Libya
37 41 23	-	Liechtenstein
37 11 28	37 44 24	Lithuania
37 41 25	-	Luxembourg
37 41 26	37 44 26	Macao
27	-	Macedonia
37 11 29	37 44 28	Madagascar
37 41 29	-	Malawi
37 13 44	37 14 44	Malaysia
37 11 30	37 44 31	Republic of Maldives
37 41 32	-	Mali
37 11 31	37 44 33	Malta
78	34	Marshall Islands
62	35	Mauritania
37 11 63	37 44 36	Mauritius
37 13 45	37 14 45	Mexico
37 11 32	37 44 38	Micronesia
37 41 39	-	Midway Island (Atoll)
40	-	Moldova
37 11 92	37 44 41	Monaco
37 41 42	-	Mongolia
37 11 93	37 44 43	Montenegro
37 41 44	-	Montserrat
37 13 46	37 14 46	Morocco
37 13 47	37 14 47	Mozambique
37 11 33	37 44 47	Myanmar
34	48	Namibia
64	49	Nauru
37 41 50	-	Nepal
37 13 48	37 14 48	TheNetherlands
37 11 81	37 44 53	New Caledonia
37 13 49	37 14 49	New Zealand
50	50	Nicaragua
37 41 56	-	Niger

(to be continued)

37 13 51	37 14 51	Nigeria
37 41 58	-	Niue
59	-	Norfolk Islands
60	-	Northern Cyprus
61	-	Northern Ireland
37 41 62	-	Northern Marianas
37 13 52	37 14 52	Norway
37 11 35	37 44 64	Oman
37 13 53	37 14 53	Pakistan
37 41 66	-	Palau
37 41 67	-	Palestine
37 13 54	37 14 54	Panama
37 11 36	37 44 69	Papua New Guinea
37 13 55	37 14 55	Paraguay
56	56	Peru
37 13 57	37 14 57	Philippines
37 41 73	-	Pitcairn Islands
37 41 74	-	Pohnpei
37 13 58	37 14 58	Poland
59	59	Portugal
37 13 60	37 14 60	Puerto Rico
37 11 65	37 44 78	Qatar
37 13 61	37 14 61	Romania
37 11 37	37 44 80	Russian Federation
37 41 81	-	Rwanda
37 11 82	37 44 82	Saint Christopher and Nevis
83	83	Saint Lucia
37 41 84	-	St. Helena & Dependencies
85	-	St. Pierre & Miquelon
37 11 43	37 44 86	Saint Vincent and Grenadines
37 11 94	87	Samoa
37 41 88	-	San Marino
37 11 95	37 44 89	Sao Tome & Principe
37 41 90	-	Sark
37 13 62	37 14 62	Saudi Arabia
37 11 66	37 44 92	Senegal
37 41 93	-	Republic of Serbia
37 11 38	37 44 94	Seychelles
67	95	Sierra Leone
37 13 63	37 14 63	Singapore
37 11 39	37 44 97	Slovak Republic
40	98	Slovenia
68	99	Solomon Islands
37 13 64	37 14 64	Somalia
37 42 01	-	Somaliland
37 13 65	37 14 65	South Africa
37 42 03	-	South Georgia & South Sandwich Islands
37 13 66	37 14 66	Spain
37 11 42	37 45 05	Sri Lanka
44	06	The Sudan
37 11 41	37 45 07	Suriname
37 42 08	-	Swaziland
37 13 67	37 14 67	Sweden
68	68	Switzerland
69	69	Syria
37 13 70	37 14 70	Taiwan (Republic of China)
37 42 13	-	Tajikistan
37 11 69	37 45 14	Tanzania
37 13 71	37 14 71	Thailand
37 42 16	-	Timor-Leste
37 11 70	37 45 17	Togo
71	18	Tonga
45	19	Trinidad & Tobago
37 42 20	-	Tristan Da Cunha
37 13 72	37 14 72	Tunisia
37 13 73	73	Turkey
37 42 23	-	Turkmenistan
24	-	Turks & Caicos Islands
37 11 72	37 45 25	Tuvalu
37 42 26	-	Uganda

(to be continued)

Unit Per Sht

CODE 4' × 6'	CODE 6' × 8'	Country Name
37 11 46	37 45 27	Ukraine
37 13 75	37 14 75	United Arab Emirates
74	74	U. K. (United Kingdom of Great Britain and Northern Ireland)
37 13 78	78	U. S. A. (United State of America)
76	76	Uruguay
37 42 32	-	Uzbekistan
37 11 47	37 45 33	Vanuatu
37 42 34	-	Vatican City
37 13 79	37 14 79	Venezuela
80	80	Vietnam
37 11 84	37 45 37	Virgin Islands (British)
85	38	Virgin Islands (U.S.A.)
37 42 39	-	Wake Island
40	-	Wales
37 42 41	-	Wallis & Futuna
42	-	Sahrawi Arab Democratic Republic
37 11 48	37 45 43	Yemen
37 42 44	-	Zambia
45	-	Zimbabwe

Ensigns (Civil Ensigns)

How to order : CODE

Flag, ensign, COUNTRY NAME, SIZE

Unit Per Sht

Country Name	Albania	Australia	The Bahamas	Bangladesh
2' × 3'	37 19 51	37 19 03	-	-
3' × 4'	-	04	37 19 06	37 19 09
3' × 5'	-	-	07	-
4' × 6'	37 19 52	37 19 05	08	-

Country Name	British Virgin Islands	Cayman Islands	Colombia	El Salvador
2' × 3'	37 19 53	-	-	-
3' × 4'	-	-	37 19 13	-
3' × 5'	37 19 54	37 19 10	-	-
4' × 6'	55	11	37 19 14	37 19 15
6' × 8'	-	12	-	-

Country Name	Falkland Island	Fiji	Ghana	Gibraltar
2' × 3'	37 19 56	37 19 59	-	-
3' × 4'	-	-	37 19 16	-
3' × 5'	37 19 57	37 19 60	-	-
4' × 6'	58	61	-	37 19 17
6' × 8'	-	-	-	-

Country Name	Guatemala	India	Isle of Man	Israel
2' × 3'	37 19 18	37 19 20	37 19 62	-
3' × 4'	-	21	-	37 19 23
3' × 5'	-	-	37 19 63	-
4' × 6'	37 19 19	37 19 22	64	-

(to be continued)

Country Name	Italy	Luxembourg	Malaysia	Malta
2' × 3'	-	-	37 19 29	-
3' × 4'	37 19 24	37 19 27	30	37 19 32
4' × 6'	25	28	31	33
6' × 8'	26	-	-	34

Country Name	Mauritius	New Zealand	Pakistan	Peru
3' × 4'	37 19 35	37 19 36	37 19 38	-
4' × 6'	-	37	-	37 19 39

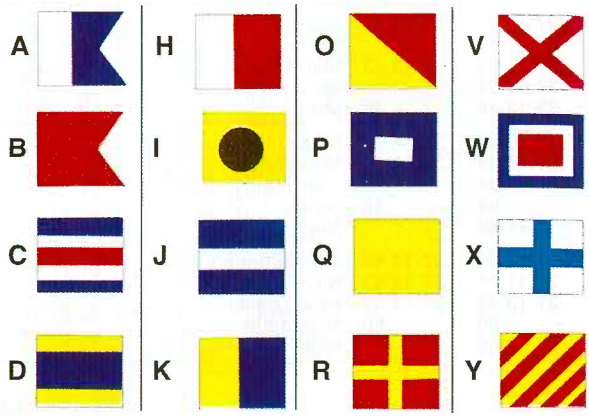
Country Name	Singapore	Solomon Island	Turks & Caicos Islands	United Kingdom
1' × 1.5'	37 19 40	-	-	-
1.5' × 3'	41	-	-	-
2' × 3'	-	37 19 65	-	37 19 46
2' × 4'	37 19 42	-	-	-
3' × 4'	-	-	37 19 45	37 19 47
3' × 5'	-	37 19 66	-	48
3' × 6'	37 19 43	-	-	-
4' × 6'	-	37 19 67	-	37 19 49
4' × 8'	37 19 44	-	-	-
6' × 8'	-	-	-	37 19 50

International Code of Signals

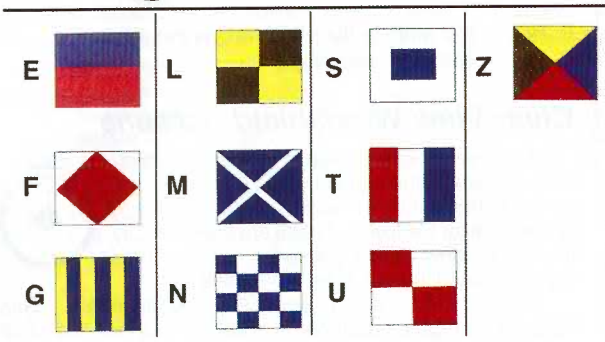
Made of Exlan bunting (synthetic fibre sometimes called Creslan, which has the appearance of wool).

Can be ordered individually or as complete sets. Sets include the following : 26 alphabet flags, 11 pennants (10 numeral and 1 answering) and 3 substitutes.

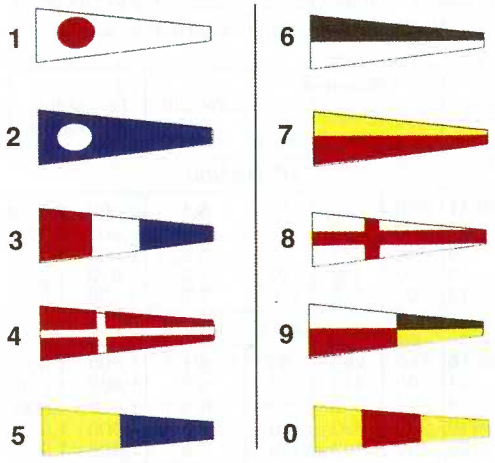
Alphabetical Flags



(to be continued)

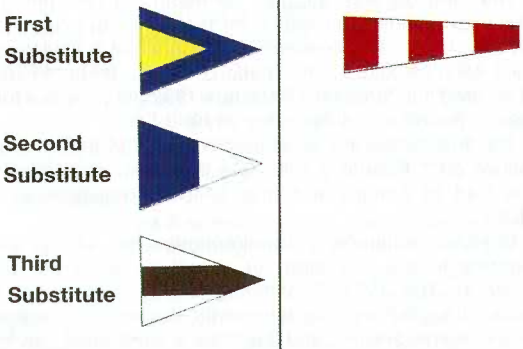


Numeral Pennants



Substitute

Code and Answering Pennant



37 15 01	Flag, signal full set, 40's A to Z, 0 to 9, 3 substitutes & 1 answering	Set
02	Flag, signal alphabetical, A to Z 26's	"
03	Flag, signal numeral, 0 to 9 10's	"
04	Flag, signal numeral, 1 to 3 3's	"

Flags (Alphabet) 4' x 6'

Unit Per Pc.

CODE	Alphabet	CODE	Alphabet	CODE	Alphabet
37 15 11	A	37 15 20	J	37 15 29	S
12	B	21	K	30	T
13	C	22	L	31	U
14	D	23	M	32	V
15	E	24	N	33	W
16	F	25	O	34	X
17	G	26	P	35	Y
18	H	27	Q	36	Z
19	I	28	R		

Pennant (Numeral & Answering) 2-2/3' x 9'

Unit Per Pc.

CODE	Item	CODE	Item	CODE	Item
37 15 41	1	37 15 45	5	37 15 49	9
42	2	46	6	50	0
43	3	47	7	51	Answering
44	4	48	8		

Substitutes 2-2/3' x 5-1/3'

Unit Per Pc.

CODE	Item	CODE	Item	CODE	Item
37 15 56	First	37 15 57	Second	37 15 58	Third

Table Flags & Stands

Flag is generally made of silk with two strings for tightening it to the stand pole. Owner's flags, etc. are available by special order. Standard size is 12 x 18 cm. When ordering, specify the flag's nationality or design. The stand for the table flag is sold separately.

37 15 65	Flag, table 12 x 18 cm	Pc.
66	Stand for table flag 400 mm	"

Repairing Bunting

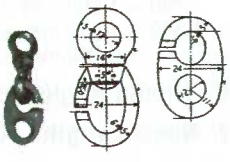
Synthetic fibre textile used for repairing flags. Available in 6 colours of black, red, yellow, white, green and blue. The standard width is 1,260 mm (4') in random lengths.

Unit Per Mtr

CODE	Colour	CODE	Colour
37 15 71	White	37 15 74	Green
72	Red	75	Yellow
73	Blue	76	Black

Flag Hooks

Made of cast brass or brass plated zinc die cast. The upper hook has a swivel and eye. The lower has an eye only with no swivel, sold individually or in sets.



37 15 81	Flag hook, complete upper/lower	Set
82	Flag hook, upper side	Pc.
83	Flag hook, lower side	"

Flag Blocks

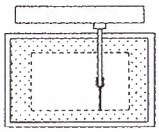
Cast brass flag line blocks covered by a semi-circle guard with an eye on top.

37 15 86	Flag block, brass, 32 mm	Pc.
87	Flag block, brass, 38 mm	"
88	Flag block, brass, 50 mm	"

Marine Electric Window Wipers

A wide variety of wipers are available in parallel and fan types. The models below are provided merely as a reference for ordering the correct wipers. For further details, ask your supplier for a product catalogue or provide a sample of the wipers you are currently using.

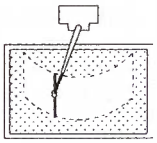
1. Parallel Type



1. Motor mounted : Inside, or outside
2. Wiping speed : Fixed, or variable
3. Heater : With heater, or without heater

1) Stroke speed is adjustable according to conditions.
2) Arm blade stops at a certain position.

2. Fan Type



1. Motor mounted : Inside, or outside
2. Wiping speed : Fixed, or variable
3. Heater : With heater, or without heater

1) Constant : Blade speed is constant
2) Variable : Blade speed is variable (Speed adjustable depending on the conditions of use)

Remarks:
Inside cabin type ... Motor is mounted inside the cabin.
Outside cabin type ... Motor is mounted outside the cabin.
With heater ... A heater is incorporated to prevent freezing.

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3. Power Source

AC 100, 110, 115 V – Single Phase
AC 200, 220, 240 V – Single Phase

4. Motors

Parallel Type
Output 40W (Stroke Length 650 mm max.)
60W (" 1,200 mm max.)
100W (" 1,800 mm max.)
120W (" 2,600 mm max.)

Fan Type
Output 40W

5. Stroke Length - Parallel Type

400 - 650 mm (Single Blade)
700 - 1,200 mm (")
1,300 - 1,800 mm (")
2,600 mm (Twin Blade)

6. Wiping Angle - Fan Type: 30° – 110°

7. Blade Length: 600 mm

How to order: 37 - 20 - 01

Marine window wiper, electric (with the following information)

1. *Type of wiping mode (Parallel or Fan)*
2. *Power source*
3. *Wiping stroke speed (Fixed or Variable)*
4. *Wiper stroke length*
5. *Heater (With or Without)*
6. *Installing position of the motor (Inside or Outside)*
7. *Mounting position of the main frame (Upper and Lower positions of the window)*
8. *Height and width of the clear parts of the window*
9. *Length of the arm and blade*

Clear View Windshield Screens

A range of well proven and superior clear view screens of the highest quality. Unlike other similar screens it is not necessary to cut a large center hole for the fixing. These are fitted directly into the window glass by a series of fixing bolts for which a drilling template is provided.

Made of high quality, corrosion free materials. Gas tight and non-gas tight models available. Unless specified when ordering, the non-gas tight type will be supplied as standard. Suitable for glass thickness from 6 mm – 19 mm. Also specify power source voltage when ordering.

How to order: CODE

Clear view windshield screen, CLEAR VIEW DIAM mm, DEPTH INSIDE mm, POWER SOURCE VOLTAGE

Unit Per Set

CODE	Size mm			Weight kgs	Revolution per Minute	Cans Watt
	Clear View	Overall Diam.	Depth Inside			
AC 110 Volt						
37 20 11	250	293	60	5.1	1,600 - 1,900	60
12	300	343	60	5.5	1,600 - 1,900	60
13	350	393	60	6.5	1,600 - 1,900	60
14	350	393	110	7.0	1,600 - 1,900	120
15	400	443	110	7.5	1,600 - 1,900	120
AC 220 Volt						
37 20 16	250	293	60	5.1	1,600 - 1,900	60
17	300	343	60	5.5	1,600 - 1,900	60
18	350	393	60	6.5	1,600 - 1,900	60
19	350	393	110	7.0	1,600 - 1,900	120
20	400	443	110	7.5	1,600 - 1,900	120

About GMDSS

All cargo ships of 300 gross registered tonnes and upwards and all passenger ships engaged on international voyages must be equipped with radio equipment that conforms to international standards as set out in the system.

The GMDSS was adopted by means of amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974. The amendments, contained in Chapter IV of SOLAS on Radiocommunications, were adopted in 1988 and entered into force on 1 February 1992 but provided for a phase-in period until 1 February 1999.

The final, global implementation of GMDSS became fully effective on 1 February 1999. On that date, all applicable ships had to comply with the GMDSS requirements in SOLAS.

Specific equipment requirements for ships vary according to the sea area (or areas) in which the ship operators. The GMDSS combines various subsystems - all of which have different limitation with respect to coverage - into one overall system, and the oceans are divided into four sea areas :

About Inmarsat

It operates a constellation of geostationary satellites designed to extend phone, fax and data communications all over the world. Inmarsat provides the space segment necessary for instant and reliable distress and safety satellite communications for the maritime community.

Inmarsat-A

The Inmarsat-A analogue mobile satcoms system provides two-way direct-dial phone, fax, telex, electronic

mail and data communications at rates up to 9.6 kbit/sec to and from anywhere in the world with the exception of the polar regions.

The service that most users access the Inmarsat system is Inmarsat-A. The first analog system of the Inmarsat system. Inmarsat-A can support high-quality direct-dial phone, telex, fax and data.

The System

An Inmarsat-A terminal is a small self-contained satellite earth station comprising, in the maritime environment, of an above deck equipment containing a parabolic antenna and electronics and a below deck equipment containing electronic units, power supplies and interface connections. Connections to telex, telephone, modem and facsimile equipment are contained in the below deck equipment.

Inmarsat ship borne terminals are referred to as a Mobile Earth Stations (MESs). In the same way Land based Earth Stations through which communications are routed are known as Land Earth Stations (LESs).

A call from an MES is routed via the Inmarsat network to an LES and thence into the national and international phone, telex and data networks. There are four Ocean Regions covering the world each with its own operational satellite

Area A1 : Within range of VHF coast stations with continuous DSC alerting available (about 20-30 miles)

Area A2 : Beyond area A1, but within range of MF coastal stations with continuous DSC alerting available (about 150 miles)

Area A3 : Beyond the first two areas, but within coverage of geostationary maritime communication satellites (in practice this means Inmarsat). This covers the area between roughly 76° North and 76° South.

Area A4 : The remaining sea areas. The most important of these is the sea around the North Pole (the area around the South Pole is mostly land). Geostationary satellites, which are positioned above the equator, cannot reach this far.

Transmission and reception of signals are co-ordinated by four network co-ordination stations (NCS), one for each ocean region;

Atlantic Ocean Region East (AOR-E)
Atlantic Ocean Region West (AOR-W)
Indian Ocean Region (IOR)
Pacific Ocean Region (POR)

Inmarsat-B

The Inmarsat-B digital mobile satcoms system provides two-way direct-dial phone, telex, facsimile and data communications at rates up to 9.6 kbit/sec to and from anywhere in the world with the exception of the polar regions.

The System

An Inmarsat-B terminal is a small self-contained satellite earth station comprising, in the maritime environment, of an above deck equipment containing a parabolic antenna and electronics and a below deck equipment containing electronic units, power supplies and interface connections. Connections to telex, telephone, modem and facsimile equipment are contained in the below deck equipment.

Inmarsat ship borne terminals are referred to as a Mobile Earth Stations (MESs). In the same way Land based Earth Stations through which communications are routed are known as Land Earth Stations (LESs).

A call from an MES is routed via the Inmarsat network to an LES and thence into the national and international phone, telex and data networks. There are four Ocean Regions covering the world each with its own operational satellite.

Transmission and reception of signals are co-ordinated by four network co-ordination stations (NCS), one for each ocean region;

Atlantic Ocean Region East (AOR-E)
Atlantic Ocean Region West (AOR-W)
Indian Ocean Region (IOR)
Pacific Ocean Region (POR)

Inmarsat-B is the digital successor to Inmarsat-A. It supports high-quality direct-dial phone, telex, fax, data, and high-speed data. Inmarsat-B is a lower cost alternative to Inmarsat-A because the system is based on modern digital satellite telecommunications technologies. The use of digital technology enables Inmarsat-B to improve on Inmarsat-A, through less power usage and improved use of satellite power and bandwidth. Inmarsat-B offers Data services in two forms: 9.6 k standard service and 64 k High Speed Data (HSD)

Inmarsat-B is a good choice for high-volume users of voice and data. In the maritime environment these include the offshore exploration industry, cruiseship operators and deep-sea shipping companies.

Inmarsat-C

The Inmarsat-C satellite system provides two-way data communications to and from virtually anywhere in the world. Inmarsat-C terminals are simple, low-cost units small enough to be hand-carried or fitted to any vessel, vehicle or aircraft.

The System

Communications via the Inmarsat-C system are data or message-based. Anything that can be coded into data bits can be transmitted via Inmarsat-C. Messages are transferred to and from an Inmarsat-C terminal at an information rate of 600 bits/sec. Frequencies are 1626.5-1645.5MHz (transmit), 1530.0-1545.0Mhz (receive). Inmarsat-C is available in all four Inmarsat satellite coverage ocean regions - Atlantic Ocean East and West, Indian Ocean and Pacific Ocean - through about 40 land earth stations (LESs). A network co-ordination station (NCS) in each region controls communications traffic.

These units come in fixed, mobile, transportable, maritime and aeronautical configurations. All configurations employ omni-directional antennas.

Inmarsat-C supports tow-way text and data messaging, data-reporting and fleet broadcast communications at a data rate of 600 bits/sec. Inmarsat-C Internet gateway allows vessels to exchange Internet e-mail without the need for special software.

Inmarsat-M

It provides digital phone, fax and data capabilities through compact terminals. Inmarsat-M is still available in all ocean regions, this service has been largely replaced by the more cost-effective Inmarsat mini-M.

Inmarsat-mini-M

The Inmarsat mini M is a digital phone, fax and data system which is packaged in very compact terminals, utilizing spot beam satellite technology. The mini M terminal form is similar in size to a small laptop computer. The terminal provides direct-dial phone, fax and 2.4 kbps data connections.

The Inmarsat mini M comes in portable, maritime and vehicle terminal configurations. There is now a multi-terminal capable of multiple installation configurations.

Inmarsat M4

Inmarsat M4 is a combination of mini-M's low-speed voice, fax, and data capabilities with Inmarsat B's high speed data feature. An additional feature of M4 is the mobile packet data service. M4 utilizes the same spot beam satellite technology as mini-M, making it very small, lightweight, and power efficient.

About Cospas-Sarsat

Cospas-Sarsat is a satellite system designed to provide distress alert and location data to assist search and rescue (SAR) operations, using spacecraft and ground facilities to detect and locate the signals of distress beacons operating on 406 Megahertz (MHz) or 121.5 MHz. The position of the distress and other related information is forwarded by the responsible Cospas-Sarsat Mission Control Center (MCC) to the appropriate SAR authorities.

The Cospas-Sarsat System provides distress alert and location data to Rescue Coordination Centers (RCCs), for 121.5 MHz beacons within the coverage area of Cospas-Sarsat ground stations (Local User Terminals - LUTs), and for 406 MHz beacons activated anywhere in the world.

GMDSS Radio Equipment
(Global Maritime Distress and Safety System)

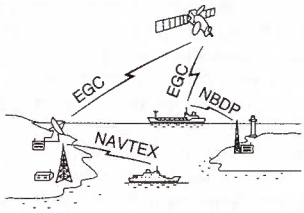
GMDSS will provide an effective search and rescue system on a global basis using the advanced technology of satellite and terrestrial communications.

The basic concept of the GMDSS is that search and rescue authorities ashore, as well as vessels in the immediate vicinity of a ship in distress, will be rapidly alerted to the distress incident so that they can assist in a co-ordinated search and rescue operation without delay.

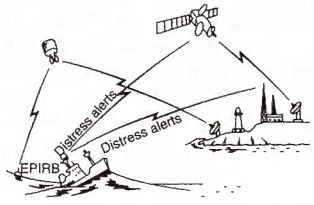
In the GMDSS, the radio equipment to be carried on a ship is determined by the ship's area of operation, as designated below.

Conventional ships will be obliged to comply with the requirements for the installment of GMDSS systems in stages during the period between February 1, 1992 and February 1, 1999 for all ships.

During normal time:
Receives navigational and meteorological warnings via EGC, NAVTEX, and MSI.



In emergency:
Transmits distress alerts through INMARSAT, DSC, and EPIRB.



Amendment 1988 to the International Convention for the Safety of Life at Sea 1974 Chapter IV "Radiocommunications" Part C – Ship Requirements

Regulation 7 Radio Equipment - General

No.	Item	Descriptions
1.1	A VHF radio installation	For transmitting and receiving (1) DSC on the frequency 156.525 MHz (CH 70) (2) Radiotelephony on the frequencies 156.300 MHz (CH 6), 156.650 MHz (CH 13) and 156.800 MHz (CH 16)
1.2	A radio installation	For maintaining a continuous DSC watch on VHF channel 70
1.3	A radar transponder	For operating in the 9 GHz band
1.4	A receiver	For receiving International Navtex service broadcast
1.5	A radio facility	For the reception of maritime safety information by the INMARSAT enhanced group calling system
1.6	A satellite emergency position-indicating radio beacon (EPIRB)	For transmitting a distress alert either through the polar orbiting satellite service operating in the 406 MHz band or, through the INMARSAT geostationary satellite service operating in the 1.6 GHz band.

Regulation 10 Radio Equipment – Sea areas A1, A2 and A3:

No.	Item	Descriptions
1.1	An INMARSAT ship earth station	For: (1) transmitting and receiving distress and safety communications using direct printing telegraphy (2) initiating and receiving distress priority calls (3) maintaining watch for shore-to-ship distress alerts (4) transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy
1.2	An MF radio installation	For transmitting and receiving on the following frequencies (1) 2,187.5 kHz using DSC, and (2) 2,182 KHz using radiotelephony
1.3	A radio installation	For maintaining a continuous DSC watch on the frequency 2,187.5 kHz
1.4	Means of initiating the transmission	For ship-to-shore distress alerts by a radio service operating either : (1) through the polar orbiting satellite service on 406 MHz (2) on HF using DSC, or (3) through the INMARSAT geostationary satellite service

(to be continued)

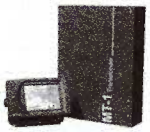
No.	Item	Descriptions
2.1	DSC, Radiotelegraphy and MF/HF radio installation	For transmitting and receiving between 1,605 KHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz using, (1) DSC (2) Radiotelegraphy and (3) Direct-printing telegraphy
2.2	A radio installation	For maintaining DSC watch on 2,187.5 kHz, 8,414.5 kHz and one of the distress and safety DSC 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz
2.3	Means of initiating the transmission	For the transmission of ship-to-shore distress alerts (1) through the Polar Orbiting Satellite Service on 406 MHz, or (2) through the INMARSAT Geostationary Satellite Service
2.4	Radiocommunication, or direct-print telegraph	For transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by an MF/HF radio installation operating between 1,605 kHz and 4,000 KHz and between 4,000 kHz and 27,500 kHz.

Note: Every ship shall be provided with the requirements of Regulation 7. In addition to the requirements of Regulation 7, every ship engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, shall be provided with the requirements of Regulation 10, Paragraphs 1 or 2.

The Definition of Sea Areas

Area A1	Within range of shore-based VHF coast stations	Distance from shore: App. 20 - 30 miles
A2	Within range of shore-based MF coast stations (Excluding A1 area)	Distance from shore: App. 100 - 150 miles
A3	Within the coverage area of INMARSAT geostationary satellites (Excluding A1 and A2 areas)	Between north latitude 70° and south latitude 70°
A4	The remaining sea areas outside areas A1, A2 and A3.	Around the North Pole and the South Pole

Automatic Identification Systems



Designed to meet the SOLAS requirements Chapter 5 Safety of Navigation - in Regulation 19-2.4 to all of ships of 300 gross tonnage and upwards engaged on international voyages, and for simple installation onto a ships bridge, and with quick and easy access for repair or replacement. As well as being intrinsically tough and rugged, the system also features a sophisticated touch screen minimum display for intuitive operation. With its touch-screen LCD (Liquid Crystal Display) minimum display, this AIS transponder transmits the ship's data to other vessels as well as shore-based VTS (Vessel Tracking Systems). Utilizing various VHF channels, this is ship-borne station consists of an integral GPS engine for timing, one VHF transmitter, three VHF receivers and a computer. Interface this with an external GPS for navigation, an antenna, a gyrocompass, and an optional ECDIS (Electronic Chart Display and Information System) or ARPA (Automatic Radar Plotting Aid) display system and you have everything required to comply with the mandatory carriage requirements that comes into effect July 1, 2002.

Static and voyage related data is transmitted every six minutes, while the dynamic information is transmitted between 2 seconds to 3 minutes, depending on the ships navigational status and speed. Short messages from ships or shore stations can be inserted into the AIS message structure that contain such information as; notices to mariners, navigational warnings, weather forecast and SAR (Search and Rescue) communications etc.

Features and Functions:

- Provision of tactical and strategic VTS information. Transmitting port data, berth assignments, pilotage, tides, currents as well as shipping agency information.
- Automatic data exchange, ship-to-ship and ship-to-shore.
- Short message service (121 characters).
- Collision avoidance.
- Detection of vessels that may be hidden in radar shadows.
- Overcomes target swapping of radar contacts.
- 4 mode operation: Autonomous, Continuous, Assigned and Polled.
- Telemetry applications for navigation aids such as lighthouse or buoys.
- Reduction of global VHF voice traffic.

The AIS message is divided into a number of categories that contain specific information which include:

- Static Data: IMO number / Call sign and name length and beam / Type of ship / Location of position fixed antenna onboard the ship.
- Dynamic Data: Ships position / Time in UTC (Universal Time Coordinated) / COG (Course Over Ground)/ SOG (Speed Over Ground)/ Heading / Navigational status / ROT (Rate of Turn).
- Voyage Related Data: Ships draft / Cargo / Destination and ETA (at masters direction).
- Safety Related Messages: As needed.

Unit Per Set

CODE		37 24 01
Item		Automatic Identification System
Dimensions & Weight	Display Unit	L230 x H140 x D50 mm, 1.5 kgs
	Transceiver Unit	L270 x W350 x D75mm, 6.5 kgs
Power Supply		24V DC
Power Drain		75 watts
GPS Receiver		12 Channel
Interfaces		3 x RS232, 5 x RS422
Name of Mfr.		McMurdo Limited

Radar Transponders
(SART - Search and Rescue Radar Transponder)

At least 1 radar transponder shall be carried on each side of every cargo ship of 500 gross tons or more.

Upon receiving radio waves from 9 GHz shipboard radar, this unit sends signals to indicate its position and bearing on the screen.

37 25 01	Radar transponder (SART) 9 GHZ (with ship's registered flag)	Pc.

NAVTEX Receivers

NAVTEX is an international maritime radio telex system. For receiving navigational warnings and safety information via printing telegraphy broadcast on 518 KHz along coastal areas.

37 25 06	NAVTEX receiver 518 kHz AC 110V	Pc.
07	" AC 220V	"

Note: Please specify the ship's registered flag when ordering

Satellite Emergency Position-indicating Radio Beacons
(Satellite EPIRB)

Transmitting a distress alert either through the polar orbiting satellite service, operating in the 406 MHz band, or through the INMARSAT geostationary satellite service operating in the 1.6 GHz band.

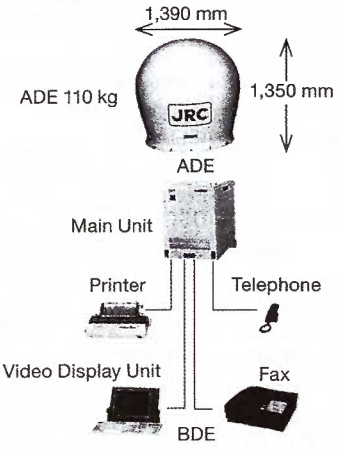
The unit will also float free if the ship sinks and will be automatically activated when afloat or activated manually in emergency. The EPIRB mentioned here is operated on 406 MHz and 121.5 MHz by the COSPAS/SARSAT satellite system which is adopted widely to the ships in the early stage of the introduction of the GMDSS. This type of EPIRB will broadcast on 406 MHz to be received by the COSPAS/SARSAT satellite and on 121.5 MHz to be used for homing by search-and-rescue vessels along with a strobe to pinpoint exact location.

It is required, when ordering, to specify the ship's registered flag, call sign, etc. to be programmed into the EPIRB as a rescue signal by the manufacturer before delivery.

37 25 11	Satellite EPIRB 406 MHz & 121.5 MHz (with ship's registered flag, etc.)	Pc.

Satellite Communication Equipment
INMARSAT B Ship Earth Station

INMARSAT stands for the organization established by The Convention on the International Maritime Satellite Organization adopted on September 3rd, 1976. The INMARSAT maritime satellite communications service permits direct ship to land and ship to ship communication via INMARSAT satellite and coastal earth stations. The INMARSAT B Ship Earth Station provides a full range of instant, quality communication services from anywhere at sea into the world public telephone, facsimile, telex and data networks. It consists of an Above Deck Equipment (ADE) and a Below Deck Equipment (BDE) which are interconnected by a single cable.



ADE: Antenna and Radome
BDE: Communication unit, Video display unit and RO printer

Specification for reference

Frequency	Transmit: 1625.5 of 1646.5 MHz
Range	Receive: 1525.0 of 1545.0 MHz
Antenna	89 cm diameter parabolic antenna
Enclosure	FRP radome (1.39 mtr diameter)
Primary Power	100/110/220 VAC ± 10% Single-phase 60 Hz ± 6%
Size & Weight	ADE: H1,350 × ϕ1,390 mm, 110 kgs BDE: Main unit H500 × W400 × D350 mm, 38 kgs Video display unit H280 × W366 × D180 mm, 4.5 kgs Printer H193 × W380 × D376 mm, 3.7 kgs

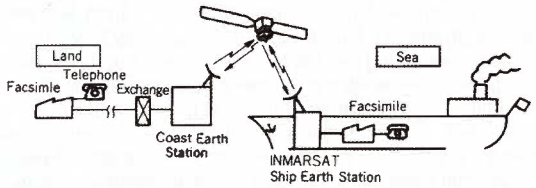
How to order: CODE

Ship earth station INMARSAT B with standard attachments
VOLTAGE (Specify Manufacturer's Name & Model)

Unit Per Set

CODE	**37 25 15**	**37 25 16**
Power Supply	AC 110V	AC 220V

INMARSAT Facsimile Receivers



Designed for INMARSAT communications to transmit all kinds of graphics and drawings that now can be transmitted over a terrestrial telephone line. Suitable for use in the shipowner's offices where there is a communication link with an INMARSAT ship to earth station.

When ordering, please specify the manufacturer's name and model as well as the INMARSAT ship to earth station currently on board.

Specifications for Reference

Standard	CCIT GII/GIII
Transmission Line	INMARSAT/Telephone
Document Size	B4 (252 mm width)
Reading/Recording	252 mm width max.
Data Compression	Modified Huffman (MH) GIII Modified Read (MR) GIII AM-PM-VSB (GII)
Size & Weight	H209 x W410 x D465 mm, 15 kgs

How to order: CODE

INMARSAT facsimile receiver CCIT GII/GIII standard, VOLTAGE

Unit Per Set

CODE	37 25 21	37 25 22
Power Supply	AC 110V	AC 220V

Satellite Navigators

Automatic navigator which works by receiving and measuring signals from satellites orbiting the earth. Constant position read out is displayed on an easy to see digital screen. Constant read out assures safe and direct navigation.

Also, this unit is designed to interface with navigational equipment, ensuring easy integration with other navigation systems.

Antenna

Receiver-Processor

Specifications for Reference

Frequency	399.968 MHz
Display Items	Lat/Lon position, Date/time, Last fix satellite alert, Distance/bearing/time-to-go, Elapsed DR time, Current set and drift, Course/speed, Total distance run, Cross track error
Power Supply	100/150/220-240V AC, 10-40V DC 19W
Size & Weight	Receiver: H140 x W271 x D300 mm, 5 kgs Antenna: H468 x 698 mm dia., 1.7 kgs

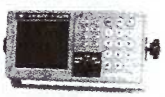
How to order: CODE

Satellite navigator, frequency 399.968 MHz, VOLTAGE

Unit Per Set

CODE	37 25 26	37 25 27
Power Supply	AC 110V	AC 220V

GPS (Global Positioning System) Navigators



Satellite-based radio navigation system to provide a global, all-weather, continuous 24 hour service for position fixing with high accuracy. The satellite system is available to an unlimited number of users when it is fully operational.

It is composed of 24 GPS satellites, each transmitting their own orbital data. The GPS navigator receives the orbital data from three or more GPS satellites to calculate a two or three dimension position, speed, and time.

Specifications for Reference

Accuracy Position & Speed	15 m RMS (C/A code, HDOP ≤ 2.5) 0.2 knot RMS (C/A code, HDOP ≤ 2.5)
Receiving Signal	1,575.42 MHz ± 1 MHz, C/A code
Data Display	A8 digit, 4-line LCD
Display Items	Position (Latitude, Longitude and Altitude), Course and speed, Data and time, Satellite data, Satellite signal receiving status and GPS positioning period, Range, Bearing and time to go, and Course deviation
Power Supply	100-1, 15/220-240V, AC 50/60 Hz, 10-45V DC, 12W
Size & Weight	Receiver: H120W243 x D116 mm, 2.7 kgs Antenna : H229 x 50 mm dia, 0.4 kgs

How to order: CODE

GPS navigator, receiving signal 1,575.42 MHz, VOLTAGE

Unit Per Set

CODE	37 25 31	37 25 32
Power Supply	AC 110V	AC 220V

DSC (Digital Selective Call) Watch Receivers

DSC is a technique using digital codes which enables a radio station to establish contact with, and transfer information to another station or group of stations complying with the relevant recommendations of the International Radio Consultive Committee.

Required by the 1974 SOLAS regulation. The 1988 amendment to Regulation 7 requires the installation of one VHF receiver and Regulation 10 requires the installation of an MF receiver for maintaining a continuous DSC watch.

Specifications for Reference

Frequency	156.525 MHz VHF (CH-70)	2,187.5 kHz MF
Power Supply	AC 110/220 Volt	
Size & Weight	H145xW140xD145 mm 1.5 kgs	H49xW480xD290 mm 3 kgs

How to order: CODE

DSC watch receiver with printer, FREQUENCY, VOLTAGE

Unit Per Set

CODE	Frequency	Power Supply
37 25 36 37	156.525 MHz VHF	AC 110V AC 220V
37 25 38 39	2,187.5 kHz MF	AC 110V AC 220V

VHF Radio Telephones

Designed to provide ship-to-shore, ship-to-ship and on board communications, allowing the ship's crew to easily obtain emergency, safety, navigation, weather and business information.

Equipped with all ITU channels, USA, USCG, Canadian and private channels. Continuous scanning watch on channel 16.

Specifications for Reference		
Frequency Range	Transmit Receive	155.50 - 159.50 MHz 155.50 - 159.50 MHz (Simplex) 160.60 - 163.50 MHz (Duplex)
Channel Capacity		57 ITU/USA channels, 4 Canadian channels, 9 weather channels, Up to 99 private channels
Mode of Operation		Simplex or Duplex
Power Supply		13.8V DC
Size & Weight		H290 × W240 × D145 mm, 6.5 kgs

37 25 41	VHF radio telephone 155.50 - 159.50 MHz simplex mode	Set
42	" duplex mode	"

MSI (Marine Safety Information) Receivers

(E.G.C. Receivers)

Automatic reception of shore-to-ship distress alerts including MSI (Marine Safety Information), such as navigational and weather warnings, and routine weather information and commercial communication services by the INMARSAT Enhanced Group Calling System. Consisting of EME (Externally Mounted Equipment), IME (Internally Mounted Equipment) and OPU (Operation Panel Unit) with a small built-in printer.

EME OPU IME

Specifications for Reference

Frequency	HF MSI 8 channels
Power Supply	AC 110 or 220 Volt
Size & Weight	EME : H450 × 110 mm Dia., 2.8 kgs OPU : H170 × W224 × D100 mm, 2.0 kgs IME : H50 × W210 × D280 mm, 3.0 kgs

37 25 46	MSI receiver HF MSI 8 channels AC 110V	Set
47	" AC 220V	"

Magnetic Compasses

A compass which measures direction by a needle which continuously seeks the magnetic meridian.

SOLAS Regulation requires ships of 150 gross tons or more to be fitted with a magnetic compass.

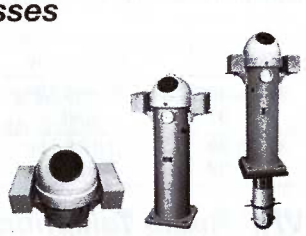


Table Type Stand Type Projector Type

Here are some types of magnetic compasses for your reference. There are several sizes of compass card diameter, according to the type of magnetic compass and the manufacturers.

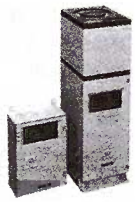
37 25 51	Magnetic compass (With further information)	Set

Azimuth Mirrors

A measuring instrument used with the magnetic compass. For obtaining the azimuth of observed objects by observing an object's reflection in a mirror or prism, pivoted in the centre of glass over a compass card.

37 25 53	Azimuth mirror (With manufacturer's name and model of Magnetic Compass)	Set

Gyro Compasses



Ships of 500 gross tons or more constructed on or after September 1st, 1984 and ships of 1,600 gross tons or more constructed before September 1st, 1984 shall be fitted with a gyro compass.

The gyroscope is mounted, ballasted and fitted so that it's north south line always remains within the meridian through the influence of the earth's diurnal revolution. Can be used as a sensor for the following types of navigation devices : Autopilots, Radar, Collision avoidance systems, Satellite navigation systems, Direction finders, etc. Here are some specifications as a reference when ordering.

Specifications for Reference		
Master Compass	Follow-up accuracy : 0.1° Follow-up speed : 360°/15 sec. Gimbal freedom angle : ±45° Range of speed error correction : 0-40 knot/0-70°	
Power Supply	Main supply voltage	AC 110V/115/220/380 440V 3P 50/60 Hz
	Emergency supply voltage	DC 24V, 2.5A

37 25 56	Gyro compass (With further information)	Set

Radars

Electronic system by which the bearing and distance of an object are found by the emission of a radio pulse.

An object's bearing and distance can be measured by observing the direction from which the pulse returns and the time elapsed from when it was sent.

Ships of 500 gross tons or more constructed on or after September 1st, 1984 and ships of 1,600 gross tons or more constructed before September 1st, 1984 shall be fitted with a radar installation.

From February 1st, 1995, the radar installation will be capable of operating on the 9 GHz frequency band. In addition, cargo ships of 300 gross tons or more, when engaged on international voyages, shall be fitted with a radar installation capable of operating on 9 GHz frequency band.

Specifications for Reference	
Peak Power	25 kW
Frequency	9,410 ± 30 MHz
Range Ring	0.25/0.05, 0.5/0.1, 0.75/0.25, 1.5/0.25, 3/0.5, 6/1, 12/2, 24/2, 48/8, 120/20 nm
CRT	21-inch Raster scan
Power Supply	100/110/115V AC, 50/60Hz, 1-P (7 ft) 200/220/230V AC, 50/60Hz, 3-P (9 ft)

(to be continued)

Size & Weight	H1,270 x W535 x D575 mm, 100 kgs

Remark: The above specifications are listed as a reference only. Please contact with a representative about which required features are available from various manufacturers.

37 25 61	Radar (With further information)	Set

Automatic Radar Plotting Aid (ARPA)
(Collision Avoidance System)

Automatic radar plotting aids are required for ships of 10,000 gross tons or more, constructed on or after September 1984, and tankers constructed before September 1st, 1984.

It is designed to be operated as a separate or integral part of marine radar equipment. It will give precise target information to avoid collision in vector and numeric form.

There are various models world-wide. Please ask a representative about detailed specifications. Listed below are some specifications for your reference.

Specifications for reference

Peak Power	25 kW
Frequency	9,410 ± 30 MHz
Scanner Length	7 feet
Target Acquisition	Automatic and/or manual
Target Tracking	Automatic up to 40 targets
CRT Display	28 inch (Effective dia.: 340 mm)
Radar Range	0.25, 0.5, 0.75, 1.5, 3, 6, 12, 24, 48, 120 mm
Range/bearing Measurement	VRM 1/2 and electronic bearing line (EBL)
Warnings	Min. CPA : 0-9.9 min. in 0.1 step Min. TCPA: 0-99 min. in 1 step
Power Supply	100/110/115/200/220V AC, 50/60 Hz
Size & Weight	H1,278 x W700 x D875 mm, 135 kgs

Note: CPA = Closest Point of Approach
TCPA = Time of Closest Point of Approach

37 25 63	Automatic radar plotting aid (With further information)	Set

Navigation Systems

Various kinds of navigation systems are available in the world. Some major navigational systems are produced here for your reference.

Major Navigational Systems

Systems	Service Area	Effective Range	Accuracy
Loran C (100 kHz)	Japan/Korea U.S.A. /Canada/North Sea Mediterranean	1,500 miles (Daytime)	30 - 500 mtr
Loran A (1.75-1.95 MHz)	Japan	700 miles (Daytime)	0.25 - 0.5 miles
Decca (70-130 kHz)	Europe/Japan/etc.	350 miles (Daytime)	20 - 100 mtr
Satellite Navigator (150, 400 MHz)	World-wide	World-wide	0.1 mile
GPS (1,575.42 MHz)	World-wide	World-wide	100 mtr

Loran C Navigators

A long range aid to navigation. Master and slave stations transmit synchronised signals which can be received by a special receiver on board the ship.

Since radio signals travel at a known speed, the difference in time at which the signals arrive at the ship can be converted into distance.

Signals from two pairs of Loran stations can thus fix the position of a ship.

Specifications for reference

Station Tracking	Master and all slave stations
Display	Fully automatic LAT/LON
Memory Capacity of Waypoints	50
Readouts	Course/Speed, Bearing/Distance and Time-to-go
Frequency	100 kHz
Power Supply	10 - 40V DC, 17W, 100/115/220V AC
Size & Weight	H142 x W271 x D314 mm, 4 kgs

Decca Navigators

A radio aid for fixing positions up to 300 miles or more from the transmitter.

A master transmitter ashore controls a chain of other transmitters. A ship provided with a receiver can receive a transmitted signal by measuring the phase-difference of the Decometers.

The numbers indicated on the Decometers refer to coloured lattice lines printed on special charts. The ship's position is symbolized by where the numbered lines cross each other on the chart.

Echo Sounding Devices

For ships constructed before May 25, 1980, weighing greater than 1,600 gross tons and for ships constructed after May 25, 1980, weighing greater than 500 gross tons. All vessels falling under this classification which sail international routes must be fitted with an echo sounding device.

Electrically operated instrument that emits a sound from vessel's submerged surface and then measures and records the time interval which passes before the echo returns.

The most popular model is shown here. Please ask for further information and brochures of various models available from local manufacturers when required.

Specification for reference

Depth Range	0 - 450 mtr, 3 ranges
Max. Sounding Depth	450 mtr
Frequency	50 kHz or 200 kHz
Recording Paper	Dry type, 150 mm width x 15 mtr
Power Supply	100/115/220V AC, 50/60 Hz
Size & Weight	H380 v W360 x D210 mm, 16 kgs

37 25 71	Echo sounding device (With further information)	Set

Direction Finding Apparatus

Ships constructed on or after May 25, 1980 exceeding 1,600 gross tons or more shall be fitted with direction finding apparatus.

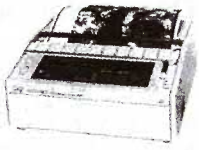
Automatically indicates ships true bearing by reading frequencies from two or more radio beacon broadcast stations or transmissions from other vessels.

Specification for reference

Operation	Automatic/Manual
Spot Frequencies	500 kHz, 2,091 kHz and 2,182 kHz
Reception Bands	Band of beacon 1: 200-340 kHz 2: 340-580 kHz Marine band 1.6-28 MHz
Mode of Reception	A1A, A2A, H2A, A3E, H3E & J3E
Power Supply	100/110/115/200/220/230V AC
Size & Weight	H298 x W489 x D428 mm, 25 kgs

37 25 76	Direction finding apparatus (With further information)	Set

Weather Facsimile Receivers



Weather facsimile service is provided world-wide, and designed to meet the WMO (World Meteorological Organization) standards.

The most popular model is shown here. Please ask for further information and brochures of various models available from local manufacturers when required.

Specification for reference

Mode of Receiving	Fully automatic, Semi automatic, Manual and Programmed
Recording	Solid-state scanning by thermal head
Effective Scanning line	296 mm (12 inches)
Scanning Speed	60, 90, 120 and 240 spm
Mode of Emission	F3C
Frequency Range	LF: 80.0 - 160.0 kHz HF: 2 - 24.9999 MHz
Frequency Display	6-digits LED
Power Supply	80-132V, 160-264V AC, 50/60 Hz
Size & Weight	H158 x W400 x D435 mm, 18 kgs

37 25 81	Weather facsimile receiver (With further information)	Set

Personal Location Beacons

Featuring a built-in GPS receiver (Global Positioning System) combined with a 406 MHz transmitter and 121.5 MHz homing signal. In the event of an emergency, an alert signal is transmitted to Cospas-Sarsat satellites and forwarded to a secure co-ordinate centre within typically 3 minutes. The built-in GPS receiver will provide latitude and longitude co-ordinates to give a position to within typically 30 meters anywhere in the world.

It comes complete with lanyard and designer carry case to enable users to keep the personal location beacon safely attached at all times.

Features
- Built-in 12 channel GPS receiver.
- Geostationary coverage > 75°N - 75°S.
- Global alert to Cospas-Sarsat polar orbiting satellites.
- 406 MHz transmitter.
- 121.5 MHz homing frequency.
- GPS cold start time to fix typically less than 3 minutes.
- Positional accuracy to typically within 30 meters.
- GPS transmitted position update rate every 20 minutes (as permitted by Cospas Sarsat).
- GPS reacquisition time, typically less than 60 seconds.
- Complete with lanyard and designer carry case.
- User replaceable battery pack.

37 28 11	Personal location beacon with built-in GPS receiver	Set

Name of Mfr.: McMurdo Limited

Wristwatch Manoverboard Beacon

The light weight, easy to wear waterproof, multi-function wristwatch has a built-in radio transmitter which when activated either manually or automatically, immediately transmits a distress tone on the international emergency search and rescue frequency (121.5 MHz). The distress signal transmitted can be detected by a surface rescue vessel or helicopter, which can accurately home in to the watch using direction-finding equipment. The unit is a working watch, fully waterproof to a depth of 50 mtr and can be set to manual or automatic activation on immersion in water, making it functional and easy-to wear manoverboard transmitter for crew members.

Features
- Automatic activation with manual on/off override.
- Chronograph 1/100 second with lap/split control.
- Alarm with chime.
- LCD backlight.
- Water resistant - tested to a depth of 50 mtrs.
- Transmission activation audible and visual LED alarms.
- Up to 8 hours transmission time.
- Range to surface vessel up to 1 nautical mile.
- Range to SAR helicopter up to 5 nautical miles.

Unit Per Set

CODE	37 28 15
RF Transmitter Frequency	121.5 MHz (121.65 MHz Training)
Class of Emission	A3X
RF Power	–25 dBm
Frequency Error	+/– 3.5 kHz
Duty Cycle	100%
Modulation Type	Sweep downward from 1.5 kHz to 650 Hz with sweep repetition of 2 Hz
Modulation Duty-Cycle	50%
Voltage	3.2 volts max. (CR2 battery)
Current Draw	20 μ Amps Quiescent 110 mAmps Transmitting
Weight including Strap	81 grm
Name of Mfr.	McMurdo Limited

Direction-Finding Equipment
for Wristwatch Manoverboard Beacon

Emergency Receiver:

High quality manoverboard surveillance system operating on the international 121.5 MHz emergency frequency. Used in conjunction with the Wristwatch Manoverboard Beacon this system will give

all crew members the confidence of knowing that no one should go overboard undetected.

Features
- 2 Reception modes.
- Dual frequency reception: 121.5 MHz emergency / 121.65 MHz training.
- 8 level signal strength indicator.
- Built-in alarm.
- Auto squelch on/off.
- Alarm reset function.
- Relay contact output (i.e. GPS or contacts).
- Continuous self-diagnostic fault indicator.
- 12/24 volt DC power input.

Unit Per Set

CODE	37 28 17
RF Receiver Frequency	121.5 MHz (121.65 MHz Training)
Modulation Type	Sweep downward from 1.6 kHz to 300 Hz
Audio Output	8V max. (Speaker > 8 ohm)
Relay Contact (NOC)	Floating, carrying cap 0.5A/10W max.
Voltage	12/24V DC (± 20%)
Current Draw	400 mAmps receiving alarm + ext. speaker
Operational Temperature Range	–20°C ± 55°C
Water Proof Rating	IP65
Weight including Strap	350 grm
Name of Mfr.	McMurdo Limited

Direction Finder:

Used together with Wristwatch Manoverboard Beacon, this direction finder is the latest state-of-the-art unit using the international 121.5 MHz emergency frequency or the 121.65 MHz training frequency. A bearing relative to the vessels head is displayed along with an incoming signal strength indicator. The visual and audible alarm provides easy-to follow information, allowing the operator to quickly search for and rescue the man overboard.

Features
- 360 degree incoming signal reception.
- 4 level incoming signal strength indicator.
- Built-in audible alarm.
- Output for external speaker.
- 2 speaker modes.
- Dual frequency reception: 121.5 MHz emergency / 121.65 MHz training.
- User adjustable squelch.
- 12/24 Volt DC power input.

37 28 18	Direction finder 121.5 MHz emergency for Wristwatch Manoverboard Beacon	Set

Name of Mfr.: McMurdo Limited

ECDIS
(Electronic Chart Display and Information System)

Required by IMO Resolution A.817 (19), IEC 61174, and related IHO (International Hydrographic Office) standards. ECDIS is a real-time geographic information system and accepted as equivalent to paper chart for continuous monitoring of the ship's position using several positioning systems.

It should be type-tested and approved by an official authority and should be used only together with official data and regular updates. Useable charts are derived from an official ENCs (Electronic Navigational Charts) database. This displays electronic charts, navigation lines, ARPA data, user-defined information and offers vessel route planning and continuous monitoring. Accurate position, depth, alarm data and other warning facilities assure the vessel of reliable route monitoring and contributes greatly safer to vessel navigation and efficiency as well as reduced operator workload when compared to using traditional paper charts.

The system is composed of monitor and processor unit. Please contact your local supplier for further information.

Unit Per Set

CODE	37 28 31
Monitor	21" high-resolution colour CRT
Processor Unit	
Media	Windows NT
Useable Charts	IHO/S-57 V.3 Vector chart ARCS raster chart C-MAP Vector chart (option)
Presentation Modes	True motion North-up, Relative motion North-up
Display of Data	
Own Ship	Position, SMG, CMG, Heading
Route	Planned route, Monitored route
ARPA Targets	Range, bearing, speed, course, CPA and TCPT
Others	EBL, VRM, parallel index line, cursor position, navigation and pilot data notebook
Interface (IEC61162-1)	
Gyrocompass	1 analog or 1 serial
SDME (Speed Log)	Single-pulse type or serial
EPFS	Up to 2 serial inputs 5 max. with A-Adapter
Water Depth	Serial input
Wind Sensor	Dual axis-serial input
ARPA/Radar	Serial

Remark: Above specifications are reference purpose only.

Voyage Data Recorder

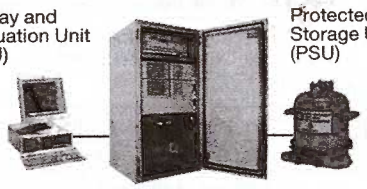
Designed to meet the requirements of IMO performance standard A. 861 (20); (1) Passenger ships constructed on or after July 1, 2002, (2) Ro-Ro passenger ships constructed before July 1, 2002 not later than the first survey on or after July 1, 2002, (3) Passenger ships other than ro-ro passenger ships constructed before July 1, 2002 not later than January 1, 2004 and (4) Ships other than passenger ships of 3,000 gross tonnage and upwards constructed on or after July 1, 2002.

Voyage Data Recorder is consist of Data Collection Unit (DCU), robust protective data storage capsule and replay and evaluation unit. It records conversations at the navigation bridge, VHF radio communication, speed , course and other information on the ship's condition for 12 hours. Records

and plays back important voyage navigation, machinery and environmental data for post-incident evaluation and crew training.

Provides the following data recording solutions;

- Conversation and communication recording,
- Radar recording,
- Vessel motion response monitoring/recording,
- Vessel performance and trends analysis,
- Stand-alone and integrated bridge configulations.
  - Data Collection Unit
    Interfaced with ship equipment and collects, processes and stores all relevant ship's data for a period of 12 hours as required by IMO A.861.
  - Protected Storage Unit
    Stores data received from the DCU on a solid state recording medium. The PSU is calamity resistant by means of a protective capsule. It is located on top of the ship's superstructure in order to provide easy access from outside.
  - Relay and Evaluation Unit
    Used to reply and evaluate previously recorded time synchronized data. The REU is in addition an excellent tool for training purposes. Data stores in the PSU can be downloaded through the DCU for replay or long-term storage of data.



Data Collection Unit (DCU)

Recording Paper
for Navigational Equipment

As a wide variety of recording paper for use with different kinds of navigational equipment are available, please specify the name of the equipment, the type, model number, manufacturers name and any other information regarding the applications of the paper.

For Course Recorder

How to order: CODE

Course recorder paper, PAPER CHART NO., SIZE mm, MANUFACTURER'S NAME & MODEL of course recorder

Unit Per Rol.

CODE	Course Recorder		Paper	
	Manu-facturer	Model No.	Chart No.	Size mm
37 26 01	Tokimec	CR-1, 2,3	120103573	150x75x35
02		DCR-1, 2, 3	120103313	200x75x35
10		CR-4	120103570	150x75x35
11		DCR-10A/40A	120103310	-
12		DCR-10A	120103311	-
37 26 03	Tokimec & Sperry London	65091 Mark-4	800839 GND109A 120100773	152x47φ
37 26 04	Sperry London	Gyro Compass	132401-1006	152x50φ
05		Dual Channel Gyro Compass	139101-1105	200x75x35
37 26 13	Yokogawa	KR-100	V8105AA	100 mm x 18 mtr
14		KR-180	V8104AH/ V8105AH	180 mm x 18 mtr
15		KR-207	UK19-5	120 mm x 18 mtr
37 26 06	Anschutz	KS11	8995	140 mm x 16 mtr
07		104-06/12/20/ 027	104-06.01-3	140 mm x 16 mtr
08		104-07/09/19/ 21/22/23	104.07.01-3	230 mm x 16 mtr
09		104-026	104-026. 02-4	230 mm x 16 mtr

(to be continued)

For Echo Sounder

How to order: CODE

Echo sounder recording paper, TYPE of PAPER, SIZE mm, MANUFACTURER'S NAME & MODEL of echo sounder

Unit Per Rol.

CODE	Echo Sounder		Paper	
	Manu-facturer	Model No.	Chart No.	Size mm
37 26 21	JRC	NJA-193S	J-6 (BRXP 00304)	150mmx10 mtr
22		JFE-570S		
16		NJA-193S	J-8 (6ZPBS 00006)	150mmx15mtr
17		NJA-193S, JFE-570S, JFE-582, JFE-582S		
18		NJA-172	J-7 (BRXP 00305)	150mmx10 mtr
19		NJA-170, 171, 120, 130, 150	No. 10 (BRXP 00043)	100mmx8mtr
20		NJA-510, 511, 155, 156, 173, 530	No. 10B (BRXP 00044)	100mmx8mtr
23	Furuno	F-850, F-851S, F-851SD, F-851T, FE-810, FE-820	PD-2020 (AD-20)	204mmx20mtr
26		FE-881, FE-880T, FE-808/818, F-851S/SD, FE-880	PD-2020NW	204mmx20mtr
30		FE-680, FE-680T, FE-616, FE-606, FE-608T, FE-680T-1	PD-1520NW	150mmx20mtr
34		PP-505	TP0340	112mmx40mtr
29	Simrad	ED-161	TP-6 (T-6)	156mmx15mtr

For Weather Facsimile Receiver

How to order: CODE

Facsimile recording paper, TYPE of PAPER, SIZE mm, MANUFACTURER'S NAME & MODEL of weather facsimile receiver

Unit Per Rol.

CODE	W.F. Receiver		Paper		
	Manu-facturer	Model No.	P/No.	Type	Size
37 26 38	JRC	JAX-2	6ZPTS 00032	HFB-19	266 mm × 35 mtr
39		JAX-3	6ZPTS 00015	-	320 mm × 30 mtr
40		JAX-9, 9A	6ZPTS 00108	HFB-19	260 mm × 25 mtr
41		JAX-12, 12A	6ZPTS 00006	BM-200 12"	320 mm × 60 mtr
43		JAX-21, 21A, 27, 27A, 29, 29S	6ZPTS 00003	ID-P15-44/14"	364 mm × 60 mtr
44		JAX-25, 25A, 28, 29, 29S	6ZPTS 00011	BM-200 14"	364 mm × 60 mtr
45		JAX-77, 78, 79, 90	6ZPTS 00127	HFB-19 (HFB-03)	400 mm × 100 mtr
37 27 11		JAX-33	6ZPTS 00033	-	260 mm × 60 mtr
12		JAX-39	6ZPTS 00029	HFB-19	305 mm × 50 mtr
13		JAX-130	6ZPTS 00412	-	210 mm × 30 mtr
14		JAX-800 series	5ZPDA 00004	-	257 mm × 100 mtr
37 26 48	Furuno	FAX-108	-	AP-1030	257 mm × 30 mtr
57		FAX-208A, 288, 207	-	TP0820	216 mm × 20 mtr
58		FAX-214	-	TP1440A	360 mm × 40 mtr
59		FAX-210	-	TP1030A	280 mm × 30 mtr
32		FAX-215	-	TP15150	400 mm × 150 mtr
33		FAX-410	-	-	257 mm × 30 mtr
37 26 51	Koden	FX-750	-	-	320 mm × 60 mtr
52		FX-753			
53		FX-750II, 755, 759, 759S			
54		FX-758, 758S, 7181			364 mm × 60 mtr
37 26 55	Kyoritsu	FXH-871	-	A3-230	364 mm × 60 mtr
56		FXH-872		TM-300	
37 26 60	Oki	460	-	-	210 mm × 30 mtr

Weather Facsimile Styli

How to order: CODE

Stylus for weather facsimile receiver, MANUFACTURER'S NAME & MODEL of weather facsimile

CODE	W.F. Receiver		Stylus	
	Mfr.	Model No.	Cont.	Unit
37 26 81	Koden	FX-750/753/750II/755	30's	Pkt
82		FX-759/759S/758/758S	-	Pc.
83		FX-7181	-	"

Course Recorder Pens

How to order: CODE

Course recorder pen, MANUFACTURER'S NAME & MODEL of course recorder

CODE	Course Recorder	Part No.	Colour	Unit
37 26 85	Yokogawa	B9565AP	Red	3's/Pkt
86		B9565AQ	Green	
87	KR180	B9565AR	Glue	
88		B9565AS	Purple	

Teleprinter Tapes

Used for international telex communications, standard size is 17.4 mm in width and 270 mtr in length.

37 26 90	Telex punching tape, 17.4 mm × 270 mtr	Rol.

Teleprinter Recording Paper

Available from 1 ply to 4 ply paper in various colour combinations. Standard size is 214 mm width. Colour combination is listed below. Besides the above, 257 mm width paper is also available on request.

How to order: CODE

Teleprinter recording paper, width 214 mm, NUMBERS of PLY, COLOUR COMBINATIO

Unit Per Rol.

CODE	Ply	Colour Combination	Length (mtr)
37 26 93	1	White	175
94	1	Yellow	105
37 26 95	2	White/Yellow	81
96	3	White/Pink/Yellow	51
97	4	White/Pink/Blue/Yellow	48

Recording Paper for Navtex Receiver

How to order: CODE

Recording paper for Navtex receiver, WIDTH x LENGTH, MANUFACTURER'S NAME & MODEL of Navtex receiver

Unit Per Rol.

CODE	Mfr. Name	Model	Paper Type	Width × Length
37 27 01	Lokata	TP 112L	TM1002800	112mm×40mtr
37 27 02	Alden	AE 900	-	112mm×25mtr
37 27 03	JRC	NCR 300A	5ZPMB00001	80mm×25mtr
07		NCR-300	7ZPJD0044	80mm×40mtr
08		NCR-333	6ZCAF00252	112mm×25mtr
37 27 04	Furuno	NX 500	TP0340	112mm×40mtr
09		NX-700	TP058-30CL	58mm×30 mtr
37 27 05	Anritsu	RR 103A	R110025G	112mm×25mtr
37 27 06	JMC	NT 900	-	112mm×25mtr

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MEDICINE

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- FDA Class 1 Registered Disinfectant
- Japanese Exclusive Technology
- Effective for $1M^3$- 99% germs and virus removal in 120 minutes
- Slowly Release, Never Exceed 0.017ppm Chlorine Dioxide for 1 Month
- Personal Protection: Reduce chance of contracting diseases
- Relieve Pain from Hay Fever Effectively

FDA

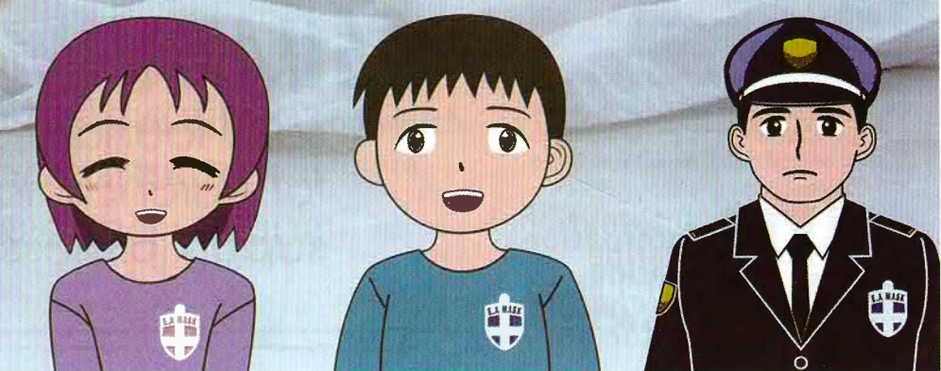
Globally Looking For Distribution Agent

info@sinoimage.co denny@sk-company.com

E.A MASK

Don't bring germs on board

MSG Code:39 12 85



Introduction to IMPA

International Marine Purchasing Association

Founded in 1978 by a group of senior purchasing executives, IMPA was formed with the aim of promoting co-operation and understanding between the purchaser and supplier and to improve the practise of marine purchasing in all applied forms.

Today IMPA offers a wide range of benefits to its membership and has grown in its reputation as the global association for purchasing and supply personnel.

IMPA has a wide membership base of companies and individuals from all over the world, including many of the leading ship owning and managing companies as well as major marine manufacturers and ship suppliers.

IMPA Aims and Objectives

- To increase the professional status of the associations' members.
- To support purchasing management and the efficiency of ship managing, operating and owning companies and their suppliers.
- To promote and facilitate worldwide co-operation between personnel engaged in purchasing and supply within the marine industry.
- To represent common interests of purchasing professionals, suppliers, trade and professional associations and public authorities.
- To work for better understanding of the importance of efficient supply management and of the value of purchasing expertise in reducing a vessel's operating expenses.
- To support the news systems or procedures which will benefit all organisations involved and working within the purchasing and supply function.
- To contribute to the enhancement of ethical and professional business standards in the marine industry.

"**IMPA;** building solid foundations for purchasing and supply professionals"

impa International Marine Purchasing Association

Our offering to you

IMPA membership offers a range of benefits which give access or discounts on IMPA products and services, but ultimately IMPA membership delivers value.

Within the current procurement environment, IMPA membership provides critical value in two ways. Firstly, IMPA membership offers a range of tangible benefits providing access or discounts to IMPA products and services. In addition, IMPA membership offers essential and valuable insight and knowledge that comes from being part of an industry network of experts and thought-leaders.

These two IMPA value streams exist within the IMPA Five Pillars.

IMPA'S FIVE PILLARS CONSIST OF THE FOLLOWING:

The Marine Stores Guide (MSG) Product Portfolio
IMPA Members receive exclusive discounts and offers for the MSG product portfolio, which provides a universal coding system to facilitate communication between crews, owners, operators and suppliers.

Education and Training
IMPA is committed to giving members access to training programmes developed in association with established industry organisations, and encouraging professional development.

CSR and the IMPA ACT Programme
IMPA engages in industry initiatives, such as the IMPA ACT CSR programme, which represent the best interests of the industry and those engaged within the purchasing and supply sector.

Networking and Events
IMPA Members benefit from discounts on a whole host of networking opportunities, including our premier exhibitions and year-round professional development events.

Knowledge and Insight
IMPA membership provides access to a comprehensive portfolio of papers and guides on a range of business and procurement subjects, plus exclusive access to our industry-leading publication, Marine Trader.

IMPA's **five** pillars

the foundations on which to build a bright future

www.impa.net

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370676	39-44	390282	39-33	390472	39-6	390648	39-20	390836	39-27	391056	39-24/38	391269	39-10
370677	39-44	390284	39-33		/21/35	390649	39-20	390837	39-27	391057	39-24/38		/24/40
370680	39-23	390286	39-33	390476	39-35	390650	39-20	390838	39-27	391058	39-24/38	391270	39-40
370681	39-23	390302	39-33	390480	39-36	390651	39-20	390839	39-27	391059	39-24	391271	39-40
370682	39-11/23	390304	39-33	390482	39-36	390652	39-5/20	390840	39-27	391061	39-38	391273	39-23
390106	39-31	390306	39-19/33	390484	39-36	390653	39-20	390841	39-27	391062	39-38	391274	39-23
390107	39-31	390308	39-33	390485	39-36	390654	39-20	390842	39-27	391063	39-38	391275	39-24
390111	39-31	390312	39-19/33	390488	39-36	390656	39-6/21	390843	39-27	391066	39-38	391276	39-24
390120	39-32	390314	39-34	390490	39-36	390657	39-21	390844	39-27	391067	39-38	391277	39-24
390126	39-32	390316	39-19/34	390492	39-36	390658	39-6/21	390845	39-27	391068	39-38	391278	39-24
390128	39-32	390317	39-19/34	390494	39-36	390660	39-6/21	390846	39-27	391070	39-38	391280	39-40
390130	39-17/32	390318	39-34	390502	39-36	390664	39-21	390847	39-28	391071	39-38	391281	39-24/40
390136	39-32	390330	39-20/34	390504	39-36	390665	39-21	390848	39-28	391072	39-38	391282	39-40
390138	39-17/32	390331	39-34	390505	39-36	390666	39-21	390849	39-28	391076	39-38	391283	39-12/25
390140	39-32	390332	39-34	390508	39-36	390667	39-21	390850	39-28	391077	39-38	391285	39-40
390146	39-32	390334	39-34	390510	39-20/36	390668	39-21	390851	39-28	391081	39-24/38	391286	39-25
390147	39-32	390336	39-34	390511	39-36	390669	39-22	390852	39-28	391082	39-24/38	391287	39-23
390148	39-32	390338	39-34	390514	39-18/36	390670	39-22	390853	39-28	391083	39-38	391288	39-23
390150	39-32	390340	39-34	390516	39-36	390671	39-22	390854	39-28	391092	39-38	391289	39-23
390152	39-32	390350	39-34	390518	39-36	390672	39-6/22	390855	39-28	391201	39-38	391290	39-13/40
390156	39-32	390352	39-5	390520	39-36	390673	39-7/22	390856	39-28	391202	39-23	391291	39-23
390158	39-32		/20/34	390522	39-36	390674	39-7	390857	39-28	391203	39-23	391292	39-13
390160	39-32	390354	39-34	390526	39-36	390675	39-22	390858	39-28	391204	39-23		/23/41
390162	39-32	390360	39-34	390540	39-36	390676	39-22	390859	39-28	391205	39-23	391294	39-23
390166	39-32	390366	39-34	390541	39-36	390677	39-22	390860	39-28	391206	39-23/38	391297	39-25
390168	39-32	390367	39-34	390542	39-36	390678	39-7/22	390861	39-28	391207	39-23	391298	39-25
390169	39-32	390368	39-34	390544	39-18/36	390679	39-7/22	390862	39-28	391208	39-13	391299	39-25
390170	39-32	390370	39-34	390545	39-36	390680	39-22	390863	39-28		/23/39	391301	39-41
390174	39-32	390372	39-34	390548	39-36	390681	39-22	390864	39-28	391209	39-24	391302	39-41
390180	39-32	390378	39-34	390550	39-36	390682	39-7/22	390865	39-28	391210	39-24/39	391304	39-25
390182	39-32	390379	39-34	390560	39-36	390683	39-7/22	390866	39-28	391211	39-39	391305	39-25
390186	39-17/32	390381	39-34	390561	39-36	390801	39-26	390867	39-28	391214	39-39	391306	39-25
390188	39-32	390383	39-34	390570	39-36	390802	39-26	391001	39-37	391216	39-39	391310	39-25/41
390192	39-32	390384	39-34	390571	39-36	390803	39-26	391002	39-37	391220	39-39	391311	39-25/41
390194	39-32	390385	39-34	390574	39-36	390804	39-26	391006	39-37	391222	39-39	391312	39-41
390196	39-18/33	390386	39-34	390603	39-17	390805	39-26	391007	39-37	391223	39-39	391313	39-25
390197	39-32	390388	39-34	390604	39-17	390806	39-26	391008	39-37	391226	39-13	391316	39-12
390201	39-33	390390	39-6	390605	39-17	390807	39-26	391011	39-24/37		/25/39		/23/41
390202	39-33		/21/34	390606	39-17	390808	39-26	391012	39-24/37	391228	39-39	391321	39-41
390204	39-33	390392	39-34	390607	39-17	390809	39-26	391013	39-24/37	391230	39-39	391322	39-41
390208	39-33	390394	39-34	390608	39-17	390810	39-26	391015	39-24	391232	39-23/39	391324	39-41
390219	39-33	390395	39-34	390610	39-18	390811	39-26	391016	39-37	391233	39-23	391326	39-41
390220	39-18/33	390396	39-34	390612	39-18	390812	39-26	391017	39-37	391238	39-39	391328	39-23
390221	39-33	390397	39-34	390613	39-18	390813	39-26	391018	39-37	391240	39-39	391329	39-41
390222	39-33	390402	39-34	390616	39-18	390814	39-26	391019	39-37	391242	39-39	391330	39-41
390223	39-33	390404	39-35	390618	39-18	390815	39-26	391020	39-24	391244	39-39	391331	39-41
390226	39-18/33	390406	39-35	390619	39-18	390816	39-26	391021	39-24	391246	39-23/39	391332	39-23/41
390230	39-33	390420	39-35	390620	39-18	390817	39-26	391022	39-24/37	391248	39-39	391333	39-23/41
390234	39-18/33	390422	39-35	390621	39-18	390818	39-27	391024	39-24	391250	39-10/40	391334	39-10
390238	39-33	390424	39-35	390622	39-18	390819	39-27	391026	39-24/37	391251	39-25		/25/41
390239	39-33	390434	39-35	390623	39-18	390820	39-27	391031	39-37	391252	39-40	391336	39-41
390240	39-33	390436	39-35	390626	39-19	390821	39-27	391032	39-37	391253	39-11/23	391342	39-41
390242	39-33	390438	39-21/35	390627	39-19	390822	39-27	391036	39-37	391254	39-24	391346	39-25/41
390243	39-33	390442	39-21/35	390628	39-19	390823	39-27	391037	39-24/37	391255	39-24	391351	39-9
390246	39-33	390444	39-35	390630	39-19	390824	39-27	391038	39-24/37	391256	39-24		/25/41
390250	39-33	390446	39-35	390631	39-4/19	390825	39-27	391039	39-37	391257	39-24	391353	39-24/41
390252	39-33	390455	39-35	390633	39-19	390826	39-27	391040	39-37	391258	39-24	391355	39-23/41
390254	39-33	390456	39-35	390634	39-19	390827	39-27	391041	39-24	391260	39-40	391356	39-41
390260	39-33	390458	39-22/35	390635	39-19	390828	39-27	391042	39-24	391261	39-25	391357	39-23
390262	39-33	390460	39-35	390637	39-19	390829	39-27	391044	39-24/37	391262	39-24/40	391360	39-42

391361	39-10 /24/42	391474	39-44	391814	39-8	391886	39-14	392005	39-29	392075	39-31
391362	39-10 /24/42	391476	39-44	391815	39-8	391887	39-14	392006	39-29	392076	39-31
391364	39-25	391477	39-44	391816	39-9	391888	39-11	392007	39-29	650768	39-23
391366	39-25/42	391485	39-25	391817	39-9	391889	39-11	392008	39-29	651715	39-13
391368	39-10 /23/42	391491	39-25	391818	39-9	391890	39-11	392009	39-29		
391369	39-42	391492	39-25	391819	39-9	391891	39-11	392010	39-29		
391371	39-10/23	391493	39-25	391820	39-9	391892	39-11	392011	39-29		
391373	39-42	391494	39-25	391821	39-9	391893	39-11	392012	39-29		
391374	39-42	391501	39-44	391822	39-9	391894	39-12	392013	39-29		
391375	39-42	391502	39-44	391823	39-9	391895	39-12	392014	39-29		
391376	39-42	391701	39-3	391824	39-9	391896	39-12	392015	39-29		
391377	39-42	391702	39-3	391826	39-9	391897	39-12	392016	39-29		
391378	39-23/42	391703	39-3	391827	39-9	391898	39-13	392017	39-29		
391379	39-23/42	391704	39-3	391828	39-9	391899	39-13	392018	39-29		
391380	39-42	391705	39-3	391829	39-9	391901	39-15	392019	39-29		
391381	39-42	391706	39-4	391830	39-9	391902	39-15	392020	39-29		
391384	39-42	391707	39-4	391831	39-10	391903	39-15	392021	39-29		
391386	39-23/43	391708	39-4	391832	39-10	391904	39-15	392022	39-29		
391387	39-43	391709	39-4	391833	39-10	391905	39-15	392023	39-29		
391388	39-23	391710	39-4	391834	39-8	391906	39-15	392024	39-29		
391390	39-23/43	391711	39-4	391835	39-8	391907	39-15	392025	39-29		
391391	39-14 /23/43	391712	39-4	391836	39-9	391908	39-15	392026	39-29		
391392	39-23	391713	39-4	391837	39-10	391909	39-15	392027	39-29		
391393	39-25	391714	39-4	391838	39-10	391910	39-15	392028	39-29		
391394	39-43	391715	39-4	391839	39-10	391911	39-15	392029	39-29		
391396	39-43	391716	39-3	391840	39-10	391912	39-15	392030	39-29		
391397	39-43	391717	39-4	391841	39-10	391913	39-15	392031	39-30		
391402	39-43	391718	39-6	391842	39-10	391914	39-15	392032	39-30		
391404	39-43	391719	39-4	391843	39-9	391915	39-15	392033	39-30		
391405	39-43	391720	39-4	391844	39-9	391916	39-15	392034	39-30		
391407	39-24	391721	39-4	391845	39-9	391917	39-15	392035	39-30		
391409	39-24	391722	39-4	391846	39-10	391918	39-15	392036	39-30		
391411	39-25	391723	39-5	391847	39-10	391919	39-15	392037	39-30		
391412	39-25	391724	39-5	391848	39-10	391920	39-15	392038	39-30		
391413	39-25	391725	39-7	391849	39-10	391921	39-15	392039	39-30		
391414	39-25	391726	39-5	391850	39-11	391922	39-16	392040	39-30		
391415	39-25	391727	39-5	391851	39-11	391923	39-16	392041	39-30		
391418	39-24	391728	39-5	391852	39-11	391924	39-16	392042	39-30		
391419	39-24	391729	39-5	391853	39-11	391925	39-16	392043	39-30		
391420	39-11/ 24/43	391730	39-5	391854	39-11	391926	39-16	392044	39-30		
391421	39-24	391731	39-5	391855	39-12	391927	39-16	392045	39-30		
391422	39-25/43	391732	39-5	391856	39-12	391928	39-16	392046	39-30		
391423	39-23	391734	39-5	391857	39-12	391929	39-13	392047	39-30		
391424	39-43	391735	39-5	391858	39-12	391930	39-13	392048	39-30		
391426	39-25/43	391737	39-6	391859	39-12	391931	39-16	392049	39-30		
391428	39-44	391739	39-6	391860	39-12	391932	39-16	392050	39-30		
391429	39-25	391740	39-6	391861	39-12	391933	39-16	392051	39-30		
391431	39-44	391741	39-6	391862	39-12	391934	39-16	392052	39-30		
391432	39-44	391742	39-6	391863	39-10	391935	39-16	392053	39-30		
391433	39-44	391744	39-6	391864	39-12	391936	39-16	392054	39-30		
391438	39-25	391745	39-6	391865	39-12	391937	39-16	392055	39-30		
391440	39-13 /23/44	391746	39-6	391866	39-10	391938	39-16	392056	39-30		
391442	39-44	391747	39-6	391867	39-12	391939	39-16	392057	39-30		
391443	39-44	391748	39-6	391868	39-13	391940	39-16	392058	39-30		
391444	39-44	391750	39-7	391869	39-10	391941	39-16	392059	39-30		
391445	39-44	391751	39-7	391870	39-11	391942	39-16	392060	39-30		
391446	39-25	391753	39-7	391871	39-11	391943	39-16	392061	39-30		
391447	39-24	391801	39-8	391872	39-11	391944	39-16	392062	39-30		
391451	39-24	391802	39-8	391873	39-13	391945	39-13	392063	39-30		
391453	39-24	391803	39-8	391874	39-10	391946	39-14	392064	39-30		
391455	39-25	391804	39-8	391875	39-13	391947	39-14	392065	39-31		
391461	39-25	391805	39-8	391876	39-13	391948	39-14	392066	39-31		
391471	39-44	391806	39-8	391877	39-13	391949	39-14	392067	39-31		
391473	39-44	391807	39-8	391879	39-13	391950	39-14	392068	39-31		
		391808	39-8	391880	39-13	391951	39-14	392069	39-31		
		391809	39-8	391881	39-13	391952	39-13	392070	39-31		
		391810	39-8	391882	39-13	392001	39-29	392071	39-31		
		391811	39-8	391883	39-13	392002	39-29	392072	39-31		
		391812	39-8	391884	39-13	392003	39-29	392073	39-31		
		391813	39-8	391885	39-13	392004	39-29	392074	39-31		

List of Recommended Medicines and Equipment by International Medical Guide for Ships - Third Edition

All ships subject to the regulations established by the international Maritime Organization (IMO) and International Labour Organization (ILO) must have adequate medical supplies, that are periodically inspected, kept in good condition, and are ready for use whenever required. The quantities needed on board will depend on the duration and destination of the voyage, the number of crew members, and the nature of the cargo.

The medicine chest is designed to hold a range of medicinal products needed for the most common medical emergencies likely to occur on board ship, however distant it is from shore.

Different communities have different methods of treatment. Items specific to national requirements and customs can be added to the list of recommended medicines and medical supplies provided at the end of this chapter. The added items, however, should not be used to replace any of the recommended medicines or medical supplies on the list, but should be integrated into the list together with detailed information about their actions and unwanted effects.

The list assumes that on-board medical treatment is dispensed by an officer working under the responsibility of the master. Ships with a doctor on board may carry an expanded range of medicines and other medical equipment and supplies.

Some of the listed medicines are available only on prescription. As regulations differ from country to country, no advice is given here about obtaining these medicines.

Guidance to the International Medical Guide for Ships 3rd edition: Interim advice regarding the best use of the medical chest for ocean-going merchant vessels without a doctor onboard

Joint Statement of WHO Collaborating Centres for the Health of Seafarers and the International Maritime Health Association – 2009 Version

Background

The WHO International Medical Guide for Ships (IMGS) was first published in 1967. The IMGS has widely been used in the maritime world. The second edition, written in 1988 was recently replaced by the third edition in 2007. Immediately after the publication of the current IMGS a discussion on the best use of the tool and on further needs developed among experts from the WHO Collaborating Centres for the Health of Seafarers and the International Maritime Health Association.

During a workshop of the INTERNATIONAL MARITIME HEALTH ASSOCIATION (IMHA) in Athens, Greece, November 14th – 15th 2008 the concerns were summarized as follows: "Flag states that do not have national requirements for the contents of the medical chest have in the past relied on a list that has been provided by WHO in the International Medical Guide for Ships (2nd Edition, 1988). This list provided information on the quantities to be carried on board. It is not a formal international instrument but the Guide is noted as a source of information in the non-statutory part of the relevant ILO Convention. Port State Control Inspectors use the IMGS list as the minimum requirement for medical supplies. The medication list is now very out of date and when WHO recently published a new edition of the Guide it included updated lists of recommended medications that were derived from the WHO Essential Medications List and of medical equipment taken from The Inter-agency Emergency Health Kit 2006. While this was a rational approach for the WHO to ensure that well validated treatments were available it did not take into account the need for remedies for minor ailments at sea – the sort that can impair ability to work without being dangerous, nor did it cover all the medical equipment that was needed in maritime situations. More significantly WHO did not consider that they could specify quantities of medications to be carried as there was a lack of information on use and effectiveness of medications at sea. In the absence of such data WHO considered that quantities should be related to voyage pattern and to political / managerial decisions rather than being stated by WHO. This lack of specification is not causing immediate problems where the flag state of the ship has its own national regulations or guidelines but it has led to great difficulties for maritime pharmacists called on to check and restock medical chests on ships from countries, including many of those with major open ship registries, that have no national lists. Pharmacists cannot continue to work to the outdated list and quantities in the old International Medical Guide, while they have no benchmarks for quantities required from the new one, nor the authority to make consistent decisions on the quantities to supply".

WHO Collaborating Centres for the Health of Seafarers and IMHA (the International Maritime Health Association) agreed that there are a number of topics where improvements are needed. The aim is to produce a knowledge-base to specify the contents of medical chests and the medical textbook. While this is a long-term approach requiring research efforts it was also agreed upon the need to produce an interim guidance on the medical chest to the current users of the IMGS even in the absence of further evidence. Symptom-oriented algorithms for diagnosis and treatment as a supplement to the current IMGS 3rd edition will follow soon.

In this paper the authors, who are experts from the International Medical Health Association and the WHO Collaborating Centres for the Health of Seafarers publish recommendations to the medical chest as given in the IMGS 3rd edition. This is an interim advice to be available to ship-owners, -masters and maritime authorities and pharmacists for use on merchant ships not carrying a medical doctor of those flags that do not follow the EU Directive 92/29[5] and do not have national requirements. The readers and users of the interim advice need to be aware that the expert group does not judge on the content of the current list as published by the World Health Organization in the 3rd edition of the IMGS.

[5] Council Directive 92/29/ eec of 31 March 1992 on the minimum safety and health requirements for improved medical treatment on board vessels.

The aim of the Interim Advice as given below **is**

- to provide an aid for decision making for quantities required for seagoing and coastal vessels.
- to add items named in the textbook of the IMGS 3rd edition but missing in the list of medicines or equipment.
- to add page numbers from the medical textbook to the list of medicines for easier use.

The Interim Advice as given below **is not**

- mandatory for ship-owners, suppliers or port health authorities. It is to the flag states responsibility to specify national requirements in a legally binding way.
- meant to substitute a qualified medical consulting. Owners and operators carry the final responsibility for the content of the medical chests on board of the ship. Owners and operators will need to seek qualified medical consulting for the content and quantities carried on board. The particularities of the voyage will need to be considered by the consultant, like travel to malaria risk areas.

The authors of the Interim Advice are solely responsible for the content of all additions made to The List of Recommended Medicines and Equipment of the International Medical Guide for ships 3rd edition, pages 430-461. We appreciate the comments of the maritime community to this publication which will be continuously revised. All comments and suggestions need to be directed to the corresponding author. Please mail to Clara.Schlaich@jhu.edu

How to use the proposed list of recommended medicines and equipment of the International Medical Guide for Ships 3rd edition, pages 430-461

- The Interim Advice is **only** to be used in conjunction with the International Medical Guide for Ships 3rd edition[2] as published by WHO in 2007.

  [2] International Medical Guide for Ships (3rd Edition), World Health Organization, Geneva. 2007.

- All items suggested from WHO in the original list on pages 430 to 461 are included.
- Any additions to the original list (items and comments) are made visible by the use of italic letters. Reference pages from the medical textbook to the list of items which justify the additions are given.
- Running numbers have been given to the list of medicines and equipment including added items.
- Drugs, forms, books and equipment which are mentioned in the textbook but have not been displayed in the list of medicines are added to the list in alphabetical order.
- Reference pages to the medical textbook are given for all items to ease the use of the list.
- If an item may be omitted under special circumstances this is mentioned in italic letters in the last column.
- Suggestions for quantities have been included. Quantities are calculated on the basis of the following assumptions: Ocean-going merchant vessels without a doctor onboard. Maximum duration of travel of 3 weeks. Crew sizes of 10, 20, 30 or 40 persons.
- For merchant vessels without a doctor onboard engaged in coastal trade or going to nearby foreign ports, and not more than 24 hours away from a port of call, for fishing boats and private craft: Quantities may be adapted or omitted on the advice of a qualified medical practitioner or pharmacist with regards to the destination, medical facilities ashore, number of crew members and cargo.
- **For dosage, contra-indications, unwanted effects, radiomedical advice and further remarks the users needs to refer to original text of the IMGS 3rd edition.**
- Recommended quantities will not always reflect the standard packs in a given country. In this case the recommendation is for the nearest available dispensing sales pack above the minimum required quantity.
- Owners and operators may substitute exact equivalents on the advice of a qualified medical practitioner or pharmacist, provided they are satisfied that an equivalent level of treatment is assured.
- Specific items will not be available in certain countries, for example Chlorpyrifos was banned in the European Communion (Directive 98/8 eec of March 16th 1998). The pharmacist will have to supply an analogous drug in corresponding quantities. The same is true for items which have transport restrictions and can not be delivered locally.
- For ships carrying dangerous goods according to the IMDG Code[6] : Medicines and equipment already available in the IMGS list may be counted toward the Medical First Aid Guide (MFAG) numerical requirement, if appropriate.

  [6] Medical First Aid Guide (MFAG) for use in accidents involving dangerous goods. International Maritime Organization, London, 2004.

Ocean-going merchant vessels without a doctor onboard.
Maximum duration of travel of 3 weeks.
Crew sizes of 10, 20, 30 or 40 persons.
Only to be used in conjunction with the International Medical Guide for Ships 3rd edition

Running numbers are given to the alphabetical list of medicines and equipment. Items which have been added by authors appear in alphabetical order and are written in italic letters.	Quantities for the recommended minimum number of items for ocean-going vessels are based on an estimated 3 weeks inventory for a crew complement of 10 to 40 persons.	Comments in italic letters refer to added items which are mentioned in the textbook but have not been displayed in the list of medicines. Remarks on items which may be omitted under special circumstance are given. For dosage, contra-indications, doctor consulting, unwanted effects and remarks refer to IMGS 3rd ed. p.430-461 and textbook.

List of Recommended Medicines

Item No.	CODE	Recommended Item, Dosage form, Strength	*Per 10*	*Per 20*	*Per 30*	*Per 40*	Indications (on board ships) *Added comments*
1	**39 17 01**	Acetylsalicylic acid, 300 mg tablet	*100*	*200*	*300*	*400*	- High dose (600-900 mg); to reduce pain, fever, inflammation. - Low dose (100-150 mg); to inhibit formation of blood clots in angina pectoris, myocardial infarction stroke. *See pages 17-25 and 113-116, 133-135, 137, 138.*
2	**39 17 02**	Aciclovir 400 mg tbl.	*35*	*35*	*70*	*70*	- Treatment of primary or recurrent herpes simplex virus infection; - May be useful for severe varicella and herpes zoster infection (doctor should be consulted). *See pages 125-126, 198-199, 256.*
3	**39 17 03**	Adrenaline 1:1000 ampoule 1 ml = 1 mg	*10*	*10*	*10*	*10*	- To raise blood pressure in anaphylaxis. - To dilate airways in severe asthma or anaphylaxis. *See pages 145-147.*
4	**39 17 04**	Amethocaine *(Tetracaine hydrochloride)* 0.5% eye drops, single-use vial 1 ml	*20*	*20*	*20*	*20*	For eye examination and procedures. *See pages 33-34.*
5	**39 17 05**	Amoxicillin + clavulanate tablets 875 mg/125 mg	*15*	*30*	*30*	*45*	- To treat infections responsive to this antibiotic. *See pages 7-776, 140-144, 181-183, 204, 216-217, 221-223, 262 and 288.*
6	**39 17 16**	*Antimalarial prophylaxis (Prevention) tablets*	*Quantity dependent of crew number, risk of acquiring malaria in a given port and duration of dwell in risk area. Seek medical advice.*				*Prophylaxis and treatment of Malaria.* *See pages 265-269.*

(to be continued)

Item No.	CODE	Recommended Item, Dosage form, Strength	*Per 10*	*Per 20*	*Per 30*	*Per 40*	Indications (on board ships) *Added comments*
7	**39 17 06**	Artemether ampoule 1 ml = (80 mg)	*5*	*5*	*5*	*5*	Treatment of severe malaria. *See pages 265-269.* Required only for voyages to areas where malaria transmission is a risk.
8	**39 17 07**	Artemether + Lumefantrine tablets 20 mg + 120 mg	*24*	*24*	*48*	*48*	Treatment of malaria. *See pages 265-269.* Required only for voyages to areas where malaria transmission is a risk.
9	**39 17 08**	Atropine ampoule 1.2 mg/ml	*10*	*10*	*10*	*10*	- To treat slow heart rate in myocardial infarction. - To treat organophosphate insecticide poisoning. *See pages 96, 136.*
10	**39 17 09**	Azithromycin tablet 500 mg	*3*	*3*	*6*	*6*	- To treat infections responsive to this antibiotics. *See pages 141-144, 195-207, 260, 274, 277, 281.*
11	**39 17 10**	Ceftriaxone ampoule 1 g powder for injection (Dissolve in water for injection)	*15*	*30*	*45*	*60*	- To treat infections responsive to this antibiotic. *See pages 16, 141-144, 153, 160-161, 172, 175, 187, 194, 195-207, 269-270.*
12	**39 17 11**	Cetirizine tablet 10 mg	*30*	*30*	*30*	*30*	- To treat allergy symptoms in hay fever, hives, allergic dermatitis, etc. *See page 145.*
13	**39 17 12**	Charcoal, activated 50 g in 300 ml purified water	*2*	*2*	*2*	*2*	To absorb ingested poisons. *See pages 93-96.*
14	**39 17 13**	Ciprofloxacin tablet 250 mg	*40*	*40*	*40*	*40*	- To treat infections responsive to this antibiotic. *See pages 77, 156-157, 181-183, 195-207, 221-223, 262 and 277.*
15	**39 17 14**	Cloves, oil of 10 ml	*1*	*1*	*1*	*1*	Toothache, *See pages 287-289.*
16	**39 17 15**	Dexamethasone ampoule 4 mg/ml	*5*	*5*	*5*	*5*	- To treat life-threatening and severe asthma. - To treat anaphylaxis. - To treat severe allergic reactions.
17	**39 04 62**	Diazepam tablets 5 mg	*50*	*50*	*100*	*100*	To treat alcohol withdrawal. *See pages 235-239.*
18	**39 17 17**	Docusate with Senna tablet 50 mg + 8 mg	*20*	*20*	*40*	*40*	- To avoid straining in patients with anal fissure and haemorrhoids. - To prevent constipation caused by opioid use. *See pages 168-169.*
19	**39 06 31**	Doxycycline tablet 100 mg	*20*	*20*	*40*	*40*	As recommended in IMGS3 for the specific infection. *See pages 195-207, 209-210, 221-223, 271-272.*
20	**39 17 19**	Ethanol 70%, hand cleanser gel *250 ml*	*2*	*4*	*6*	*8*	An alternative to hand-washing when hands are not obviously soiled.
21	**39 17 20**	Ethanol 70%, liquid *500 ml*	*1*	*1*	*2*	*2*	To disinfect instruments and surfaces.
22	**39 17 21**	Fluorescein 1%, strips or single use vials *1 ml*	*20*	*20*	*20*	*20*	To detect damage to cornea: damaged area stains yellow/green. *See pages 33-34.*
23	**39 17 22**	Frusemide ampoule 4 ml = 40 mg	*5*	*5*	*5*	*5*	To treat severe fluid retention in lungs (pulmonary oedema) due to cardiac failure, *See pages 15, 136.*

(to be continued)

Item No.	CODE	Recommended Item, Dosage form, Strength	Per 10	Per 20	Per 30	Per 40	Indications (on board ships) *Added comments*
24	**39 17 23**	Glucagon, ready to use ampoule 1 mg amp	*1*	*1*	*1*	*1*	To treat low blood sugar (hypoglycaemia) due to insulin when oral intake is impossible and intravenous glucose cannot be given. *See pages 123, 125.* *It is recommended to carry a glucose measuring instrument on board.*
25	**39 17 24**	Haloperidol ampoule 1 ml = 5 mg	*5*	*5*	*10*	*10*	- To treat psychotic hallucinations and delusions. - To treat severe agitation and aggressiveness. *See pages 126-132.*
26	**39 06 44**	Hydrocortisone 1% cream *(20 – 30 gram)*	*2*	*4*	*6*	*8*	To treat allergy and some other inflammatory skin conditions. *See pages 169, 212-213, 219-221.*
27	**39 17 26**	Ibuprofen coated tablet 400 mg	*50*	*100*	*150*	*200*	- To treat inflammation. - To reduce mild-to-moderate pain, especially if associated with inflammation. *See pages 17-25.*
28	**39 03 52**	*Insect repellent lotions for skin. Vials for personal use DEET 20-35% formulation or Picaridin or p-menthane-3,8-diol*	*One vial per person in areas of risk of acquiring a disease transmitted by mosquitoes in a given port*				*Consider diseases transmitted by mosquitoes as Dengue Fever p 258-259, Malaria p 265-269, Yellow Fever p 284.* *See also pages 363-364 for mosquito control in general.*
29	**39 17 27**	Isosorbide dinitrate tablet 5 mg *sublingual.*	*20*	*20*	*40*	*40*	- To treat angina pectoris (chest pain). - To treat myocardial infarction.
30	**39 17 28**	Lignocaine 1% (without adrenaline) ampoule 5 ml	*5*	*5*	*10*	*10*	For local anaesthesia when suturing wounds or performing minor surgery. *See pages 71-74, 216-219.*
31	**39 17 29**	Loperamide tablet 2 mg	*30*	*60*	*90*	*120*	To treat symptoms of diarrhoea. *See pages 156-157.*
32	**39 17 30**	Mebendazole tablet 100 mg	*10*	*10*	*20*	*20*	- To treat intestinal worm infections not effective for tapeworm infection or hydatid disease. *See pages 281-284.*
33	**39 17 31**	Metoprolol tablet 100 mg	*30*	*60*	*60*	*60*	- To treat hypertension (high blood pressure). - To treat artrial fibrillation (irregular or rapid heart rate). - To treat angina pectoris (chest pain). - To prevent migraine *See pages 133-137.*
34	**39 17 32**	Metronidazole tablet 500 mg	*30*	*30*	*30*	*30*	To treat infections responsive to antibiotics. *See pages 160-163, 172, 203-204.*
35	**39 06 52**	Miconazole 2% cream	*2*	*4*	*6*	*8*	To treat fungal skin infections. *See pages 203-204, 214.* *If women on board, supply also Miconazole vaginal cream.*
36	**39 17 34**	Midazolam ampoule 1 ml (= 5 mg)	*5*	*5*	*10*	*10*	To terminate epileptic fits. *See pages 121, 128-130.*
37	**39 17 35**	Misoprostol tablet 200 µg	*3*	*3*	*3*	*3*	To prevent post-partum haemorrhage. *Page 192* *If women on board.*

(to be continued)

Item No.	CODE	Recommended Item, Dosage form, Strength	*Per 10*	*Per 20*	*Per 30*	*Per 40*	Indications (on board ships) *Added comments*
38	**39 03 90**	Morphine (injectable) ampoule 1 ml = 10 mg	*10*	*20*	*30*	*40*	- To reduce severe pain. - To reduce pain not relieved by other analgesics. *See pages 17-25.*
39	**39 17 37**	Morphine (oral) liquid 1 mg/ml *100 ml bottle or 10 tablets with 10 mg*	*1*	*1*	*1*	*1*	To reduce severe pain likely to last several days in patients able to eat and drink. *See pages 17-25.*
40	**39 06 56**	Naloxone ampoule 1 ml (= 0.4 mg)	*10*	*10*	*10*	*10*	To reverse effects of opioids, especially in case of overdose. *See pages 123, 240.*
41	**39 17 39**	Omeprazole tablets 20 mg	*30*	*30*	*60*	*60*	- To treat gastro-oesophageal reflux. - To treat peptic ulcer disease. *See pages 152, 163-167 and 173.*
42	**39 17 40** **39 17 41**	Ondansetron tablet 4 mg or *Scopolamin transdermal patches* *See pages 347.*	*10* *5*	*10* *5*	*20* *10*	*20* *10*	- To prevent vomiting. - To prevent seasickness. *See page 347.* *Caution : Scopolamine treatment causes. sedation, See remarks on page 347.*
43	**39 06 58**	Oral rehydration salts sachets of powder for reconstitution	*10*	*10*	*20*	*20*	To prevent or treat dehydration, especially due to diarrhoea, *See pages 257-258 and 347.*
44	**39 17 42**	Oxymetazoline 0.5% (or equivalent) drops or *spray*	*4*	*5*	*6*	*7*	- To treat nasal obstruction due to allergies or viral infection. - To improve sinus drainage in sinusitis.
45	**39 06 60**	Paracetamol tablets 500 mg	*100*	*200*	*300*	*400*	To reduce pain and fever (but not inflammation). *See pages 17-25.*
46	**39 17 44**	Permethrin 1% lotion *250 ml*	*1*	*1*	*2*	*2*	To eliminate hair, pubic, and body lice *See pages 219-221.*
47	**39 17 45**	Permethrin 5% lotion, vial of *250 g*	*1*	*1*	*2*	*2*	To treat scabies. *See pages 219-221.*
48	**39 17 46**	Povidone iodine ointment 10% 25 to 50 g	*2*	*3*	*4*	*5*	To disinfect skin and wounds. *See pages 67-77, 215-219.*
49	**39 17 48**	Povidone iodinesolution 10% 30 to 120 ml	*2*	*3*	*4*	*5*	To disinfect skin and wounds. *See pages 67-77, 215-219.*
50	**39 17 47**	Prednisone tablet 25 mg	*30*	*30*	*60*	*60*	- To treat severe asthma. - To treat other inflammatory conditions (on medical advice). *See pages 125-126, 145-147.*
51	**39 04 72**	*Petroleum jelly 50 g to 100 g (Vaseline)*	*2*	*3*	*4*	*5*	*- To treat chapped skin. See page 212, 261 for lubricating rectal thermometer.*
52	**39 06 72**	Salbutamol aerosol inhaler 0.1 mg/dose	*1*	*2*	*3*	*4*	- To treat asthma. - To treat chronic bronchitis. - To treat emphysema. - To treat other lung diseases. *See pages 145-147.*
52a	**39 17 18**	*Volume spacer for salbutamol inhaler*	*1*	*1*	*1*	*1*	*To make inhaling salbutamol more effective.* *See page 146.*

(to be continued)

Item No.	CODE	Recommended Item, Dosage form, Strength	Per 10	Per 20	Per 30	Per 40	Indications (on board ships) *Added comments*
53	**39 06 73**	Sodium chloride 0.9% infusion plastic-bottle 1 litre *or 2 x 500 ml plastic-bottle*	*5*	*5*	*5*	*5*	For fluid replacement. *Can also be used for sterile eye irrigation, See page 38.*
53a	**39 06 74**	*Sodium chloride 0.9% infusion plastic-bottle 10 ml*	*2*	*2*	*2*	*2*	*For sterile eye bathing and application of wet compresses, See page 38.*
54	**39 17 50**	Tetracycline 1% ointment *Eye –ointment 5 g*	*2*	*4*	*6*	*8*	To treat minor eye infections; To prevent infections following damage to the cornea. *See pages 33-34, 40-42, 261.*
55	**39 06 78**	*Tetanus immunoglobulin ampoule. (keep at 2-8°C)*	*1*	*1*	*1*	*1*	*Part of wound care if state of vaccination is unknown, See page 68.*
56	**39 06 79**	*Tetanus toxoid vaccination ampoule. (keep at 2-8°C)*	*1*	*1*	*1*	*1*	*Part of wound care if state of vaccination is unknown, See page 68.*
57	**39 17 25**	*Tramadol tablets 50 mg*	*50*	*50*	*50*	*50*	*Against moderate pain; See pages 22-23. In severe pain use morphine; See pages 17-25.*
58	**39 17 51**	Vitamin K (Phytomenadione) ampoule 1 ml = 10 mg	*2*	*2*	*2*	*2*	To reverse excessive or unwanted effects of warfarin or related drugs. *See pages 96, 173.*
59	**39 06 82**	Water for injection ampoules 5 ml	*20*	*30*	*40*	*50*	Reconstitution of injectable drugs provided as powders.
60	**39 17 53**	Zidovudine plus Lamivudine tablets, 300 mg + 150 mg *Consider adding further or using other antiviral substance following current guidelines* *http://www.who.int/hiv/pub/prophylaxis/pep_guidelines/en/index.html* *http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm*	*Carry at least 60 tablet.* *Qualified medical advice needed for general risk assessment on board.* *Omit only if very low risk of infection with exposure on board.* *Add further or other antivirals following guidelines with moderate to high risk for infection in case of exposure.*				Prophylaxis against HIV infections after needle-stick injury. One tablet daily twice daily for four weeks. *See page 252.* *In case of exposure immediately seek radio-medical advice for risk assessment in individual person.*
61	**39 06 83**	Zinc oxide 20% paste or ointment *50-100g*	*5*	*5*	*5*	*5*	Protection of irritated skin.

List of Recommended Equipment

Item No.	CODE	Recommended Item	Per 10	Per 20	Per 30	Per 40	Category Added Comments
1. RESUSCITATION EQUIPMENT							
1.1	**39 18 01**	Portable oxygen set, complete, containing;	*1*	*1*	*1*	*1*	Appliance for the administration of oxygen. *See pages 4-5.*
1.1a	**39 18 02**	1 oxygen cylinder, 2 ltr/200 bar	*1*	*1*	*1*	*1*	*Ready to use. See pages 4-5.*
1.1b	**39 18 03**	1 spare oxygen cylinder, 2 ltr/200 bar	*1*	*1*	*1*	*1*	*See pages 4-5. If no additional equipment from the MFAG on board consider to increase amount of oxygen to 4 x 10 ltr.*
1.1c	**39 18 04**	Pressure regulating unit and flow meter with tubes such that ship's industrial oxygen can also be used	*1*	*1*	*1*	*1*	*See pages 4-5.*
1.1d	**39 18 05**	3 disposable face masks of choice: including simple face mask and non-rebreathing mask	*1*	*2*	*3*	*4*	*See pages 4-5.*
1.2a	**39 18 06**	Guedel airway (Mayo-tube): size medium	*1*	*1*	*1*	*1*	Oropharyngeal airway, *See pages 4-5, 315.*
1.2b	**39 18 34**	Guedel airway (Mayo-tube): size large	*1*	*1*	*1*	*1*	Oropharyngeal airway, *See pages 4-5, 315.*
1.3a	**39 18 07**	Manual aspirator to clear upper airways	*1*	*1*	*1*	*1*	Mechanical aspirator, *See pages 4-5.*
1.3b	**39 18 35**	Catheters for aspirator	*2*	*2*	*2*	*2*	Mechanical aspirator, *different sizes; See pages 4-5.*
1.4	**39 18 08**	Ambubag or equivalent: supplied with small, medium and large masks	*1*	*1*	*1*	*1*	Bag and mask resuscitator *including oxygen reservoir bag and oxygen tubing, See pages 4-5.*
1.5	**39 18 09**	Brook Airway, Lifeway, pocket face mask or equivalent	*1*	*1*	*1*	*1*	Cannula for mouth-to-mouth resuscitation, *See pages 4-5.*
2. DRESSING MATERIAL AND SUTURING EQUIPMENT							
2.1	**39 18 10**	Assorted wound-plaster or plaster strips, water resistant – *slim and broad*	*200*	*200*	*200*	*200*	Adhesive dressings.
2.2a	**39 18 11**	Sterile gauze compresses, 5 cm × 5 cm, sterile	*50*	*50*	*100*	*100*	Sterile gauze compresses.
2.2b	**39 18 12**	Sterile gauze compresses, 10 cm × 10 cm	*50*	*50*	*100*	*100*	Sterile gauze compresses.
2.3	**39 18 13**	Gauze roll, 5 cm and 60 or 90 cm×100 m, non-sterile	*1*	*1*	*1*	*1*	Gauze roll. *60 cm / 90 cm may be substituted by gauze roll of smaller size.*
2.4	**39 18 14**	Non-adherent gauze dressing, square, 10 cm	*10*	*20*	*30*	*40*	Gauze dressing with non-adherent surface.
2.5	**39 18 15**	Paraffin gauze dressing, 10 × 10 cm, sterile	*40*	*40*	*40*	*40*	Vaseline gauze.

(to be continued)

Item No.	CODE	Recommended Item	*Per 10*	*Per 20*	*Per 30*	*Per 40*	Category Added Comments
2.6	**39 18 16**	Elastic fixation bandage, 4 m x 6 cm	*3*	*6*	*9*	*12*	Bandage.
2.7a	**39 18 17**	First-aid absorbent gauze-covered cotton pad sewn onto a cotton bandage (ambulance dressing) small	*5*	*5*	*10*	*10*	Sterile compression bandages.
2.7b	**39 18 36**	First-aid absorbent gauze-covered cotton pad sewn onto a cotton bandage (ambulance dressing) medium	*5*	*5*	*10*	*10*	Sterile compression bandages.
2.7c	**39 18 43**	First-aid absorbent gauze-covered cotton pad sewn onto a cotton bandage (ambulance dressing) large	*5*	*5*	*10*	*10*	Sterile compression bandages.
2.8a	**39 18 18**	Tubular gauze bandage for finger bandage, 5 m	*1*	*1*	*1*	*1*	Tubular gauze for finger bandage. *See pages 43-58.*
2.8b	**39 18 44**	Applicator for finger bandage	*1*	*1*	*1*	*1*	*See pages 43-58.*
2.9	**39 18 19**	Adhesive elastic bandage, 4 m x 6 cm	*10*	*10*	*10*	*10*	Adhesive elastic bandage.
2.10	**39 18 20**	Triangular sling	*5*	*5*	*5*	*5*	Triangular sling. *See pages 43-58 and 77.*
2.11	**39 18 21**	Sterile sheets for burn patients	*2*	*2*	*4*	*4*	Sterile sheet for burn victims. *Different sizes See pages 79-83.*
2.12	**39 18 22**	Honey for dressing burns 1 kg *(only purified 1,000 g)*	*1*	*1*	*2*	*2*	*Only if honey for medical purposes available. Otherwise use a hydrogel-burnkit. See pages 79-83.*
2.13	**39 18 23**	Adhesive tape, waterproof, skin-friendly, 5 x 1.25 cm	*3*	*3*	*6*	*6*	Adhesive sutures or zinc oxide bandages.
2.14	**39 18 24**	Q-tips (wooden)	*100*	*100*	*100*	*100*	Q-tips.
2.15	**39 13 51**	Safety pins (stainless steel) 12 pieces	*1*	*1*	*2*	*2*	Safety pins.
2.16	**39 18 26**	Butterfly sutures, Steristrip® or Leukostrip®, sterile	*50*	*50*	*50*	*50*	Butterfly sutures. *See pages 69-74.*
2.17	**39 18 27**	2-octyl cyanoacrylate liquid, 0.5 ml	*1*	*1*	*1*	*1*	Skin adhesive for closing small wounds. *See pages 69-74.*
2.18a	**39 18 28**	Sutures, absorbable with curved non-traumatic needles, 1-0	*3*	*3*	*6*	*6*	Suturing equipment. *See pages 71-74. Replace with non-absorbable sutures for easier use, See page 71.*
2.18b	**39 18 45**	Sutures, absorbable with curved non-traumatic needles, 3-0	*3*	*3*	*6*	*6*	Suturing equipment. *See pages 71-74. Replace with non-absorbable sutures for easier use, See page 7.1.*
2.18c	**39 18 29**	Sutures, absorbable with curved non-traumatic needles, 4-0 or 5-0	*3*	*3*	*6*	*6*	Suturing equipment. *See pages 71-74. Replace with non-absorbable sutures for easier use, See page 71.*
2.19a	**39 18 30**	Disposable examination gloves, *size M*	*100*	*100*	*100*	*100*	Gloves.
2.19b	**39 18 74**	Disposable examination gloves, *size L*	*100*	*100*	*100*	*100*	Gloves.

(to be continued)

Item No.	CODE	Recommended Item	Per 10	Per 20	Per 30	Per 40	Category Added Comments
2.19c	**39 18 31**	Surgical gloves size 6.5, sterile, in pairs	*3*	*4*	*5*	*6*	Gloves *(sterile).*
2.19d	**39 18 63**	Surgical gloves size 7.5, sterile, in pairs	*3*	*4*	*5*	*6*	*Gloves (sterile).*
2.19e	**39 18 66**	Surgical gloves size 8.5, sterile, in pairs	*3*	*4*	*5*	*6*	*Gloves (sterile).*
2.20	**39 12 50**	*Eye pads*	*1*	*2*	*3*	*4*	*See pages 36, 38.*
3. INSTRUMENTS							
3.1	**39 18 32**	Scalpel, sterile, disposable	*10*	*10*	*10*	*10*	Disposable scalpels, *See pages 71-74, 216-219.*
3.2	**39 18 33**	Instrument box (stainless steel)	*1*	*1*	*1*	*1*	Stainless-steel instrument box.
3.3	**39 13 61**	Operating scissors, straight (stainless steel)	*1*	*1*	*1*	*1*	Scissors.
3.4	**39 13 62**	Bandage scissors (stainless steel)	*1*	*1*	*1*	*1*	Scissors.
3.5	**39 12 69**	Splinter forceps, pointed (stainless steel)	*1*	*1*	*1*	*1*	Forceps.
3.6	**39 18 37**	Teeth tissue forceps (stainless steel)	*1*	*1*	*1*	*1*	Forceps. *See pages 71-74, 216-219.*
3.7	**39 18 38**	Needle holder, Mayo-Hegar, 180 mm, straight	*1*	*1*	*1*	*1*	Needle holder. *See pages 71-74.*
3.8	**39 18 39**	Haemostatic clamp, Halstead mosquito, 125 mm, stainless steel	*2*	*2*	*2*	*2*	Haemostatic clamps.
3.9	**39 18 40**	Razor, disposable	*5*	*5*	*5*	*5*	Disposable razors.
4. EXAMINATION AND MONITORING EQUIPMENT							
4.1	**39 18 41**	Tongue depressors, disposable	*100*	*100*	*100*	*100*	Disposable tongue depressors.
4.2	**39 18 42**	Reactive strips for urine analysis: blood/glucose/ protein/nitrite/leukocytes	*50*	*50*	*100*	*100*	Reactive strips for urine analysis, *See pages 311-312, 324.*
4.3	**39 13 34**	Microscope slides	*12*	*12*	*12*	*12*	Microscope slides, *See pages 265-269.*
4.4	**39 13 71**	Stethoscope	*1*	*1*	*1*	*1*	Stethoscope.
4.5	**39 13 68**	Sphygmomanometer (blood pressure set), preferably automatic	*1*	*1*	*1*	*1*	Aneroid sphygmomanometer, *See pages 305-307.*
4.6a	**39 18 46**	Standard thermometer, digital if possible	*2*	*2*	*3*	*3*	Standard thermometer, *See pages 302-304.*
4.6b	**39 18 47**	Rectal thermometer, digital if possible	*1*	*1*	*1*	*1*	Rectal thermometer, *See pages 302-304.*
4.7	**39 18 48**	Thermometer 32°-34°C, digital if possible	*1*	*1*	*1*	*1*	Hypothermic thermometer, *preferable range 26°C to 42°C to differentiate between severe-moderate-mild hypothermia; See pages 343-344.*
4.8	**39 18 49**	Penlight + blue cover	*1*	*1*	*1*	*1*	Penlight (Blue light) to detect damage to cornea. *See pages 33-34.*
4.9	**39 18 69**	*Waterproof indelible marker*	*1*	*1*	*1*	*1*	*See page 29.*
4.10	**39 12 53**	*Magnifying glass (a x 8 loupe)*	*1*	*1*	*1*	*1*	*See pages 33-34.*

(to be continued)

Item No.	CODE	Recommended Item	Per 10	Per 20	Per 30	Per 40	Category Added Comments
FORMS AND BOOKS							
4.11	**39 14 20**	*Temperature cards / charts*	*10*	*10*	*10*	*10*	*Use as master copy from page 302.*
4.12	**39 18 70**	*Cards for telemedical advise*	*10*	*10*	*10*	*10*	*Use as master copy. Should be filled in before calling radiomedical advise.*
4.13	**39 18 71**	*Medical logbook*	*1*	*1*	*1*	*1*	*See p.455.*
4.14	**39 18 72**	*Controlled drug register*	*1*	*1*	*1*	*1*	*Controlled drug register.*
4.15	**37 06 74**	*International Medical Guide for Ships 3rd*	*1*	*1*	*1*	*1*	*Hard-copy.*
4.16a	**39 18 88**	*Forms from Annex A Ship master's report form*	*10*	*10*	*10*	*10*	*Use as master copy (See pages 455-461) file in medical log p.455.*
4.16b	**39 18 89**	*Forms from Annex A Ship's identity and navigational status form*	*10*	*10*	*10*	*10*	*Use as master copy (See pages 455-461).*
4.16c	**39 18 90**	*Forms from Annex A Patient health status form*	*10*	*10*	*10*	*10*	*Use as master copy (See pages 455-461).*
4.16d	**39 18 91**	*Forms from Annex A Primary physician's report form*	*10*	*10*	*10*	*10*	*Use as master copy (See pages 455-461).*
4.17	**37 06 82**	*Vaccination requirements*	*1*	*1*	*1*	*1*	*International travel and Health, current edition (WHO).*
4.18	**39 18 92**	*Malaria prophylaxis and treatment*	*1*	*1*	*1*	*1*	*www.who.int/malaria/publications.html. See page 266.*
5. EQUIPMENT FOR INJECTION, INFUSION, AND CATHETERIZATION							
5.1	**39 18 50**	Syringes, Luer connection, 2 ml, sterile, disposable	*10*	*20*	*30*	*40*	Equipment for injection, *See pages 324-329.*
5.2	**39 18 51**	Syringes, Luer connection, 5 ml, sterile, disposable	*10*	*20*	*30*	*40*	Equipment for injection, *See pages 324-329.*
5.3	**39 18 93**	*Syringes, Luer connection, 10 ml, sterile, disposable*	*10*	*10*	*20*	*20*	*Equipment for injection, See pages 324-329.*
5.4	**39 18 52**	Hypodermic subcutaneous needle, Luer connection, 16 × 0.5 mm, *(23G or 25G), sterile, disposable*	*20*	*30*	*40*	*50*	Equipment for subcutaneous injection, *See pages 324-329.*
5.5	**39 18 53**	Hypodermic intramuscular needle *(19G or 21G)*, Luer connection, 40 × 0.8 mm, sterile, disposable	*20*	*30*	*40*	*50*	Equipment for intramuscular injection, *See pages 324-329.*
5.6	**39 18 54**	Needles, 19G *or 21G*, blunt, "drawing up" type	*20*	*30*	*40*	*50*	*Equipment for drawing the medicine into the syringe, See pages 324-329.*

(to be continued)

Item No.	CODE	Recommended Item	*Per 10*	*Per 20*	*Per 30*	*Per 40*	Category Added Comments
5.7a	**39 18 55**	Intravenous infusion cannula 16G (1.7mm) *or 19G*, Luer-lock connection, sterile, non-recap type + mandarin	*5*	*5*	*10*	*10*	*Equipment for intravenous fluid infusion, See page 326.*
5.7b	**39 18 94**	Intravenous infusion cannula 22G (0.8mm) *or 21G*, Luer-lock connection, sterile, non-recap type + *mandarin*	*5*	*5*	*10*	*10*	*Equipment for intravenous fluid infusion, See page 326.*
5.8	**39 18 56**	Intravenous giving set, Luer-lock connection, sterile + *3-way valve/ connection*	*5*	*5*	*10*	*10*	Equipment for intravenous infusion, *See pages 324-329.*
5.9	**39 18 57**	Tourniquet, blood-taking type, to be used with intravenous infusion cannula	*1*	*1*	*1*	*1*	Equipment for infusion, *See pages 324-329.*
5.10a	**39 18 58**	Penile sheath set with condom catheter, tube, and bag	*1*	*1*	*1*	*1*	Bladder drainage equipment, *See pages 308-309.*
5.10b	**39 18 95**	*Indwelling urine catheter 14 CH*	*1*	*1*	*1*	*1*	*Bladder drainage equipment, See pages 319-321.*
5.11a	**39 18 59**	Short-term urine catheter with soft-eye straight tip Thieman No.12, or equivalent	*2*	*2*	*2*	*2*	Bladder drainage equipment, *See pages 319-321.*
5.11b	**39 18 96**	Short-term urine catheter with soft-eye straight tip Thieman No.16, or equivalent	*2*	*2*	*2*	*2*	Bladder drainage equipment, *See pages 319-321.*
5.11c	**39 18 97**	Complete sterile urine catheterization set with lubricant, drapes, cotton swabs, skin disinfection, forceps, sterile container	*2*	*2*	*2*	*2*	Bladder drainage equipment, *See pages 319-321.*
5.12	**39 18 60**	Urine collecting bag and tube	*2*	*2*	*2*	*2*	Bladder drainage equipment, *See pages 319-321.*
6. GENERAL MEDICAL AND NURSING EQUIPMENT							
6.1	**39 18 61**	Plastic goggles or full-face mask	*1*	*1*	*1*	*1*	Eye protection.
6.2	**39 18 62**	Disposable plastic apron	*10*	*10*	*10*	*10*	Plastic apron.
6.3	**39 13 16**	Kidney dish, stainless steel, 825 ml	*1*	*1*	*2*	*2*	Kidney dish.
6.4	**39 18 64**	Towels,plastic backed, absorbent, 600 x 500 mm	*10*	*10*	*10*	*10*	Plastic backed towels.
6.5	**39 18 65**	Safety box for sharps disposable, 5 ltr	*1*	*1*	*1*	*1*	Safety box size of *1-5 liters may be chosen.*
6.6	**39 12 83**	Mask, duckbill type, disposable	*50*	*50*	*100*	*100*	Mask.
6.7	**39 18 67**	Tape measure, vinyl coated, 1.5 m	*1*	*1*	*1*	*1*	Tape measure.

(to be continued)

Item No.	CODE	Recommended Item	Per 10	Per 20	Per 30	Per 40	Category Added Comments
6.8	**39 18 68**	Draw sheet, plastic 90 × 180 cm	*1*	*1*	*1*	*1*	Draw sheet.
6.9	**39 12 08**	Bedpan, stainless steel	*1*	*1*	*1*	*1*	Bedpan.
6.10	**39 12 90**	Hot-water bag	*1*	*1*	*1*	*1*	Hot-water bottle.
6.11	**39 14 40**	Urinal, male (plastic)	*1*	*1*	*1*	*1*	Urine bottle.
6.12	**39 12 92**	ColdHotpack Maxi	*1*	*1*	*1*	*1*	Ice bag.
6.13	**39 18 73**	Aluminium foil blanket	*1*	*1*	*1*	*1*	Aluminium foil blanket.
6.14	**39 12 26**	Male condoms	*100*	*200*	*300*	*400*	Condoms, *assorted sizes.*
6.15	**39 18 75**	Plastic wash bottle, 250 ml	*1*	*1*	*1*	*1*	Wash bottle.
6.16	**39 18 76**	Bottle, 1 ltr, plastic with screw top	*1*	*1*	*1*	*1*	Plastic bottle.
6.17	**39 18 77**	Stainless steel dressing tray, 300 × 200 × 30 mm	*1*	*1*	*1*	*1*	Dressing tray.
6.18	**39 18 79**	Bowl, stainless steel, 180 ml	*1*	*1*	*1*	*1*	Bowl.
6.19	**39 18 80**	Jars, plastic, with lids and labels, 100 ml	*10*	*20*	*30*	*40*	Specimen jars.
6.20a	**39 18 81**	Bandages, POP, 5 cm x 2.7 m	*6*	*6*	*6*	*6*	Plaster-of-Paris bandages, *may be omitted if splints are carried.*
6.20b	**39 18 98**	Bandages, POP, 10 cm x 2.7 m	*6*	*6*	*6*	*6*	Plaster-of-Paris bandages, *may be omitted if splints are carried.*
6.21a	**39 18 82**	Stockinet sizes for arm splints, 10 m roll	*1*	*1*	*1*	*1*	Stockinet. *See pages 43-58.*
6.21b	**39 18 99**	Stockinet sizes for leg splints, 10 m roll	*1*	*1*	*1*	*1*	Stockinet. *See pages 43-58.*
6.22	**39 18 83**	Cotton wool roll, 500 g	*1*	*1*	*2*	*2*	Cotton wool, *See pages 43-58.*
6.23	**39 18 84**	Alcohol swabs	*100*	*100*	*100*	*100*	70% alcohol swabs for skin cleansing prior to injection.
6.24	**39 18 85**	Nail brush	*1*	*1*	*1*	*1*	Nail brush.
6.25	**65 17 15**	*Thermometer for refrigerator*	*1*	*1*	*1*	*1*	*If Tetanus vaccine and Immunoglobin are on board.*
6.26	**39 19 29**	*Mortuary transfer bag*	*1*	*1*	*1*	*1*	*See pages 334-336.*
DISINFECTANTS, DISINSECTANTS							
6.27	**39 19 30**	*Water disinfection set including measure kit / test stripes for pH and for residual chlorine*	*1*	*1*	*1*	*1*	*To disinfect portable water tanks with chlorine effectively, See pages 359-360.*
6.28	**39 19 52**	*Disinfectant solution for medical instruments, 1,000 ml: 3% aqueous phenolic solution*	*1*	*1*	*1*	*1*	*For disinfection of used instruments* and thermometers. See page 331. *Caution: All items entering the skin or are in direct contact with mucous membranes should be single use (i.e. injection needles, urinary catheters).*
6.29	**39 19 45**	*Disinfectant for surfaces and floor, 1,000 ml concentrate: 2% cetrimide solution or 3% aqueous phenolic solution.*	*1*	*1*	*1*	*1*	*For disinfection of contaminated surfaces, hard-surface objects and floors. (Non-food-handling area), See page 331.*

(to be continued)

Item No.	CODE	Recommended Item	Per 10	Per 20	Per 30	Per 40	Category Added Comments
6.30	**39 19 46**	*Disinfectant for surfaces and floor, 1000 ml concentrate: sodium hypochlorite 100 mg/ltr*	2	2	2	2	*For disinfection of food-handling area: cutlery, dishes, plates, glasses, See page 331.*
6.31	**39 19 47**	*Chlorpyrifos 5 g/ltr in bait stations or gels*	20	20	20	20	*To use against cockroaches in food storage and preparation area, See pages 362-365.*
6.32	**39 19 48**	*Chlorpyrifos-methyl 7-10 g/ltr spray – 1 piece*	10	10	10	10	*To use against cockroaches in other areas than food storage and preparation area, See pages 362-365.*
6.33	**39 19 49**	*Insecticide spray permethrine, natural pyrethrins or chlorpyriphos-methyl*	1	2	3	4	*For space spraying, not for skin. See pages 362-365.*
7. IMMOBILIZATION AND TRANSPORTATION EQUIPMENT							
7.1	**39 18 86**	Malleable finger splint	1	1	1	1	Malleable splints *(small), See pages 43-58.*
7.2	**39 18 87**	Malleable forearm/hand splint	2	2	2	2	Malleable splints *(medium), See pages 43-58.*
7.3	**39 19 50**	*Malleable splint legs*	2	2	2	2	*Malleable splints (large), See pages 43-58.*
7.4	**39 13 91**	*Stretcher*	1	1	1	1	*Stretcher equipment (a system for trauma management, i.e. immobilization and stretcher equipment most suited for treatment in the vessel concerned. Preferably allowing crane/helicopter lifting. See page 7.*
7.5	**39 19 51**	*Cervical rigid collar variable size*	1	1	1	1	*For neck immobilisation, See pages 7, 45.*

Endnote

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Medical First Aid Guide Dangerous Good List

Appendix 14
LIST OF MEDICINES AND EQUIPMENT

Preamble

1 Medicines and equipment already available in the ship's medicine chest may be counted towards the MFAG numerical requirements outlined below.
2 In some cases, alternatives are given. This means that one of the given alternatives should be chosen.
3 Not all drugs and antidotes on the list may be licensed as pharmaceutical specialities in all Member States and thus available for general purchase. In such cases, the national authorities may issue a modified list, also in English, where drugs on the below list not available are substituted with analogous drugs in corresponding quantities.
4 In countries with official lists on contents of ship's medicine chests, the national authorities can decide to substitute some of the drugs on the below list with analogous drugs available in the ordinary ship's medicine chest.
5 The recommended minimum quantities are based on an estimate of risk to persons on board and the time within which full treatment on shore can be given.
6 National authorities can decide on exemption from carrying these medicines for vessels making short regular voyages of ten minutes or less.

Labelling, storage and dispensing should, in general, conform to the relevant specifications in the IMGS. Contents and storage conditions should be checked at least once a year, taking account of manufacturers expiry date and instructions. Medicines used should be replaced as soon as possible.

Column A of the following table shows the recommended minimum requirements for ships when casualties **cannot** be hospitalized on shore within 24 hours.
Column B shows the recommended minimum requirements for ships when casualties can be hospitalized on shore within 24 hours.
Column C shows the recommended minimum requirements for ships when casualties can be hospitalized on shore within 2 hours.

CODE	Medicine	Format/ Standard unit	Recommended Minimum Quantity			Dosage	Reference
			A	B	C		
39 19 01	amoxycillin	capsules 500 mg	30 capsules	none	none	500 mg x 3	Table 9
39 19 02	anaesthetic eye drops	eye drops (bottle)	5 bottles	5 bottles	5 bottles	several drops x several	Table 7
39 19 03	antibiotic eye ointment	eye ointment (tube)	5 tubes	5 tubes	none	apply 2 to 4 times daily or more frequently if required	Appendix 7
39 19 04	atropine	injection fluid 1 (or 0.5) mg/ml (1 ml ampoule)	15 (or 30) x 1 ml	15 (or 30) x 1 ml	none	1 mg x several	Table 17
39 19 05	beclomethasone (including inhalation device)	inhalation aerosol 50 µg/dose (200 doses) or 250 µg/dose (200 doses)	5 x 200 doses	5 x 200 doses	none	250 µg x several (5 puffs of 50 µg/dose) or (1 puff of 250 µg/dose)	Table 9
	or						
39 19 06	budenoside (including inhalation device)	inhalation aerosol 200 µg/dose (100 doses)	5 x 100 doses	5 x 100 doses	none	400 µg x several (2 puffs of 200 µg/dose)	
39 19 07	calcium gluconate gel	gel 2% (25 g tube)	5 tubes	5 tubes	5 tubes	apply several times	Tables 8, 16
39 19 08	calcium gluconate	Effervescent tablets 1 g	20 tablets	20 tablets	none	5 g x 2	Table 16
39 19 09	cefuroxime	injection substance 750 mg (750 mg bottle)	10 x 750 mg	none	none	750 mg x 3	Table 10
39 19 10	charcoal, activated	powder (50 g bottle) or effervescent granules (5g sachet)	2 x 50 g or 10 x 5 g	2 x 50 g or 10 x 5 g	none	50g x 1	Table 10
39 19 11	diazepam	rectal solution 10 mg (ampoule)	5 x 10 mg	5 x 10 mg	none	10 mg x 1 to 5	Tables 4, 5, 6
39 19 12	erythromycin	tablets 500 mg	30 x 500 mg	none	none	500 mg x 4	Table 9
39 19 13	ethyl alcohol	solution 99.5% (500 ml bottle)	3 x 500 ml	1 x 500 ml	none	25 ml x 8 (25 ml 99.5% in 250 to 300 ml water or soft drink)	Table19
39 19 14	fluorescein	eye test strip	1 package	none	none	1 test strip x 2	Appendix 7
39 19 15	furosemide (frusemide)	injection fluid 10 mg/ ml (5 ml ampoule)	5 x 5 ml	none	none	50 mg x 3	Tables 2, 9
39 19 16	metoclopramide	injection fluid 5 mg/ml (2 ml ampoule)	30 x 2 ml	10 x 2 ml	5 x 2 ml	10 mg x 3	Tables 7, 8, 10, 13, 15, 20
39 19 17	metronidazole	suppositories 1 g	10 x 1 g	none	none	1g x 3	Table 10
39 19 18	morphine sulphate	injection fluid 10 mg/ ml (1 ml ampoule)	40 x 1 ml	10 x 1 ml	5 x 1 ml	10 to 20 mg x 6 or 7	Tables 7, 8, 10, 13
39 19 19	naloxone	injection fluid 0.4 mg/ml (1 ml ampoule)	5 x 1 ml	5 x 1 ml	2 x 1 ml	0.4 mg x 1 to 5	Tables 4, 13
39 19 20	oral rehydration salts (ORS)	sachets or tablets to dissolve in water	ORS to give 18 litres solution	ORS to give 6 litres solution	none	1 litre x 3 or more	Tables 8, 10, 11
39 19 21	paracetamol	tablets 0.5 g	200 tablets	100 tablets	20 tablets	1g x 4	Tables 7, 8, 13

(to be continued)

CODE	Medicine	Format/ Standard unit	Recommended Minimum Quantity			Dosage	Reference
			A	B	C		
39 19 22	phytomenadione	injection fluid 10 mg/ ml (1 ml ampoule)	10 x 1 ml	none	none	10 mg x 2 or more	Table 14
39 19 23	plasma expander (gelatine-based)	infusion fluids (500 ml bottles)	3 x 500 ml	3 x 500 ml	none	500 ml x 1 to 3	Appendix 13
39 19 24	rehydration salts - see oral rehydration salts						Tables 8, 10, 11
39 19 25	salbutamol (including inhalation device)	inhalation aerosol 100 µg/dose (200 doses)	5 x 200 doses	5 x 200 doses	1 x 200 doses	200 µg x several (2 puffs of 100 µg/ dose)	Table 9
	or						
39 19 26	terbutaline (including inhalation device)	inhalation aerosol 500 µg/dose (50 doses)	5 x 50 doses	5 x 50 doses	1 x 50 doses	500 µg x several (1 puff of 500 µg/ dose)	
39 19 27	sodium chloride, isotonic (saline)	9 mg/ml (0.9%) (1 ltr bottle)	5 x 1 ltr	3 x 1 ltr	1 x 1 ltr	1 ltr x 1 to 3	Table 7
39 19 28	terbutaline - see salbutamol						

LIST OF EQUIPMENT

Column A of the following table shows the recommended minimum requirements for ships when casualties **cannot** be hospitalized on shore within 24 hours.

Column B shows the recommended minimum requirements for ships when casualties can be hospitalized on shore within 24 hours.

Column C shows the recommended minimum requirements for ships when casualties can be hospitalized on shore within 2 hours.

CODE	Equipment	Recommended Minimum Quantity			Reference
		A	B	C	
39 19 31	Guedel airway size 2	2	2	2	Appendix 3
32	size 3	2	2	2	
33	size 4	2	2	2	
39 19 34	iv cannula (size 1.2)	10	10	non	Appendix 13
39 19 35	iv set	10	10	non	Appendix 13
39 19 36	needles size 0.8	100	50	10	
39 19 37	simple face mask (allowing up to 60% oxygen), disposable	10	10	2	Appendix 3
39 19 38	valve and bag manual resuscitator	2	2	2	Appendix 3

(to be continued)

39 19 39	oxygen cylinder	40 ltr/ 200 bar*	40 ltr/ 200 bar*	none	Appendix 3
40	portable oxygen-giving set ready for use	1* (2 ltr /200 bar)	1* (2 ltr /200 bar)	1	
41	spare portable oxygen cylinder	"	"	1	
39 19 42	rectal infusion set catheter (26 French gauge)	1 6	none none	none none	Appendix 13
	syringes				
39 19 43	2 ml	100	50	10	
44	5 ml	10	10	none	

- A minimum of 44 litres/200 bar oxygen of which there should be at least:
  - one complete portable set with 2 ltr/200 bar oxygen ready for use with a spare cylinder of 2 ltr/200 bar and
  - one oxygen cylinder of 40 ltr/200 bar (at ship's hospital, assembled for direct use) with one flowmeter unit (two ports) for supplying of oxygen for two persons at the same time. If more than one non-portable oxygen cylinder is used, there must be two flowmeter units for supplying of oxygen for two persons at the same time.

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List of Recommended Medicines and Equipment by International Medical Guide for Ships - Second Edition

The following table was devised in accordance with the "List of Medicines" recommended for the ship's medicine chest in accordance with the regulations of the World Health Organization. The table is set up in the same way as the International Medical Guide For Ships (2nd edition) with a code number assigned to each medicine to make it quick and easy to determine what medicines are required on board, compare the ship's current inventory of medical supplies, and submit orders for the medications required. We have also provided some helpful information about prescribing the medication as well as notes of caution in the use of the medication.

"List of Medicines"

WHO Number	Medicine with the corresponding IMPA code number	Required inventory	Conditions for which the medication is prescribed with notes of caution for use
1.	Acetylsalicylic acid, 300 mg tablets, 100's (Common aspirin) **39 01 86**	6 btl.	For relief of aches and pains caused by illnesses such as influenza, a cold, and sinusitis. Also to relieve headaches, neuralgia, muscular aches, joint pains, and fever.
2.	Alcohol, rubbing (70% ethyl alcohol), 500 ml **39 01 30**	6 btl.	Used as an antiseptic to sterilize and disinfect the skin prior to injections or other surgical procedures.
3.	Aluminium acetate, ear drops, 13% solution in 20 ml bottle **39 06 03**	6 btl.	Used for treating a boil in the ear.
4.	Aluminium acetate powder, 2 grm packet, 12's **39 06 04**	2 box	For external use only. A solution/mixture used as a soothing, astringent wet dressing for inflamed or exposed areas of the skin. Effective remedy for insect bites, poison ivy, or fungal infections such as athlete's foot. CAUTION : Keep away from eyes. Do not give internally.
5.	Aluminium hydroxide gel with magnesium hydroxide, 360 ml **39 06 05**	6 btl.	Used in treating gastric hyperactivity and peptic ulcer, acid ingestion, or sour stomach.
6.	Aluminium hydroxide w/magnesium hydroxide, 1 grm tablets, 100's **39 06 06**	10 btl.	Used in the same way as the oral suspension.
7.	Aminophylline suppository, rectal 500 mg, 12's **39 06 07**	2 box	To facilitate breathing in patients who have bronchial asthma, asthmatic bronchitis, pulmonary emphysema, and certain types of heat failure. Give only on radio medical advice. (Refrigerate)
8.	Amitriptyline tablets, 25 mg, 100's **39 06 08**	1 btl.	A psychotherapuetic drug used in the treatment of depression and anxiety. To be prescribed only after obtaining radio medical advice. Not to be given to people with a history of seizure, urinary retention, glaucoma, liver disease, or to patients with cardiovascular complications.
9.	Ampicillin capsules, 250 mg, 100's **39 01 38**	3 btl.	For chest infections, urinary and gastrointestinal infections, and infections of the tonsils and throat. Give only upon radio medical advice from a physician. Persons allergic to penicillin should be assumed to be allergic to ampicillin and should not receive this medication.

(to be continued)

WHO Number	Medicine with the corresponding IMPA code number	Required inventory	Conditions for which the medication is prescribed with notes of caution for use
10.	Antihaemorrhoidal suppositories, 12's **39 06 10**	6 box	For temporary relief of itching, burning, and soreness from haemorrhoids.
11.	Ascorbic acid tablets (vitamin C), 50 mg, 100's **39 05 44**	3 btl.	For the treatment and prevention of colds.
12.	Atropine sulfate injection, 0.5 mg/ml, 1 ml ampoules, 10's **39 06 12**	6 box	Used as an antidote in the treatment of poisoning by insecticides. Do not administer this drug before obtaining radio medical advice.
13.	Benzathine benzylpenicillin injection, 2.4 million unit/5ml vial **39 06 13**	20 pcs.	Used as an antibiotic, particularly for the treatment of syphilis. Before administering any penicillin preparation, determine if the patient is allergic to penicillin.
14.	Benzoic and salicylic acid ointment, 30 grm tube **39 01 96**	2 pcs.	Used in treating fungal infections of the skin. For external use only.
15.	Calamine lotion, plain, 120 ml. **39 02 20**	8 btl.	For the relief of itching or irritated skin, heat rashes, and hives. Do not use on open or seething sores.
16.	Calcium gluconate, effervescent tablets, 1 grm, 30's **39 06 16**	1 box	Used primarily in cases of poisoning by oxalic acid or sodium fluoride.
17.	Cetrimide, 40% solution, 500 ml (disinfectant) **39 02 26**	3 btl.	Disinfectant for external use only. This stock solution should be diluted before use.
18.	Charcoal, activated, powder, 120 grm **39 06 18**	1 btl.	Used in the initial treatment of most poisoning. Should not be used on unconscious patients because of the danger of the aspiration of the powder.
19.	Chloroquine phosphate tablets, 250 mg, 100's **39 06 19**	1 btl.	To prevent and treat malaria.
20.	Chlorphenamine maleate tablets, 4 mg, 20's **39 06 20**	3 btl.	For treating allergic reactions such as hay fever, urticaria, and anaphylactic shock. Do not give to patients with a history of glaucoma.
21.	Chlorphenamine maleate injection, 10 mg, 1 ml ampoules, 10's **39 06 21**	2 box	See previous item.
22.	Chlorpromazine hydrochloride tablets, 25 mg, 20's **39 06 22**	4 btl.	For treating anxiety, tension, and agitation.
23.	Chlorpromazine hydrochloride injection, 25 mg in 1 ml ampoules, 10's **39 06 23**	2 box	Same as for chlorpromazine tablets.
24.	Clove oil, 20 ml **39 05 14**	2 btl.	For the relief of toothaches caused by cavities.
25.	Codeine sulfate tablet 30 mg, 100's Controlled substance **39 02 34**	1 btl.	Used to relieve coughing or diarrhoea. WARNING: A controlled substance. An exact record of its use must be kept.

(to be continued)

WHO Number	Medicine with the corresponding IMPA code number	Required inventory	Conditions for which the medication is prescribed with notes of caution for use
26.	Cyclizine hydrochloride tablet, 50 mg, 100's **39 06 26**	4 btl.	For relief of nausea, vomiting and dizziness associated with motion sickness.
27.	Dextran injection, 6% and sodium chloride, 0.9% 500 ml **39 06 27**	6 btl.	To expand plasma volume and maintain blood pressure in the emergency treatment of shock due to loss of blood. Give only on the radio medical advice from a physician. Only trained people can administer this drug intravenously.
28.	Diazepam injection, 5 mg/ml, 2 ml ampoule Controlled substance **39 06 28**	20 pcs.	For treatment of severe agitation, including acute alcohol withdrawal states and convulsions. CAUTION : The injection should be given only on medical advice. This is a controlled substance. Keep an exact record of its use and keep stored in a locked cabinet.
29.	Diazepam tablets, 5 mg, 100's Controlled substance **39 04 62**	2 btl.	For the treatment of common anxiety and tension, and the management of agitation during alcohol withdrawal. Same precautions must be taken with the use of the tablets as the injections above.
30.	Dimercaprol injection, 100 mg in 2 ml ampoules, 10's **39 06 30**	6 box	Used as an antidote in poisoning from arsenic (pesticides), gold, and mercury. Always obtain radio medical advice in the event of such poisoning.
31.	Doxycycline hydrochloride tablets, 100 mg, 100's **39 06 31**	2 btl.	Antibacterial agent used in the treatment urinary infections.
32.	Ephedrine sulfate tablets, 25 mg, 100's **39 03 06**	1 btl.	To regulate breathing in asthma attacks, prevent asthma attacks for chronic asthma cases, and to relieve nasal congestion in hay fever and severe head colds. Obtain radio medical advice before using this drug. This drug should not be given to patients with chronic heart disease, high blood pressure, glaucoma, diabetes, or hyperthyroidism.
33.	Epinephrine hydrochloride injection, 1:1000, 1 ml ampoules 10's **39 06 33**	2 box	1. For acute asthma attacks and severe allergic reactions to penicillin and other drugs, and insect bites. 2. For cardiac or circulatory failure.
34.	Ergometrine maleate injection, 0.2 mg, in 1 ml ampoules, 10's **39 06 34**	1 box	Medicine administered to the mother after delivery of an infant, contracts the womb and reduces the risk of haemorrhaging.
35.	Erythromycin tablets, 250 mg, 100's **39 06 35**	3 btl.	Used for the treatment of a variety of infections of the upper and lower respiratory tract; infections of the mouth, gums, and teeth, ears, nose and sinuses.
36.	Eye anaesthetic drops, 0.5% solution of tetracaine hydrochloride, 10 ml **39 03 12**	2 btl.	For local anaesthetic of the eye before foreign particles are removed. For external use.
37.	Eye antiinfective drop, 1% solution of chloramphenicol, 10 ml **39 06 37**	3 btl.	For treating infectious eye diseases (blepharitis, conjunctivitis).
38.	Eye ointment, 1% tetracycline hydrochloride, 4 grm. tube **39 06 38**	6 pcs.	For superficial eye infections, trachoma, inflammation of the eyelids and tear sacs, and prevention of eye infection in injured eyes.
39.	Eyewash, isotonic, sterile, 120 ml **39 03 16/17**	6 btl	For irrigating or flushing the eye to wash away foreign particles, mucous secretions, and fluorescein die used in diagnosis.

(to be continued)

WHO Number	Medicine with the corresponding IMPA code number	Required inventory	Conditions for which the medication is prescribed with notes of caution for use
40.	Fluorescein sodium ophthalmic strip, sterile, 200's **39 06 40**	1 pkt	Used for the detection of lesions or small foreign bodies embedded in the cornea of the eyeball.
41.	Furosemide tablets, 40 mg, 100's **39 06 41**	1 btl.	A potent, short acting diuretic which causes the production of urine by affecting the kidneys. This drug is to be used only after getting radio medical advice.
42.	Glyceryl trinitrate tablets, 0.5 mg, 20's **39 03 30**	2 btl.	For an acute attack of angina pectoris.
43.	Hydrocortisone sodium succinate for injection 100 mg. **39 06 43**	5 vials	For use on medical advice only. 1. For severe shock. 2. For acute allergic reactions. 3. For the control of life threatening inflammation of the lungs after a patient has inhaled vomit.
44.	Hydrocortisone ointment, 1%, 30 grm tube **39 06 44**	6 pcs.	For temporary relief of certain skin disorders, common rashes, inflamed skin, and disorders causing itching and discomfort. WARNING : Do not apply to the eyes. Do not use for extended periods of time without a physicians order.
45.	Ichthyol & glycerine ointment, in 100 grm container **39 06 45**	3 pcs.	For treatment of boils, fishermen's hand infections, salt water boils, etc.
46.	Insect repellent, 50 ml **39 03 52**	12 btl.	External use only. Repels mosquitos, chiggers, flies, and other biting insects. Do not apply near the eyes, nose, or mouth.
47.	Iodine, 2.5% solution in 100 ml bottle **39 05 10**	4 btl.	For external use only. For disinfecting the skin against round worms and for the treatment of small cuts and skin bruises to prevent infection.
48.	Lidocaine hydrochloride injection 1%, 2 ml ampoule **39 06 48**	12 pcs.	For use as a local anaesthetic in minor surgical procedures.
49.	Lindane cream, 1%, 6 grm tube **39 06 49**	12 pcs.	For infestations of scabies and lice. For external use only.
50.	Magnesium hydroxide suspension, 550 mg/10ml, 500 ml **39 06 50**	8 btl.	For use as a laxative. Never give magnesium hydroxide suspension to a patient with abdominal pain without first consulting a doctor.
51.	Metronidazole tablets, 200 mg, 100's **39 06 51**	5 btl.	For the treatment of salpingitis and other diseases of women and the treatment of amoebic dysentery.
52.	Miconazole nitrate, 2%, vaginal cream, in 80 grm container **39 06 52**	5 pcs.	For the treatment of external vaginal itching.
53.	Miconazole nitrate, 100 mg, pessary and inserter **39 06 53**	20 pcs.	Like miconazole vaginal cream, in genital itching.
54.	Mineral oil (liquid petrolatum) 500 ml **39 06 54**	1 btl.	Used as a skin emollient or protective agent. Also used to help remove ointments or creams from treated skin areas.

(to be continued)

WHO Number	Medicine with the corresponding IMPA code number	Required inventory	Conditions for which the medication is prescribed with notes of caution for use
55.	Morphine sulfate injection, 10 mg/ml, 1 ml ampoules, 10's Controlled substance **39 03 90**	2 box	For severe pain which cannot be relieved by analgesics. Obtain medical advice prior to use. Caution : An addiction producing drug. Do not give morphine unless the radio medical doctor has instructed you to do so.
56.	Naloxone hydrochloride injection, 0.4 mg/ml, 1 ml ampoules **39 06 56**	6 pcs.	For the emergency treatment of respiratory depression resulting from the administration of narcotics, such as morphine.
57.	Neomycin and bacitracin ointment, 30 grm tube **39 06 57**	20 pcs.	Used in the treatment and prevention of infection in second and third degree burns.
58.	Oral rehydration salts in water-proof bags **39 06 58**	50 pcs.	For the treatment of diarrhoea and other diseases causing dehydration.
59.	Oxygen, size E tank **33 04 01/03** 7222 D. F	2 pcs.	To make up for the lack of oxygen in the blood and tissues, the symptoms for which are cyanosis (bluish colour to the skin and nail beds), dyspnoea (rapid shallow breathing), rapid thready pulse, and restlessness. Only trained personnel should administer oxygen. The use of oxygen presents an explosion hazard.
60.	Paracetamol, 500 mg tablet **39 06 60**	300 pcs.	To relieve pain and fever.
61.	Petrolatum, white, 60 grm tube **39 04 72**	6 pcs.	Used as a bland and neutral protective dressing for minor burns, abrasion, and dry skin.
62.	Phenobarbital tablets, 30 mg, 100's Controlled substance **39 04 42**	3 btl.	1. For insomnia. 2. For relatively prolonged sedation, as in some anxiety and tension states and in hypertension. 3. For the treatment of epilepsy. Patients using this drug should not drink alcohol.
63.	Phenoxymethylpenicillin potassium tablets, 250 mg, 100's **39 04 38**	3 btl.	Used for susceptible infections. Give on radio medical advice only. Before administering any penicillin preparation, determine, if possible, whether the patient is allergic to penicillin.
64.	Pilocarpine hydrochloride eye drops, 2%, 15 ml **39 06 64**	2 btl.	Used for the management of glaucoma.
65.	Potassium permanganate, 100 grm. **39 06 65**	2 btl.	Diluted in water, this substance is used for the disinfection of the skin and mucous membranes and for the treatment of some skin diseases. For external use.
66.	Probenecid tablets, 500 mg, 100's **39 06 66**	2 btl.	Used along with intensive therapy with benzylpenicillin, with ampicillin, and a number of other penicillins for prolonging the effective blood concentration of these drugs.
67.	Procaine benzylpenicillin, sterile suspension injection, 600,000 units/ml, 1 ml vials, 10's **39 06 67**	2 box	To be given only upon the radio medical advice of a physician. Used for susceptible infections. Before administering any penicillin preparation, determine, if possible, whether the patient is allergic to penicillin.
68.	Proguanil tablets, 100 mg, 100's **39 06 68**	1 btl.	For the prevention of malaria. Given either alone or in association with chloroquine.

(to be continued)

WHO Number	Medicine with the corresponding IMPA code number	Required inventory	Conditions for which the medication is prescribed with notes of caution for use
69.	Pyrantel tablets, 250 mg, 50's **39 06 69**	1 btl.	For the treatment of ringworm and roundworm infections.
70.	Quinine sulfate tablet, 300 mg, 100's **39 06 70**	2 btl.	Used for the treatment of acute attacks of malaria contracted in certain areas. Quinine sulfate may produce toxic symptoms such as ringing in the ears or sensation of fullness in the head.
71.	Quinine dihydrochloride, injection, 300 mg/ml, 2 ml ampoule, 10's **39 06 71**	2 box	For use in the treatment of acute attacks of malaria when the patient is unable to tolerate oral medication because of repeated vomiting or impairment of consciousness.
72.	Salbutamol, aerosol inhaler unit **39 06 72**	2 pcs.	An inhaled spray used for the relief of bronchial asthma.
73.	Sodium chloride injection, 0.9%, 1,000 ml **39 06 73**	6 btl.	Used intravenously to replace water, chloride, and sodium lost in excessive vomiting or diarrhoea, in dehydration due to excessive sweating, and in mild haemorrhage. Obtain radio medical advice before administering.
74.	Sodium chloride tablet, 1 grm, 1,000's **39 04 58**	2 btl.	Used to help avoid heat exhaustion, heat stroke, or heat cramps by replenishing body salts lost through excessive perspiration.
75.	Spectinomycin hydrochloride injection, 2 grm per 5 ml vial. **39 06 75**	20 pcs.	Used for the treatment of gonorrhoeal urethritis and proctitis in men and gonorrhoeal cervicitis and proctitis in women.
76.	Sulfamethoxazole & trimethoprim (400 + 80 mg) tablets, 20's **39 06 76**	10 btl.	For the treatment of urinary infections.
77.	Talc (talcum powder) 120 grm **39 06 77**	6 cans	Used as a skin lubricant and protector, and as a dusting powder for such skin irritations as chafing and heat rash.
78.	Tetanus immune human globulin, 250 units, vial **39 06 78**	5 pcs.	To provide immunity to tetanus in a patient who has not received vaccination and has a potentially contaminated wound. This drug should be carried only on ships transporting horses, cattle, and hides.
79.	Tetanus toxoid adsorbed, single dose, ampoule **39 06 79**	10 pcs.	For active immunization against tetanus.
80.	Tetracycline ear drops, 1% tetracycline solution, 10 ml **39 06 80**	10 btl.	For use in the treatment of ear infections.
81.	Tetracycline hydrochloride capsules, 250 mg, 100's **39 06 81**	3 btl.	For use in treatment of susceptible infections. To be given only after receiving radio medical advice.
82.	Water, sterile, 5 ml ampoules, 10's **39 06 82**	3 box	To dissolve penicillin in powder form.
83.	Zinc oxide paste, 30 grm tube **39 06 83**	12 pcs.	A non-toxic, protective, water insoluble, mildly astringent, and antiseptic paste employed in a large variety of diseases and irritations of the skin.

The following list comprises the required inventory of surgical equipment, instruments, and supplies for ocean going vessels in accordance with the provisions of the WHO International Medical Guide for Ships (2nd edition). All required equipment is listed with the standard inventory and a code number for easy stocking of the items.

Equipment

WHO Number	CODE	Description	Quantity required
1.	**39 13 16**	Basin, emesis, kidney shape	1 pc.
2.	**39 12 06**	Basin, wash, with rim	1 pc.
3.	**39 12 08**	Bedpan	1 pc.
4.	**39 12 33**	Cane, with rubber tip	1 pc.
5.	**39 12 32**	Crutches, adjustable, wood, with rubber tip	1 pr.
6.	**39 12 46**	Eye cup	2 sets
7.	**39 13 28**	Funnel, metal, 12 cm diameter	1 pc.
8.	**39 13 32**	Glass cylinder 50 cm^3, graduated	1 pc.
9.	**39 13 33**	Glass cylinder 500 cm^3 graduated	1 pc.
10.	**39 12 91**	Heating pad, electric, waterproof, AC/DC	1 pc.
11.	**39 12 92**	Hot water/ice bag, rubber	1 pc.
12.	**39 13 91**	Litter, Stokes	1 pc.
13.	**39 12 53**	Magnifying glass	1 pc.
14.	**39 13 90**	Neil Robertson stretcher	1 pc.
15.	**39 12 03**	Oxygen unit, portable	1 pc.
16.	**39 12 04**	Spare oxygen cylinder, size E	1 pc.
17.	**39 12 87**	Refrigerator, about 60 ltr capacity	1 pc.
18.	**23 26 21**	Cuffs	2 pcs.
19.	**39 13 92**	Mummy restraint	1 pc.
20.	**39 12 88**	Side board	2 pcs.
21.	**39 12 05**	Resuscitator, hand operated	1 pc.
22.	**39 12 94**	Rubber inflatable ring pad	1 pc.
23.	**65 07 68**	Scales, capacity 150 kgs	1 pc.
24.	**39 13 68**	Sphygmomanometer, aneroid, 300 mm Hg scale	1 pc.
25.	**39 13 78**	Splints, inflatable, arm, assorted sizes, 6's	1 pkt
26.	**39 13 79**	Splints, inflatable, leg, assorted sizes, 6's	1 pkt
27.	**39 12 65**	Splints, finger, assorted sizes 6's	1 pkt
28.	**39 13 86**	Sterilizer, steam pressure type	1 set
29.	**39 13 88**	Sterilizer, water type, 3 ltr, electric	1 set
30.	**39 13 71**	Stethoscope, disc-diaphragm type	1 pc.
31.	**39 14 23**	Thermometer, bath	2 pcs.
32.	**39 12 07**	Tray with cover	1 pc.
33.	**39 14 40**	Urinal, male	2 pcs.
34.	**39 12 89**	Receptacle, 12 ltr. capacity	1 pc.
35.	**37 06 74**	International medical guide for ships	1 vol.
36.	**37 06 80**	Medical first aid guide	1 vol.
37.	**37 06 81**	International health regulations	1 vol.
38.	**37 06 82**	Vaccination certificate requirements and health advice	1 vol.

(to be continued)

Instruments

WHO Number	CODE	Description	Quantity required
39.	**39 12 02**	Airway, pharyngeal, plastic, adult and child sizes.	2 pcs.
40.	**39 13 55**	* Blade, surgical knife, No. 10	1 pc.
	57	* Blade, surgical knife, No. 15	1 pc.
41.	**39 12 73**	Forceps, dressing, bayonet shaped, Adsor, 18 cm	1 pr.
42.	**39 12 74**	Forceps, haemostat, curved, Halstead, mosquito, 15 cm	2 prs.

(to be continued)

INTERNATIONAL MARINE PURCHASING ASSOCIATION

WHO Number	CODE	Description	Quantity required
43.	**39 12 67**	Forceps, haemostat, straight, Spencer-Wells 15 cm	2 prs
44.	**39 12 75**	Forceps, haemostat, curved, Kelly, 15 cm	2 prs
45.	**39 12 69**	Forceps, splinter, tweezers, 10 cm	1 pr.
46.		Forceps, tissue, 2-3 dents	
	39 12 76	(a) 13 cm	1 pr.
	77	(b) 18 cm	1 pr.
47.	**39 13 53**	Handle, knife, No. 3	2 pcs.
48.	**39 13 62**	Scissors, bandage, Lister angular, one sharp point and one blunt point, 20 cm	3 pcs.
49.	**39 13 61**	Scissors, surgical, straight, 15 cm	2 pcs.
50.	**39 14 47**	Hammer, reflex testing, 20 cm	1 pc.
51.	**39 14 07**	Needle holder, suture, Hegar-Mayo, 14 cm	2 pcs.
52.		Adhesive tape, surgical	
	39 10 82	(a) 5 cm x 5 m	6 rls.
	81	(b) 2 cm x 5 m	6 rls.
53.	**39 14 09**	Administration set, intravenous with hub needle 1mm x 40 mm, disposable	6 pcs.
54.	**39 10 44**	Applicators, wood, 2 mm x 15 cm, 50's	3 pkt.
55.		Bandage, cotton, elastic, rubberless 12's	
	39 10 13	(a) 10 cm x 5 m roll	1 box
	12	(b) 8 cm x 5 m roll	1 box
	11	(c) 5 cm x 5 m roll	1 box
56.	**39 10 15**	Bandage, gauze, roller 3cm x 10 m, 12's	1 pkt
57.	**39 10 42**	Bandage, absorbent, adhesive, 5 cm x 5 m, 100's	2 box
58.		Bandage, gauze, roller	
	39 10 20	(a) 10 cm x 5 m	60 pcs.
	21	(b) 12 cm x 5 m	40 pcs.
59.		Casualty dressing, adhesive, individually wrapped	
	39 10 54	(a) 9 cm x 6 cm	30 pcs.
	55	(b) 18 cm x 9 cm	20 pcs.
60.	**39 10 22**	Bandage, muslin, triangular, 90 x 130 cm	4 pcs.
61.	**39 10 26**	Tube, gauze type, bandage for finger	10 pcs.
62.	**39 10 59**	Spray dressing, 120 ml	4 btl.
63.	**39 10 51**	Petrolatum gauze, burn and wound dressing, various sizes	20 pcs.
64.		First aid emergency dressing	
	39 10 56	(a) small size	10 pcs.
	57	(b) medium size	20 pcs.
	58	(c) large size	20 pcs.
65.	**39 12 10**	Bottle, vial, amber 50 ml, glass or plastic	50 pcs.
66.		Catheter, double eye, pointed, disposable	
	39 12 54	(a) 6 French (2 mm)	1 pc.
	55	(b) 8 French (3mm)	1 pc.
	56	(c) 12 French (4mm)	1 pc.
	57	(d) 14 French (5 mm)	1 pc.
	58	(e) 16 French (5.5 mm)	1 pc.
67.	**39 12 09**	Catheterization tray, sterile, disposable, regular type	3 pcs.
68.	**39 14 18**	Clinical record chart	50 pcs.
69.	**39 14 20**	Temperature/pulse chart	50 pcs.
70.	**39 14 21**	Medical report form for seafarers	100 pcs.
71.	**39 14 19**	Clinical record chart	1 pad
72.	**39 14 51**	Collar, cervical, with strap.	1 pc.
73.	**39 10 38**	Cotton absorbent, sterile, 100 grm.	3 pkt
74.		Cotton absorbent	
	39 10 37	(a) 50 grm roll	20 pkt
	41	(b) 200 grm roll	10 pkt
75.	**39 12 62**	Finger, cots, rubber, assorted sizes, 12's	1 box
76.	**39 14 53**	Flashlight, with replacement batteries	1 pc.
77.	**39 10 24**	Gauze bandage, tubular, 2 cm x 5 m, rolled.	5 pcs.
78.	**39 12 81**	Gloves, surgical, disposable, large, 12's	1 box
79.	**39 12 78**	Gowns, surgical	5 pcs.

(to be continued)

(to be continued)

WHO Number	CODE	Description	Quantity required
80.	**39 12 83**	Mask, face, disposable	50 pcs.
81.	**39 12 61**	Medicine cup, 30 ml, disposable, 100's	1 box
82.	**39 13 34**	Microscope slide	100 pcs.
83.	**39 13 93**	Mortuary transfer bag	2 pcs.
84.	**39 13 04**	Needle, hypodermic, 0.5mm x 16mm, 6's	6 pkt
85.	**39 13 05**	Needle, intramuscular injection, 1mm x 5 cm, 6's	3 pkt
86.	**39 13 06**	Needle, intravenous injection, 1.1 mm, 3 cm, 6's	2 pkt
87.	**39 14 55**	Occult blood detection tablet, 60's	1 pkt
88.	**39 14 85**	Pad abdominal, 20 cm x 20 cm	6 pcs.
89.	**39 12 51**	Pad, cotton, eye, 12's	1 pkt
90.	**39 12 86**	Pad, non-adherent 8 cm x 10 cm	100 pcs.
91.	**39 13 51**	Safety pin, rustless	100 pcs.
92.	**39 14 61**	Scrubbing brush, hand	2 pcs.
93.	**39 12 26**	Sheath, rubber, 3's	Sufficient qty.
94.	**39 13 46**	Sheet, waterproof, 110 cm x 180 cm	2 sht
95.	**39 13 64**	Skin closure, adhesive surgical, 6 mm, 25's	2 pkt
96.	**39 13 66**	Skin closure, adhesive sutureless, 10 cm x 8 cm	10 pcs.
97.	**39 14 11**	Suture, tapered, 1/2 circle, 12's	1 pkt
98.	**39 14 12**	Suture, armed, 1/2 circle, 12's	2 pkt
99.	**39 14 13**	Suture, armed 3/8 circle, 12's	1 pkt
100.	**39 14 14**	Suture, armed, polyester, 3/8 circle, 12's	1 pkt
101.	**39 14 15**	Suture removal kit	1 kit
102.		Syringe, glass	
	39 12 97	(a) 2 ml	4 pcs.
	98	(b) 5 ml	4 pcs.
	99	(c) 20 ml	2 pcs.
103.		Syringe, plastic, disposable	
	39 13 10	(a) 2 ml w/hypodermic needle, 1/2 mm, 16 mm	50 pcs.
	13	(b) 2 ml w/intramuscular needle, 1 mm, 5cm	50 pcs.
	11	(c) 5 ml w/intramuscular needle, 1 mm, 5 cm	30 pcs.
104.	**39 14 38**	Test strip and colour chart 100's	1 btl.
105.	**39 14 46**	Test tablets, kit, glucose in urine, 36's	3 pkt
106.	**39 14 91**	Tissues, facial	6 box
107.	**39 14 22**	Thermometer, clinical, fever	6 pcs.
108.	**39 14 29**	Tourniquet, non-pneumatic, blood taking type	1 pc.
109.	**39 14 26**	Tongue depressor, wooden	100 pcs.
110.	**39 14 92**	Towels, paper, sterile, disposable, 12's	2 pkt
111.	**39 14 93**	Towels, surgical, cotton, 12's	1 pkt
112.	**39 14 94**	Wrapping material	1 pkt

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Medical Stores required for United Kingdom Merchant Ships and Fishing Vessels

The Merchant Shipping and Fishing Vessels (Medical Stores) Regulations 1995 SI No.1802 (as amended 1996 SI No.2821)

Medical Stores Categories

The categories of vessels and the consequent requirements for medical stores and equipment are set out in the directive and the implementing legislation. The vessel categories are ;

Category A : Sea going or sea-fishing vessels with no limitation on length of trips.

Category B : Sea going or sea-fishing vessels making trips of less than 150 nautical miles from the nearest port with adequate medical equipment. This category is extended to seagoing or sea-fishing vessels which make trips of less than 175 nautical miles from the nearest port with adequate medical equipment and which remain continuously within range of helicopter rescue services.

The requirements and recommended stores are set out in the following schedules.
Schedule 1 : Requirements for Categories A and B vessels.
Notes on schedule 1 : Requirements for categories A and B.
in the attached schedule the columns are as follows :

* Column 1 is the reference number in the EC Directive 92/29. This is included for identification of treatments when seeking or receiving radio medical advice from any European Community Member State.

* Column 2 is the treatment which must be available to comply with the Regulations.

* Column 3 is the medicine and dosage strength which MSA considers best complies with the statutorily required treatment. Owners and operators may substitute exact equivalents on the advice of a qualified medical practitioner or pharmacist, provided they are satisfied that an equivalent level of treatment is assured.

* Column 4 is the quantity of medicine/equipment considered sufficient to provide treatment for a crew of 10 persons or 10 persons in a lifeboat or life-raft.

* Drug supplies should be replenished wherever possible at the same strengths as specified in the British Pharmacopoeia. If drugs are obtained elsewhere, e.g. in the U.S.A., they may be of different strength, and this must be taken into account when administering them.

* The medicines have been chosen to ensure that they can be purchased at minimum cost. However if, for operational reasons, an alternative packaging is preferred this is acceptable. e.g. the use of the word "ampoule" should not exclude the use of a pre-filled syringe where available and preferred.

MEDICAL SUPPLIES

For any items marked * the specified quantity is considered sufficient regardless of crew size.

1	2	CODE	3	4	
Ref. No.	Statutoy Treatment Requirements		Recommended Medicine and Dosage Strength representing best practice	Recommended quantity for 10 workers	
				Cat A	Cat B
1	Cardio vascular				
(a)	Cardio vascular analeptics-Sympathomimetics	**39 08 01**	Adrenaline injection BP 0.5 ml - adrenaline acid tartrate injection 1.0 mg in 1 ml (1 in 1,000)	5*	1*
(b)	Anti-angina preparations	**39 08 02**	Glyceryl Trinitrate Spray 400 micrograms/metered 200 dose aerosol or transdermal patches 5mg x 2	1 unit	1 unit
(c)	Diuretics		Frusemide		
		39 08 03	i) 40mg tablets	20*	5*
		39 08 04	ii) 10mg in 1ml inj. 2ml ampoule	2	-
(d)	Anti-haemorrhagics (including uterotonics if there are women with potential for child bearing working on board)	**39 08 05**	i) Phytomenadione (Vitamin K1)	1*	1*
		39 08 06	ii) Ergometrine Maleate 500mg inj. Oxytocin 5 units in 1ml ampoule	2*	1*
(e)	Anti-hypertensive	**39 08 07**	Atenolol 50mg tablets x 28	1 pack	-
2	Castro intestinal system				
(a)	Medicines for gastric and duodenal disorders				
	- Histamine H_2 receptor anti ulcer antagonists	**39 08 08**	Cimetidine 400mg tablets 60 tablet pack	1 pack	-
	- Anti-acid mucous dressings	**39 08 09**	Proprietary Antacid of choice	As Reqd	As Reqd
(b)	Anti-emetics	**39 08 10**	i) Prochlorperazine maleate 3mg buccal tablets	30"	30"
		11	ii) Promethazine hydrochloride 25mg per ml (1ml ampoules)	10"	-
(c)	Lubricant laxatives	**39 08 12**	Glycerol Suppository 4mg mould	12	-
(d)	Anti-diarrhoeals	**39 08 13**	Codeine Phosphate 30mg tablets	30	30
(e)	Intestinal antiseptics	**39 08 14**	Trimethoprim 200 mg tablets	20	20
(f)	Haemorrhoid preparations	**39 08 15**	Proprietary preparation of choice	As Reqd	As Reqd
3	Analgesics and Antispasmodics				
(a)	Analgesics, anti-pyretics and anti-inflammatory agents	**39 08 16**	i) Paracetamol 500mg tabs	100	50
		17	ii) Diclofenac sodium 100mg suppository	10	-

(to be continued)

1	2	CODE	3	4	
Ref. No.	Statutoy Treatment Requirements		Recommended Medicine and Dosage Strength representing best practice	Recommended quantity for 10 workers	
				Cat A	Cat B
(b)	Powerful anagesics see(2d) Codeine Morphine	**39 08 18** **19**	i) Codeine Phosphate ii) Morphine Sulphate 10mg in 1ml injection	Use 2d 10	Use 2d -
(c)	Anti-Spasmolytics	**39 08 20**	Hyoscine hydrobromide 0.3mg tabs.	60	60
4	Nervous system				
(a)	Anxiolitics	**39 08 21** **22**	i) Diazepam Injection 5mg per ml, 2ml ampoules ii) Diazepam 10mg tablets	5* 20*	- -
(b)	Neuroleptics	**39 08 23** **24**	i) Chlorpromazine hydrochloride 25mg injection ii) Chlorpromazine hydrochloride 25mg tabs	5* 40*	- 10*
(c)	Seasickness remedies	**39 08 25**	Hyoscine hydrobromide	Use 3 (c)	Use 3 (c)
(d)	Anti-epileptics	**39 08 26**	Diazepam rectal dispenser 10mg in 2.5ml	4	4
5	Anti-allergics and anti-anaphylactics				
(a)	H1 Anti-histamines	**39 08 27**	Astemizole 10mg tabs	30*	30*
(b)	Injectable glucocorticoids	**39 08 28** **29**	i) Hydrocortisone injection powder for reconstitution 100mgm vial with 2ml water for injection ii) Prednisolone 5mg tabs	3 10	1 5
6	Respiratory System				
(a)	Bronchospasm preparations	**39 08 30** **31**	i) Salbutamol inhaler 100 micrograms per metared dose. 200 dose inhaler with volumatic ii) Beclomethasone 50 micrograms per metered dose. 200 dose inhaler	1 1	1 1
(b)	Anti-tussives	**39 08 32**	Codeine phosphate tab.(cough suppressant)	Use 2d	Use 2d
(c)	Medicines used for colds and sinusitis	**39 08 33**	Paracetamol	Use 3a	Use 3a
7	Anti-infection				
(a)	Antibiotics(of at least two families) (◆to be carried in category A vessels which may be more than 48 hours from medical assistance)	**39 08 34** **35** **36** **37** **38**	i) Benzylpenicillin-benzylpenicillin sodium 600mg injection(powder for reconstitution in a rubber capped and metal topped vial) and water for injection 2ml ii) Ciprofloxacin as hydrochloride 500mgm tablet ◆iii) Cefuroxime injection 750mgm vial and water for injection iv) Erythromycin 250mg tablets v) Doxycycline 100mg capsules	10 10 20 40 10	1 10 20 -
(b)	Anti-bacterial sulphamide	**39 08 39**	Trimethroprim 200mg tablets	20	-
(c)	Urinary antiseptics	**39 08 40**	Trimethroprim	Use 7b	Use 7b
(d)	Anti-parasitics	**39 08 41**	Mebendazole 100mg tabs. 6 tablet pack	1*	1*
(e)	Intestinal anti-infectives	**39 08 42** **43**	Metronidazole suppositories 1gm Metronidazole tabs.400mg tabs	10 14	- 14
(f)	Anti-tetanus vaccines and immunoglobulins	**39 08 44** **45**	Tetanus Vaccine 0.5ml ampoule Tetanus Immunoglobulin ampoule for injection	5* 1*	1* 1*
8	Compounds promoting rehydration, caloric intake and plasma expansion				
		39 08 46	Sodium chloride & dextrose rehydration salts 8g sachets of Oral Rehydration Salts, Formula A. BP Oral powder in sachet to provide Na=35mmol,K=20mmol,Cl-37mmol,HCO^3 18mmol and glucose 200mmol when reconstituted in a litre of water	12	12

(to be continued)

1	2	CODE	3	4	
Ref. No.	Statutoy Treatment Requirements		Recommended Medicine and Dosage Strength representing best practice	Recommended quantity for 10 workers	
				Cat A	Cat B
9	Medicines for External Use				
(a)	Skin medicines				
	- Antiseptic solutions	**39 08 47**	100ml solution or preimpregnated wipes containing 0.015% w/v cholorhexidine and 0.15% w/v cetrimide	1* bottle or 1 pack wipes	1* bottle or 1 pack wipes
	- Antibiotic ointments	**39 08 48**	Cicatrin cream 15mg tube	1	1
	- Anti-inflammatory and analgesic ointments	**39 08 49**	i) Hydrocortisone 1% cream 15g tube	2	-
		39 08 50	ii) Benzoic Acid Ointment BP 50mg(benzoic acid 6%, salicylic acid 3% in emulsifying ointment 15g)	3	1
	- Anti-mycotic skin creams	**39 08 51**	Miconazole nitrate 2% topical cream 30g	2	1
	- Burn preparations	**39 08 52**	Silver Sulphadiazine 1% cream 50g tube	2	1
			Miscellaneous skin preparations		
		39 08 53	i) Permethrin 1% in a basis containing isopropylalcohol 20% Cream Rinse	2*	-
		39 08 54	ii) Zinc ointment, BP(containing zinc oxide 15%) 25g	1*	-
		39 08 55	iii) Potassium permanganate crystals 10g container	1*	-
(b)	Eye medicines				
		39 08 56	Antibiotic ointment Framycetin sulphate 0.5% ointment 5g tube	4	1
	- Antibiotic and anti-inflammatory drops	**57**	Betamethasone sodium phosphate 0.1% neomycin sulphate 0.5% eyedrops 5ml	2	1*
	- Anaesthetic drops	**58**	Amethocaine hydrochloride 0.5% 5ml	5*	5*
(b)	- Hypotonic myotic drops	**39 08 59**	Pilocarpine hydrochloride eyedrops 0.5% 10ml	1*	1*
		60	Detection of foreign bodies Fluorescein Sodin 1% eye-drops	1*	-
(c)	Ear medicines				
	- Antibiotic solutions	**39 08 61**	Antibiotic eardrops containing in each ml; neomycin 3,400 units, polymixin B sulphate 10,000 units, hydrocortisone 10mg 5ml dropper bottle	1*	1*
	- Anaesthetic and anti-inflammatory solutions	**39 08 62**	Ephedrine nasal drops BP 0.5% ephedrine hydrochloride 10ml	1*	1*
(d)	Medicines for oral and throat infections				
	- Antibiotic or antiseptic mouthwashes	**39 08 63**	Chlorhexidine gluconate 0.2% mouthwash 300ml	1	1
(e)	Local Anaesthetics				
	- Local anaesthetics using freezing	**39 08 64**	Ethyl chloride liquid spray 50mg	1*	1*
	- Local anaesthetics given by subcutaneous injections	**39 08 65**	Lignocaine hydrochloride 1% 25mg in 5ml for injection	5	5
	- Dental anaesthetics and antiseptic mixtures	**39 08 66**	i) Lignocaine Gel 20g (lignocaine hydrochloride 2% in a water miscible(bass) gel	1	
		67	ii) Oil of Cloves 10ml	1*	1*

MEDICAL EQUPMENT

	Required Equipment		Recommended Specification	A	B
1 Resuscitation Equipment					
	Manual resuscitation appliance				
	Appliance for the administration of oxygen	**39 20 01**	Oxygen Giving Set comprising the following; 1) Oxygen reservoir 2) 1 flow meter unit giving a minimum setting of 4 litres per minute 3) 1 pressure regulating unit 4) 1 set of tubing 5) 5 x 24% oxygen disposable face masks 6) 5 x 35% oxygen disposable face masks each part constructed so that it can only be assembled in the correct manner	1	1
	Mechanical aspirator to clear upper respiratory	**39 20 02**	Aspirator to clear airways(manual, hand operated) + two catheters	1	1
	Equipment for mouth to mouth resuscitation	**39 20 03** **04**	Laerdal Pocket Mask Guedal Airway Sizes 3 and 4	1 1	1 1
2 Dressing and suturing equipment					
	Disposable suture stapler or suture kit with needles	 **39 20 05** **06** **07**	Suture and needle pack Sterile non absorbable, sutures BP, of monofilament nylon or silk, swaged to a 26mm, and 40mm half circle needle with a cutting edge. Each needle and suture to be in a sealed pack (1) 26mm half circle needle (2) 40mm half circle needle (3) sterile absorbable sutures BP of catgut swaged to a 40mm half circle cutting needle	 3 3 26	 - - -
	Adhesive elastic bandage	**39 20 08** **09**	Adhesive Elastic Bandege 7.5cm x 4m Crepe bandege 7.5cm x 4.5m when stretched	4 4	1 1
	Tubular gauze bandage, seamless, of a size suitable for finger dressings	**39 20 10**	20m length with applicator	1	1
	Sterile gauze compresses	**39 20 11**	Packet containing 5 sterile gauze pads BP size 7.5cm x 7.5cms	10	5
	Cotton wool	 **39 20 12** **13**	Absorbent cotton and viscose wadding db, in a roll, in damp proof packaging (1) 15gm, sterile (2) 100gm, non-sterile	 6 3	 3 1
	Sterile sheet for burns victims	**39 20 14**		1	1
	Triangular sling	**39 20 15**	Calico, with two sides @90cm and base @127cm	4	4
	Disposable polyethylene gloves	**39 20 16**	Large size	25	25
	Adhesive dressings	**39 20 17**	Assorted, sterile	40	40
	Sterile compression bandages	**39 20 18** **19** **20**	(1) No.13 Standard dressings (2) No.14 Standard dressings (3) No.15 Standard dressings	5 5 4	3 3 2
	Adhesive sutures or zinc oxide bandages	**39 20 21**	75mm adhesive suture strips	6	6
	Non-absorbable sutures with needles		Use Equipment items 2(1) and 2(2)	Use 2(1) & 2(2)	Use 2(1) & 2(2)
	Vaseline gauze	**39 20 22**	Paraffin gauze dressings, size 10cm x 10cm	40	40
3 Instruments					
	Disposable scalpels	**39 20 23**		2	-
	Stainless-steel instrument box	**39 20 24**		1	1
	Scissors	**39 20 25**	- about 18cm one blade sharp pointed and the other round-ended	1	1
		39 20 26	- 12.5cm, both blades sharp pointed	1	1
	Dissecting forceps	**39 20 27**		1	1
	Haemostatic Clamps	**39 20 28**		1	1
	Needle Forceps	**39 20 29**		1	-
	Disposable razors	**39 20 30**		5	-

(to be continued)

	Required Equipment		Recommended Specification	A	B
4	**Examination and monitoring equipment**				
	Reactive strips for urine analysis	**39 20 31**		50	-
	Temperature charts	**39 20 32**		1 pad	-
	Disposable tongue depressors	**39 20 33**		10	10
	Medical evaluation reports	**39 20 34**	(SCMG/3)	1 pad	1 pad
	Stethoscope	**39 20 35**		1	1
	Aneroid sphygmomanometer	**39 20 36**		1	1
	Standard medical thermometer	**39 20 37**		3	1
	Hypothermic thermometer	**39 20 38**		1	1
	Additional equipment	**39 20 39** **40**	Sputum cup with cover(disposable) Specimen jars(strong glass or plastic with airtight lid 50ml with black labels)	2 2	- -
5	**Equipment for injection, perfusion, puncture and catheterization**				
	Bladder drainage instruments	**39 20 41**	Bladder drainage set(including bag, spigots and tube)	1	-
	Rectal drip set	**39 20 42**		1	-
	Disposable filter infuser	**39 20 43**	Integral in UK equipment. Foreign produced items may require a separate filter	if Reqd	if Reqd
	Urine drainage bag		Use bladder drainage set	Use 5 (1)	Use 5 (1)
	Disposable syringes and needle	**39 20 44**	2ml, 5ml, 10ml, quantities of each size	6	3
	Catheter	**39 20 45** **46** **47**	1) Foley type 16, Charriere guage, 5ml balloon(Short/medium term use in adults) 2) Nelaton size 16 Charrire guage (with no balloon) 3) Penile sheath set	1 1 1	- - -
6	**General Medical Equipment**				
	Bedpan	**39 20 48**	(stainless steel or sterilisable plastic)	1	-
	Hot water bottle	**39 20 49**	with fabric cover	1	-
	Urine container	**39 20 50**		1	-
	Icebag	**39 20 51**		1	-
7	**Immobilization and setting equipment**				
	Malleable finger splint	**39 20 52**		1	1
	Malleable forearm and hand splint	**39 20 53**		1	1
	Inflatable splints	**39 20 54**	Set of four(half-leg, full leg, half arm, and full arm)	1	1
	Thigh splint	**39 20 55**		1	1
	Collar for neck immobilisation	**39 20 56**	(Adult size set of 3, small, medium and large)	1	1
	Thomas splint	**39 20 57**		1	-
8	**Disinfection, Disinsectization and Prophylaxis**				
	Water-disinfection compound	**39 20 58**	In liquid form - litres	5	-
	Liquid insecticide	**39 20 59**	In liquid form - litres	5	-

REQUIRED ADDITIONAL EQUIPMENT

	Required Equipment	CODE	A	B
	First Aid Kits - Vessels with a crew of more than 10 should carry first aid kits to be distributed in appropriate locations on the ship e.g. in the galley and engine room.(For passenger vessels see Schedule 3) The kit should include the following items to be kept in a portable waterproof container. (1) 4 x triangular bandages (90cms × 127cms base) (2) 6 x standard dressings no.8 or 13 BPC (3) 2 x standard dressings no.9 or 14 BPC (4) 2 x extra large unmedicated dressings, 28 cms ×17.5 cms (5) 6 medium safety pins, rustless (6) 20 assorted elastic adhesive dressings medicated BPC (7) 2 x sterile eye pads with attacthment (8) 2 x packeges containing 15 grammes sterile cotton wool (9) 5 pairs large size disposable polythene gloves	**39 20 60**	3 max	3 max
	Recommended additional equipment			
	Face masks disposable	**39 20 61**	6	6
	Plastic measuring jug 1/2 litre size	**39 20 62**	1	1
	Disposable paper towels	**39 20 63**	100	100
	Latex gloves surgical quality - sterile(large)	**39 20 64**	5 prs	5 prs

(to be continued)

	Required Equipment	CODE	A	B
	Waterproof plastic sheeting, size 1 m x 2 m	**39 20 65**	2	2
	"Sharps" disposal box	**39 20 66**	1	1
	Lotion bowl (Size at least 200 mm x 90 mm, stainless steel or sterilisable plastic, to be marked "medical"	**39 20 67**	1	-
	Kidney dish (Size 250 mm stainless steel or sterilisable plastic)	**39 20 68**	1	-
	Safety pins, rustless medium	**39 20 69**	6	6
	Magnifying glass 7.5 cm diameter on handle	**39 20 70**	1	1
	Nail brush	**39 20 71**	1	1
	Stretcher equipment (A system for trauma management, i.e. immobilisation and stretcher equipment most suited for treatment on the vessel concerned).	**39 20 72**	1	-
	Baby bag - Large size	**39 20 73**	1	1
	Vessels in malarial areas only Microscope slides in individual transit containers	**39 20 74**	5	5
	1) Excavator double ended Guys' pattern G2 2) Filling paste inserter (for inserting filling paste into the tooth) 3) Dental mirror size 4 on handle 4) Cavit (temporary dental filling) tube	**39 20 75**	1 set all items	-
	Kit for protection against blood transmitted diseases (to be carried in all vessels trading in known malarial areas and in areas where medical facilities are limited and emergency shore based treatment is necessary). To be kept in a heavy gauge polythene bag, and labelled "to be used only for the treatment of ..." (insert the name of the seafarer going ashore for emergency treatment) Each kit to contain the following: (1) 10 x 2 ml syringes (2) 10 x10 ml syringes (3) 20 xx 21 swg 0.8 mm needles (4) 1 blood giving set (5) 1 blood taking set (6) pack of pre-injection site swabs (7) Disposable plastic gloves 2 prs. (large size)	**39 20 76**	1	-

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Medicines

The medicines and medical equipment required on board ocean going commercial and passenger vessels are available below as outlined by the World Health Organization and the Merchant Shipping Notice for United Kingdom merchant ships and fishing vessels on medical precautions. The medications and equipment are available in a complete medical chest set or individually where they may be required. In addition, some more commonly used medications have also been provided for everyday minor ailments.

Whenever using or prescribing medications always be sure to follow the respective instructions carefully.

WHO Medical Chests

Medicines and medical equipment in accordance with WHO (World Health Organization). International Medical Requirements for ocean going vessels without a doctor aboard. The quantities of medicaments are based on an estimated 6-month inventory for a crew complement of 25-40 persons.

39 01 11	WHO Medical Chest, capacity for 25 - 40 persons	Set

Medical Stores required for United Kingdom Merchant Ships and Fishing Vessels

The Merchant Shipping and Fishing Vessels (Medical Stores) Regulations 1995 SI No.1802 (as amended 1996 SI No.2821)

The United Kingdom implemented the requirements of Council Directive 92/29/EEC which sets out minimum standards for ships' medical stores by introducing the Merchant Shipping and Fishing Vessel (Medical Stores) Regulation 1995, as amended by the Merchant Shipping and Fishing Vessel(Medical Stores) Amendment Regulations 1996.

The requirements for medical stores set out in M1607 and M1608 have been reviewed and are replaced by this Notice.

39 01 06	Medical stores required for U.K. merchant ships and fishing vessels, Regulation 1995 SI No. 1802 Category A	Set
39 01 07	Medical stores required for U.K. merchant ships and fishing vessels, regulation 1995 SI No. 1802 Category B	"

The following list of medical supplies and medications are those which may not be included in the World Health Organization or DTI medical lists for ocean going vessels but which are used commonly on ships for mild illnesses and injuries. A variety of the more popular over the counter medicines are listed with their uses and code numbers for easy referencing.

CODE	Descriptions	Virtue	Contents	Unit
39 01 20	Adrenaline Injection	For the rare cases of collapse following treatment with penicillin. Each ampoule contains 1 ml and 10 ampoules in a packet.	10 amp	Pkt
39 01 26	Medical Alcohol	95% ethyl alcohol bottled in a 500 ml container. Used as a local anti-infective (as 70 percent W/V solution and solvent). Not for ingestion or internal use!	500 ml	Btl
39 01 28	Surgical Alcohol (Dilute Alcohol)	75% ethyl alcohol for disinfection and anti-microbe. Bottled in 500 ml. For external use only.	500 ml	Btl
39 01 30	Rubbing Alcohol	Isopropyl alcohol for external use only. Bottled in 500 ml bottles.	500 ml	Btl
39 01 36	Aminophylline Tablets	For carditis, angina pectoris, asthma and nephritis.	100 mg, 60 tab	Pkt
39 01 38	Ampicillin Capsules	An antibiotic for tonsillitis, gonorrhoea, otitis media, bronchitis, pharyngitis and suppurative diseases. Each capsule contains 250 mg and 100 capsules in a packet.	250 mg, 100 cap	Pkt
39 01 40	Amyl Nitrite Capsules	For angina pectoris. A capsule is crushed and the vapors are inhaled to relieve oncoming angina attacks.	6-cap	Pkt
39 01 46 **47** **48**	Analgesic Tablets "Bufferin"	For headaches, general pain relief, and colds.	20 tab 40 tab 80 tab	Pkt " "
39 01 50	Analgesic Tablets "Excedrine"	For general pain relief for headaches, toothaches, neuralgia, etc.	36 tab	Pkt
39 01 52	Analgesic Tablets "Saridon"	For analgesic and antipyretic symptoms such as headaches, toothaches, migraines, lumbago, etc.	100 tab	Pkt
39 01 56	Antacid Tablets	For heartburn, upset stomach, and acid indigestion.	120 tab	Pkt
39 01 58	Antibiotic Ointment	An antibiotic for minor cuts and scratches.	25 grm	Tub
39 01 60	Antihistamine Tablets (Anti-Allergy Tablets)	For relief of allergic symptoms such as hay fever, allergic asthma, urticaria, drug rash, and sea sickness.	40 tab	Btl
39 01 62	Anti-Scabies Ointment	For the treatment of scabies and for the symptomatic treatment of pruritic skin.	50 grm	Jar
39 01 66	Antiseptic Cream	For application to broken skin or as a barrier against bacterial infection.	50 grm	Tub
	Antibiotic Skin Ointment	See Tetracycline Ointment.		
39 01 68	Antiseptic Powder	For secondary infections from burns and superficial suppurative skin diseaes.	10 grm × 5 btl	Pkt
39 01 69 **70**	Antiseptic Solution	Used as a general antiseptic for the cleaning of wounds, burns, etc. Also used for the disinfection or surgical instruments.	200 ml 500 ml	Btl
39 01 74	Anti-Tetanus Injections	For the treatment or prevention of tetanus.	10 ml, 12,000 unit	Pkt
39 01 80	Arachis Oil	For soothing eczema or other skin irritations. Also used to soften wax in the ear or lubricate catheters.	500 ml	Btl
39 01 82	Aromatic Spirit of Ammonia	Stimulant to revive persons who feel faint.	100 ml	Btl
39 01 86	Aspirin Tablet	Analgesic for the relief of headaches, toothaches, muscular pains, etc.	100 tab	Btl
39 01 88	"Bayer" Aspilin Tablets	Same properties as above aspirin branded "Bayer". 30 tablets in a packet.	20 tab	Pkt
39 01 92	Athlete's Foot Liquid (Ringworm Liquid)	For athlete's foot and ringworm.	60 ml	Btl
39 01 94 **97**	Athlete's Foot Powder (Ringworm Powder)	Same as above for athlete's foot and ringworm.	90 grm 32 grm	Tin "

(to be continued)

CODE	Descriptions	Virtue	Contents	Unit
39 01 96	Athlete's Foot Ointment (Whitfield's Ointment)	For the treatment of athlete's foot and ringworm.	30 grm	Tub
39 02 01 02	Benzyl Benzoate Applications	25% Benzyl Benzoate. For use in the treatment of scabies.	80 ml 500 ml	Btl "
39 02 04	Boric Acid Powder	Used as an antiseptic eyewash or for gargling.	500 grm	Pkt
39 02 08	Burn Ointment	For burns, minor cuts and bruises.	15 grm	Tub
39 02 20 19 21	Calamaine Lotion	Provides fast relief for heat rashes, insect bites, sunburn, etc.	60 ml 100 ml 260 ml	Btl " "
39 02 22 23	Castor Oil	Used to safely induce vomiting in the treatment of poisoning.	20 ml 500 ml	Btl
39 02 26	Cetrimide Solution, Strong	Sudsing emollient skin cleaner for personal cleaning and skin care. Furnished in 150 ml bottle.	150 ml	Btl
39 02 30	Chloramphenicol Tablets	An antibiotic for colds, pneumonia, dysentery, tonsillitis, diarrhoea, gonorrhoea, empyema, and suppurative diseases.	250 mg, 100 tab	Pkt
39 02 34	Codeine Phosphate Tablets	An analgesic more powerful than regular aspirin for the relief of headaches or toothaches. Each tablet contains 3 mg of dehydrocodeine phosphate.	3 mg, 100 tab	Btl
39 02 38 39 40	Cold Remedy "Vicks Vaporub"	For the relief of congestion and coughs due to colds.	50 grm 70 grm 100 grm	Jar " "
39 02 42 43	Cold Capsules "Contac 600"	For common colds and acute rhinitis.	10 caps 20 caps	Pkt
39 02 46	Cold Tablets	For common colds and headaches caused by colds.	90 tab	Btl
39 02 50	Concentrated Antiseptics	Antibacterial skin cleanser.	500 ml	Btl
39 02 52	Corticosteroid Ointment	Synthetic corticosteroid with antibiotic for skin diseases such as eczema, dermatitis, otitis externa, insect bites, etc.	10 grm	Tub
39 02 54	Cortisone Ointment	Ointment for the relief of skin conditions like dermatitis, eczema, or discomfort from insect bites.	25 grm	Tub
39 02 60	Cough Drops "Vicks"	For a sore throat or cough.	20 drop	Pkt
39 02 62	Cough Linctus	Cough suppressant and expectorant.	60 ml	Btl
39 02 63 64	Cough Mixture	An antitussive, expectorant, and antihistamine mixture. Furnished in a 1,000 ml bottle.	500 ml 1,000 ml	Btl "
39 02 65 66	Cough Tablets	For relief of a cough or the symptoms of bronchitis.	36 tab 50 tab	Btl "
39 02 79 80	Dermatologic Purulent Infection Spray	For the treatment of eczema, burns, cuts and minor wounds. Serves to prevent infection during the healing period.	35.5 grm 85 grm	Tin "
39 02 82	Diarrhoea Tablets	For the treatment and relief of diarrhoea.	40 tab	Btl
39 02 84	Digoxin Tablets	For heart failure, asthma, and use as a diuretic.	20 tab	Btl
39 02 86	Dover's Powder Tablets	Medicated powder tablets for the relief of a cough, headache, and fever related to colds.	100 tab	Pkt
39 03 02	Ear Drops	For otitis media and internal and external otitis.	15 ml	Btl
39 03 04	Eczema Ointment	For the treatment of eczema.	20 grm	Tub
39 03 06	Ephedrine Tablets	For asthma, bronchitis and cough. Contains 30 tablets in a bottle.	30 tab	Btl
39 03 08	Ergometrine Injections	For use in the treatment of bleeding due to abortion or miscarriage in women. Contains 10 ampoules in a packet.	10 amp	Pkt
39 03 12	Eye Drops, Anesthetic	Serves as an ophthalimic anesthetic. 2 - 3 drops as needed. 20 ml in a bottle.	20 ml	Btl

(to be continued)

CODE	Descriptions	Virtue	Contents	Unit
39 03 14	Eye Drops, Antiseptic	To clean and relieve the eyes from irritation or slight infections such as conjunctivitis. Furnished in a 15 ml bottle.	12 ml	Btl
39 03 16 **17** **18**	Eye Wash (Eye Lotion)	For irrigation of the eyes to remove particles or irritants.	130 ml 330 ml 200 ml	Btl " "
39 03 30 **31** **32**	Heart Tablets (Nitroglycerin Tablets)	For the prevention of episodes of angina pectoris.	20 tab 40 tab 100 tab	Btl " "
39 03 34	Hemorrhoidal Ointment (Piles Ointment)	For internal and external hemorrhoids, bleeding, and anal fistula.	15 grm	Tub
39 03 36	Hemorrhoidal Suppositories	For the relief of discomfort caused by hemorrhoids.	10 pcs	Pkt
39 03 38	Hydro-Chlorothiazide Tablets (Dropsy Tablets)	For the treatment of hypertension and diuresis.	25 mg, 100 tab	Pkt
39 03 40	Hydrogen Peroxide Solution	Serves as a germicide and antiseptic for cuts and abrasions.	500 ml	Btl
39 03 50	Inhalation Mixture (Friar's Balsam) (Benzoin Compound Ticture)	For the treatment of tonsilitis, bronchitis, laryngitis, and sinus conditions.	100 ml	Btl
39 03 52	Insect Repellent, Aerosol	For the prevention of insect bites. One spraying will have a continuous effect for hours. 80 ml in an aerosol tin.	80 ml	Tin
39 03 54	Insecticide Powder	An effective delousing agent.	30 grm	Pkt
39 03 60	Kaolin Poultices	Antiphlogistines for sprains, etc.	200 grm	Pkt
39 03 66	Local Anaesthetic Ointment	For pains from minor cuts and burns, etc.	25 grm	Btl
39 03 67	Pain Relieving Patch	For relief of aches and pains associated with muscle fatigue, muscle pain, stiff shoulder and simple backache, etc.	6.5 x 4.2cm (20's)	Pkt
39 03 68	Local Anaesthetic Spray	An anaesthetic for external use which stops pain and swelling from contusions or minor cuts.	80 grm	Tin
39 03 70	Liquid Laxative (Milk of Magnesium Liquid)	For the relief of constipation.	12 fl-oz	Btl
39 03 72	Milk of Magnesium Tablets	Serves as an antacid and laxative to relieve gastric discomfort.	150 tab	Btl
39 03 78 **79**	Magnesium Sulphate (Epsom Salt)	Serves to induce vomiting in case of the ingestion of poison.	25 grm 500 grm	Pkt
39 03 81	Malaria Tablets	For the treatment of malaria.	100 tab	Pkt
39 03 83 **84**	Mercurochrome Solution	Used as an antiseptic or germicidal agent.	100 ml 500 ml	Btl "
39 03 85 **86**	Merthiolate Tincture	To wash and disinfect the skin prior to surgery or for the first aid cleaning of a contaminated wound.	250 ml 500 ml	Btl
39 03 88	Methyl Salicylate Liniment	For rheumatism, neuralgia, and arthritis.	500 ml	Btl
39 03 90	Morphine Injection Controlled Substance	For severe pain after an operation, or for serious wounds. Each ampoule contains 15 mg. 10 ampoules per packet.	15 mg, 10 amp	Pkt
39 03 92	Morphine Tablets Controlled Substance	For headaches, toothaches, lumbago, myalgia, neuralgia, dismenorrhea, traumatic pain, chill, fever, articular pain, muscular pain, etc.	120 tab	Pkt
39 03 94 **95** **97**	Mouthwash "Listerine"	For general oral hygiene and the prevention of bad breath.	12 fl-oz 500 ml 1,000 ml	Btl " "
39 03 96	Mouthwash & Gargle "Astring O-Sol"	A germicidal and antiseptic mouth wash.	4 fl-oz	Btl
39 04 02	Nasal Spray (Nose Drops)	For acute or chronic rhinitis, allergic rhinitis, and sinusitis.	15 ml	Btl

(to be continued)

CODE	Descriptions	Virtue	Contents	Unit
39 04 04	Nikethamide Injections	For the treatment of respiratory trouble.	1 mg, 10 amp	Pkt
39 04 06	Normal Saline Injections	For diseases requiring a nutritional supplement or a heart stimulant. Supplied in 500 ml bottles and furnished with a solution administration set.	500 ml	Btl
39 04 20	Oxy-Tetracycline Capsules	An antibiotic for pneumonia, dysentery, gonorrhoea, pyelitis, tonsillitis, otitis media, and suppurative diseases.	250 mg, 100 caps	Tub
39 04 22	Oxy-Tetracycline Injections	An antibiotic intramuscular solution for gonorrhoea, pneumonia, otitis media, and tonsillitis.	100 mg, 10 amp	Pkt
39 04 24	Oxy-tetracycline Eye Ointment	An antibiotic for superficial infections of the eye and eyelid, including conjunctivitis, uveitis, corneitis, blepharitis, and trachoma.	3.5 grm	Tub
39 04 34	Penicillin Injections	For gonorrhoea, pneumonia, and suppurative diseases. One vial contains 250 mg of oxacilin sodium with 10 vials in a packet.	250 mg, 10 vials	Pkt
39 04 36	Penicillin Ointment	An antibiotic for minor cuts, irritations, and burns.	10 grm	Tub
39 04 38	Peniicillin Tablets	For the treatment of perilous wounds, illness, infections, and gonorrhoea. Each tablet contains 200,000 units, 125 mg, 100 tablets in a packet.	200,000 units, 100 ta	Pkt
39 04 42	Phenobarbitone Tablets	A sedative used for epilepsy. Contains 30 mg and 50 tablets in a bottle. **Controlled Substance:** Patients taking this medication should not drink alcohol.	30 mg, 50 tab	Btl
39 04 44	Potassium Permanganate Capsules	Used to cleanse the mouth and stomach eliminating germs or bacteria which may be present.	50 caps	Btl
39 04 46	Proguanil Hydrochloride Tablets	Used for the prevention of malaria. Contains 100 tablets in a bottle.	100 tab	Btl
39 04 55 **56**	Salt Tablets	A salt supplement for men working in high temperatures and humidity. These tablets will replenish salts lost from excessive perspiration.	500 tab 1,000 tab	Btl "
39 04 58	Salt Tablets Entirc Coated	Salt tablets with an enteric coating for the protection of the stomach.	750 tab	Btl
39 04 60	Seasickness Tablets	Used for the prevention and treatment of nausea, vomiting, or vertigo related to motion sickness.	100 tab	Btl
39 04 62 **63**	Sedative (Diazepam) Tablets	A sedative for sleeping. This tablet is required by both WHO and DTI scale I, however, they are different in chemical components as described below. When ordering, specify WHO or DTI.	WHO, 50 mg, 100 tab DTI, 10 mg, 100 tab	Btl "
39 04 66	Sleeping Tablets	A mild sedative used to induce sleep.	100 tab	Btl
39 04 68	S.M.P. (Sulfamethoxypyridazine) Tablets	For chancroid, gonorrhoea, bacillary dysentery, colibacillary diseases, urinary fracto infections and surgical suppurative diseases.	100 tab	Btl
39 04 70	Sodium Bicarbonate Powder	To counteract gastric acidity or flatulence. Also used with aspirin to counteract acidity. Will also sooth the burning and irritation of insect bites.	125 grm	Tin
39 04 72	Soft Paraffin (Vaseline)	Acid free vaseline for use as a soothing dressing for minor skin irritations such as burns, scratches, abrasions, and detergent burns on the hands.	50 grm	Jar
39 04 76	Spirit Soap (Tincture of Iodine)	An excellent skin and scalp cleanser.	500 ml	Btl

(to be continued)

CODE	Descriptions	Virtue	Contents	Unit
39 04 80	Stomach Powder (Indigestion Powder)	For indigestion, hyperacidity, overeating, overdrinking, gastroenteric catarrh and stomachaches.	140 grm	Tin
39 04 82	Stomach Tablets (Indisgestion Tablets)	For indigestion, heartburn, overeating and overdrinking.	120 tab	Btl
39 04 84 85	Stomach Pills "Seirogan"	For stomachache, mild or chronic indigestion and other stomach diseases.	250 pills 500 pills	Btl "
39 04 88	Streptomycin Injecitions	An antibiotic for tuberculosis.	1 grm, 10 vial	Pkt
39 04 90	Sulfa Drug Powder (Antiseptic Powder)	To facilitate the healing of cuts, scratches, abrasions and minor burns.	100 grm	Btl
39 04 92	Sulphaguanidine Tablets	For colds, dysentery, diarrhoea, etc.	100 tab	Pkt
39 04 94	Sulfonamide Tablets	For pneumonia, gonorrhoea, tonsillitis, otitis media and suppurative diseases.	100 tab	Btl
39 05 02	Tetracycline Capsules	An antibiotic for the treatment of pneumonia, gonorrhoea, otitis media, diarrhoea and suppurative diseases. One packet contains one hundred 250 mg capsules.	250 mg, 100 caps	Pkt
39 05 04 05	Tetracycline Ointment (Antibiotic Skin Ointment)	For the treatment of superficial wounds, burns, minor skin irritation and minor cuts. Furnished in 5 grm or 25grm tubes.	5 grm 25 grm	Tub "
39 05 08	Throat Lozenges (Troches)	For sore throats and coughs due to colds.	24's	Pkt
39 05 10 11	Ticture of Iodine	Use as a disinfectant and germicide to clean minor wounds.	100 ml 500 ml	Btl "
39 05 14	Tooth Anaesthetic (Oil of Clove)	A remedy for toothaches. Contains 30 ml in one bottle.	30 ml	Btl
39 05 16	Topical Analgesic Gels "Ben-Gay"	For muscle aches and minor arthritis pain.	35.5 grm	Tub
39 05 18	Topical Analgesic Ointment "Salomethyl"	For muscular fatigue, stiff joints, contusions, sprains, neuralgia, arthritis, etc.	30 grm	Tub
39 05 20	Topical Analgesic Ointment (Tiger-Balm)	For muscular pain, stiff joints, sprains, contusions neuralgia, rheumatism, etc.	19.4 grm	Jar
39 05 22	Topical Analgesic Spray "Air Salonpas"	For the relief of muscular pain, stiff joints, sprains, bruises, and rheumatism.	120 ml	Tin
39 05 26	Tranquillizer Tablets (Chlorpromazine HCL Tablets)	Provides a sedative effect to ease the symptoms of neurosis, anxiety neurosis, mental tension, and depression. Each tablet contains 50 mg of chlorpromazine hydrochloride.	50 mg, 20 tab	Btl
39 05 40	Vegetable Laxative Tablets (Senna Laxative Tablets)	For the relief of acute and chronic constipation. Furnished 100 tablets in a packet.	100 tab	Pkt
39 05 41 42	Vitamin B1 Tablets	For beriberi, neuralgia, and fatigue.	25 mg, 80 tab 25 mg, 120 tab	Btl "
39 05 44 45	Vitamin C Tablets	For the prevention and treatment of colds.	250 mg. 200 tab 500 mg, 100 tab	Btl "
39 05 48	Vitamin C Tablets "Cebion"	Tablets are taken after being dissolved in water. Effective for the prevention and treatment of colds. Each tablet contains 1,000 mg of ascorbic acid.	1 grm, 10 tab	Btl
39 05 50	Multi Vitamin Tablets	For fatigue, anorexia, anemia, and as a nutritional supplement.	120 tab	Btl
39 05 60 61	Water for Injections	Furnished on 5 ml ampoules.	5 ml x 10 amp 5 ml x 50 amp	Pkt
39 05 70 71	Zinc Dusting Powder (Talcum Powder)	For soothing irritated skin or heat rashes.	113 grm (4 oz) 255 grm (10 oz)	Tin "
39 05 74	Zinc Ointment	For the soothing and protection of eczema and psoriasis.	100 grm	Jar

Dressings and Medical Instruments & Equipment

The following is a supplemental items of basic medical supplies and equipment. These items are provided with photographs to make them easy to recognize and compare with the current inventory in the ships medical chest.

Bandages

Adhesive & Elastic Bandage

Furnished 5 cm width and 4.5 mtr in length.

39 10 01	Bandage, adhesive & elastic 5 cm x 4.5 mtr	Rol
02	" 7.5 cm x 4.5 mtr	"

Crepe Bandages

Available in 5, 7.5 and 10 cm width with 9 mtrs of bandage per roll.

39 10 06	Bandage, crepe 5 cm x 9 mtr	Rol
07	" 7.5 cm x 9 mtr	"
08	" 10 cm x 9 mtr	"

Elastic Bandages

Available in 5 to 10 cm width with a length of 4.5 mtrs.

39 10 11	Bandage, elastic 5 cm width x 4.5 mtr	Rol
12	" 7.5 cm width x 4.5 mtr	"
13	" 10 cm width x 4.5 mtr	"

Gauze Bandages

Available in 2.5 to 10 cm width with a length of 9 mtrs. Contains 12 rolls in a packet.

39 10 16	Bandage, gauze 2.5 cm x 9 mtr	Pkt
17	" 5 cm x 9 mtr	"
18	" 7.5 cm x 9 mtr	"
19	" 10 cm x 9 mtr	"

Triangular Bandages

One 90 x 105 cm sized bandage furnished per packet.

39 10 22	Bandage, triangular, 90 x 105 cm	Pkt

Tube Gauze Bandages

Suitable for wounds on the finger. Furnished in 2.5 cm x 18 mtr rolls. Dressings also available for arm, hand, foot, shoulder, and head fittings.

39 10 26	Bandage, tube gauge, for finger 25 cm x 18 mtr	Pkt

Johnson & Johnson "Band-Aid"

Contains 50 pieces of four assorted sizes per tin. Also available in a tin of 150 bandages of one size. Specify when ordering.

39 10 31	Band-aid 50 pcs, 4 assorted size	Tin
32	Band-aid 150 pcs, 2 x 7.5 cm	Box

Absorbent Cotton

For a variety of uses applying disinfectants or cleaning wounds.

39 10 36	Absorbent cotton, 25 grm	Pkt
37	" 50 grm	"
38	" 100 grm	"
39	" 500 grm	"
39 10 40	Absorbent cotton, compressed 20 grm	Pkt

Cotton Tips (Applicators)

Sterilized long double-tip swabs. Contains 75 tips per box.

39 10 44	Cotton tip, (applicator), 75 pcs.	Pkt
45	" 100 pcs.	"

Dressings

Adhesive Strip Dressings

An absorbent strip with adhesive plaster. Furnished with two 6.3 cm x 50 cm sized strips in packet.

39 10 48	Dressing, adhesive strip 6.3 x 50 cm 2's	Pkt

Burn & Wound Dressing, Individual

Sterile tulle dressing lined with Fradomycin Sulfate

39 10 51	Dressing, burn & wound, individual, 10 x 10 cm, 10's	Pkt

Burn & Wound Dressing

Sterile, plain gauze evenly lined with yellow paraffin (vaseline). Furnished in a size 15 cm wide and 5 mtr in length. Furnished in a plastic container.

39 10 52	Dressing, burn & wound, 15 cm x 5 mtr	Pkt

Standard Dressings (First Aid/Emergency Dressings)

Contains a gauze pad with a bandage. Able to furnish sizes No. 13 to 15.

Unit Per Pkt

CODE	No.	Description
39 10 56	13	Gauze pad 7.5 × 10 cm & bandage 5 cm × 2.3 mtr
57	14	Gauze pad 10 × 15 cm & bandage 6 cm × 2.7 mtr
58	15	Gauze pad 15 × 20 cm & bandage 7.5 cm × 3.5 mtr

Gauze Pads

Ready to cut, sterilized gauze. Packed 10 sheets per packet.

Unit Per Pkt

CODE	Size	CODE	Size
39 10 61	5 × 5 cm	**39 10 63**	10 × 10 cm
62	7.5 × 7.5 cm		

Plain Gauze

Absorbent gauze rolls for wrapping open or seething wounds.

39 10 66	Gauze, plain 30 cm × 1 mtr	Pkt
67	" 5 mtr	
68	" 10 mtr	

7TH 39

Absorbent Gauze Ribbon

Furnishable 2.5 cm in width and 4.5 mtr in length.

39 10 70	Absorbent gauge ribbon, 2.5 cm × 4.5 mtr	Rol

Alcohol Swabs

For preparation of the skin prior to injection, and for first aid to decrease germs in minor cuts, scrapes and burns.

39 10 71	Swab, alcohol, 60 × 30 mm, 100's	Pkt

Jaconets

Sterile, waterproof bandage sheets. Furnished in a sheet 80 cm wide and 2 mtrs long.

39 10 72	Jaconet, 80 cm × 2 mtr	Pkt

Absorbent Lint

Dressing for wounds. Packed in individual sheets.

39 10 76	Absorbent lint, 15 × 30 cm	Pkt
77	" 30 × 30 cm	"

Adhesive Plaster (Zinc Oxide Plaster)

To protect minor cuts or relieve pain. Furnished in widths of 2.5, 5, and 7.5 cm. Each roll is 5 mtrs in length.

39 10 81	Plaster, adhesive, 2.5 cm × 5 mtr	Rol
82	" 5 cm × 5 mtr	
83	" 7.5 cm × 5 mtr	

First Aid Satchels

Furnishable in accordance with DTI requirements.

Contents

1.	4 pcs	Triangular bandages
2.	6 pcs	Standard dressing, No.8
3.	2 pcs	Standard dressing, No.9
4.	2 pcs	Sterile unmedicated dressing, 28 cm×17.5 cm
5.	6 pcs	Medium size safety pin
6.	20 pcs	Assorted dressing strips
7.	2 pcs	Sterile eye pads
8.	2 pcs	Sterile cotton wool, 15 grm
9.	5 prs	Disposable polythene gloves

How to order

39 10 92	First aid satchel, conforms to DTI scale IA requirement	set

Medical Instruments & Eqiupment

Artificial Airways (Artificial Respirators)

Facilitates mouth to mouth resuscitation without oral contact.

39 12 01	Artificial Airway "Brook-type"	Pc.

Medical Basins

A white enameled basin for sterilizing hands, etc. with antiseptic solution. Has 320 mm in diam and 90 mm in depth.

39 12 06	Medical basin, enameled	Pc.

Bed-Pans

Enamel, white coloured bedpan. Used in bed for urination and defecation.

39 12 08	Bed-pan, enameled	Pc.

Medical Empty Bottles

Dispensing Bottle

60 ml and 200 ml plastic bottles with a screw on cap.

39 12 10 11	Bottle, dispensing, medical 60 ml " 200 ml	Pc.

Poison Bottles
(Medical "Poison" Empty Bottles)

Amber coloured, glass bottles with a screw on cap. Furnished in 60 ml bottles.

39 12 14	Bottle, poison, glass, 60 ml	Pc.

Plastic Bottles with Screw Cap

Furnished with a screw on cap to hold liquid samples or test oils safely. Capacity : 500 cc.

39 12 16	Bottle, plastic, 500 cc with screw cap	Pc.

Canvas Rolls
for Instrument

Storage bag for surgical instruments.

39 12 20	Canvas roll for instrument	Pc.

Catheter Sets

Rubber made tubular devices designed for insertion into canals, vessels, or body cavities to drain the area. Furnished with three sizes in a plastic cylinder.

Unit Per Set

CODE	39 12 22	39 12 23
Type	Olivary Ends	Soft Rubber

Condoms
(Prophylactic Rubbers)

For protection against sexually transmitted diseases and for contraception.

39 12 26	Condom (prophylactic rubber) 12's	Pc.

Containers

Ointment Containers

For dispensing ointment.

39 12 28	Container, ointment plastic	Pc.

Tablet Containers

Plastic bottles for holding tablets.

39 12 30	Container, Tablet, plastic	Pc.

Crutches

The length of these crutches is adjustable and the bottom of the crutches are covered with rubber to prevent slipping.

39 12 32	Crutches	Pr.

Ear Syringes

For the cleaning of the ears and nose. Made of rubber. The overall length is 75 cm.

39 12 38	Ear syringe, rubber	Set

Enema Kits

Stainless steel cylinder with a lid and hanger at the top and rubber tubing at the bottom. Used to inject liquid into the intestine.

39 12 40	Enema kit	Set

Enema Syringes

Made of rubber with an overall length of 75 cm.

39 12 42	Enema syringe, rubber	Set

Dispensing Envelopes

Furnished in packs of 100 sheets.

39 12 44	Envelope, dispensing, 100's	Pkt

Eye Baths
(Eye Cups)

Plastic cup which withstands boiling. Has a rubber bulb on the side to splash liquids on the eye.

39 12 46	Eye bath with 2 spare bulbs	Set

Eye Droppers

Glass tube with rubber bulb.

39 12 48	Eye dropper	Pc.

Eye Patches
(Eye Shades)

For covering an infected eye to protect it from foreign particles. Furnished with cleaning pads for the eye and the skin.

39 12 50	Eye patch	Pc.

Eye Spuds with Covered Point

For removing dirt in the eyes. Made of stainless steel. Length 13 cm.

39 12 52	Eye spud with covered point, s. steel	Pc.

Feeding Cups

Stainless steel feeding cups of 200 cc capacity.

39 12 60	Feeding cup, stianless steel, 200 cc	Pc.

Fingerstalls (Finger Sacks)

Available in rubber and leather. Can be provided in a variety of sizes. Specify the size required when ordering.

Unit Per Pc.

CODE	Material	Application
39 12 62	Rubber	Specify for which finger
63	Leather	For the thumb
64		For the fingers except the thumb

7TH
39

Forceps

Dental Packing Forceps

Made of stainless steel. Overall length is 16 cm.

39 12 66	Forceps, dental packing stainless steel	Pr.

Hemostatic Forceps

For stopping blood flow of a severed vessel by clamping it. Made of stainless steel. Overall length is 15 cm.

39 12 67	Forceps, hemostatic, stainless steel	Pr.

Sinus Forceps

Made of stainless steel. Overall length is 18 cm.

39 12 68	Forceps, sinus, stainless steel	Pc.

Splinter Forceps (Epilation Forceps)

For use in surgical operations. Made of stainless steel. Overall length is 13 cm.

39 12 69	Forceps, splinter, stainless steel	Pr.

Dissecting Forceps (Surgical Forceps)

For use in a surgical operation. Made of stainless steel in a length of 13 cm.

39 12 70	Forceps, dissecting, stainless steel 13 cm	Pr.

Spencer Wells' Forceps

For holding a suture needle. Made of stainless steel with an overall length of 16 cm.

39 12 71	Forceps, Spencer Wells' stainless steel	Pr.

Surgical Gloves

For use in a surgical operation. Made of rubber.

39 12 80	Gloves, surgical, rubber	Pr.
81	" " disposable	

Gauze Masks

To prevent the inhalation of dirt, dust, or foreign particles, and to prevent possible infection of the patient during a surgical procedure.

39 12 82	Mask gauze	Pc.

Air Masks

Designed for sterilizing and deodorizing the room by just attaching the cloths or hanging on the neck. It contains chlorine dioxide which eliminate the disinfecting bacteria, and effective for $1m^3$, 99% of germs, bacteria and virus will be removed within 120 minutes. CLO_2 will be slowly released and never exceed 0.017ppm, lasting for 1 month. Good personal protection from colds, influenza and pollen etc. FDA Class 1 Registered Disinfectant.

Remark: Not effective in open space on deck, only for indoor use.

39 12 85	Air Masks	Pc.

Hot Water Bottles

Made of rubber.

39 12 90	Hot water bottle, rubber	Pc.

Ice Bags

Screw cap sealed ice bags made of soft rubberized fabric to conform to the shape of the area on which it is applied.

39 12 92	Ice bag, rubber	Pc.

Injection Syringes

Made of glass. Furnished with a nozzle cover for the needle and a metal case. Injection needles are provided separately.

39 13 01	Syringe, injection, 2 ml with metal case	Set
02	" 5 ml with metal case	"

Disposable Hypodermic Syringes with Needle

Disposable, sterile syringe made of a plastic resin. Furnished with an injection needle.

39 13 10	Syringe, hypodermic, disposable, 2.5 ml w/needle	Set
11	" 5 ml w/needle	"

Disposable Hypodermic Needles

Sterile, disposable needle packed in a plastic cylinder.

39 13 12	Needle, hypodermic, disposable	Pc.

Kidney Dishes (Surgical Instrument Trays)

Made of stainless steel. Standard size of 210 mm but other sizes are available on request.

39 13 16	Kidney dish, stainless steel, 210 mm	Pc.

Medical Labels

Plain Labels

Furnished 100 sheets in a packet.

39 13 21	Label, plain, 100's/pkt	Pkt

Poison Labels

Furnished 50 sheets in a packet.

39 13 22	Label, poison, 50's/pkt	Pkt

Ligature Catgut (Sutures)

Sterile suture for external and internal stitching. Furnished with a needle.

39 13 24	Ligature catgut	Pkt

Lotion Bowls

Stainless steel basin used when sterilizing the hands. 230 mm in diameter and 80 mm high.

39 13 26	Lotion bowl, stainless steel	Pc.

Medical Measure Glasses (Graduated Cylinders)

Unit Per Pc.

CODE	Capacity	CODE	Capacity
39 13 31	20 ml	**39 13 30**	200 ml
32	50 ml	**33**	500 ml
29	100 ml		

Microscope Slides

Transparent plain glass.

39 13 34	Microscope slide glass	Pc.

Plastic Measuring Spoons

39 13 36	Measuring spoon, plastic 5 ml	Pc.

Palette Knives

For dispensing and applying ointments. Stainless steel blade with a wooden handle.

39 13 42	Palette knife	Pc.

Rubber Sheeting for Operation

Rubber coated water proof sheets. 2 mtr long and 1 mtr wide.

39 13 46	Rubber sheeting for operation 1 × 2 mtr	Sht

Safety Pins

Safety pins are 5 cm in length and furnished in packets of 12 pcs.

39 13 51	Safety pin, medical, 12's	Pkt

Scalpels

For use in surgical operations. The blade and handle are ordered separately. Specify the blade number when ordering.

Handle No. 3

Blade No. 10

Blade No. 11

Unit Per Pc.

CODE	Items	CODE	Items
	Handle		**Blade**
39 13 53	No. 3	**39 13 55**	No. 10
		39 13 56	No. 11

Medical Scissors

One-Point & One-Blunt Scissors

Stainless steel scissors with one blunt tip and one pointed tip. Overall length is 14.5 cm.

39 13 60	Scissors, one-point & one-blunt, Stainless steel	Pr.

Surgical Scissors

Made of stainless steel with both ends blunt for use in an operation. Overall length is 16 cm.

39 13 61	Scissors, surgical, stainless steel	Pr.

Bandage Scissors

Designed specially to cut bandage without scratching the skin beneath. Stainless steel. Overall length 16 cm.

39 13 62	Scissors, bandage, stainless steel	Pr.

Skin Closures
(Butterfly Closures)

A sterile, waterproof bandage for forming skin closures on superficial lacerations. The bandage has non-adhering film on the center section to prevent the bandage from sticking to the wound. 100 large closures (7 cm x 1.3 cm) in a packet.

39 13 66	Skin closure, 7 x 1.3 cm 100's	Pkt

Sphygmomanometers

Mercury filled blood pressure monitor. Measurement range of 0 - 300 mmHg. Enclosed in a hard plastic case.

39 13 68	Sphygmomanometer, mercury	Set

Digital Sphygmomanometers

Compact and lightweight, battery operated sphygmomanometer. Power source is two R6P (UM-3 • AA) batteries. The measuring range is 0 – 300 mmHg. The unit is furnished with batteries and is enclosed in a soft leather case.

39 13 69	Sphygmomanometer, digital	Set

Splints

Common Splint Sets

Wooden splints suitable for straight setting most fractures. 3 different sizes in a set.

39 13 73	Common splint set, wooden, 3's	Set

Metal Splint Sets

Metal made frames with a sponge pad suitable for setting fractured limbs and hands. One set contains 3 different sized splints.

39 13 74	Metal splint set, 3's	Set

Serrated Splints Gooch Type

A sheet of wooden splints.
Size: 0.9 x 1 mtr.

39 13 75	Serrated splint of Gooch type 0.9 x 1 mtr	Sht

Wooden Thigh Splints

Designed to set a fractured femur.

39 13 76	Splint, thigh, wooden	Pc.

Thomas Splints

Suitable for splinting injuries of the foot. Metal pipe frame with a cushioned support ring.

39 13 77	Splint, Thomas	Pc.

Emergency Air Splints

Made of double-walled transparent vinyl plastic, comfortably shapes itself to the contour of the limb and applies uniform pressure to injured arm or leg. Completely washable and reusable, and can be sterilized by gas or cold solution.

Available in several types:
Hand & Arm:
Hand & Wrist Splint/Half Arm Splint/Full Arm Splint

Foot & Leg:
Foot & Ankle Splint/Half Leg Splint/Full Leg Splint

39 13 78 **79**	Emergency Air Splint inflatable, Arm Assorted 6's Leg Assorted 6's	Set

Sputum Pots

Made of waxed cardboard with a twist on lid.

Unit Per Pc.

CODE	Type	Material
39 13 80	Disposable	Waxed Paper
81	Non-Disposable	Enameled Ware

Sterilizers with Alcohol Lamp

A set comprised of an alcohol lamp, a tripod, and a stainless steel tray with a lid. The tray size is 250 x 85 x 55 mm. Alcohol is not furnished with the lamp.

39 13 84	Sterilizer with alcohol lamp	Set

Electric Steam Sterilizers
(Autoclaves)

Standard Tray

Portable, high speed steam pressure autoclave suitable for sterilizing and drying dressing materials, gauze and sanitary cotton as well as syringes and hypodermic needles. Stainless steel construction that weighs around 13 kgs. Furnished with a stainless steel standard tray sized 12 x 36 x 4 cm.

Specification

Chamber Size mm		Outer Size mm			Net Weight
ID	Depth	W	L	H	
150	270	334	443	285	13 kgs

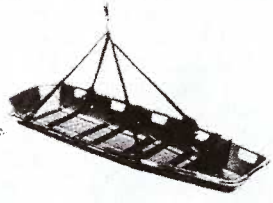
Unit Per Set

CODE	Electricity	Working Pressure
39 13 86	100 - 110V	1 kgf/cm² - 2 kgf/cm²
87	220V	121°C - 132°C

Stretchers

Both of the stretchers illustrated below, the "Neil Robertson type" or the "Basket Type", can be furnished upon request.

Neil Robertson



Basket

Unit Per Pc.

CODE	Description
39 13 90	Neil Robertson Type
91	Basket Type

Stomach Tubes with Funnel

1.9 mtrs length of rubber tube with rubber funnel.

39 13 94	Stomach tube with funnel	Set

Suspensory Bandages with Understrap

Available in a large or medium size.

Unit Per Pc.

CODE	33 13 96	33 13 97
Size	Medium	Lange

Suture Strips, Non-Stitch

Supplied in packs of 12 rolls.

39 14 02	Suture strip, non-stitch 2.5 cm x 9.1 mtr	Pkt

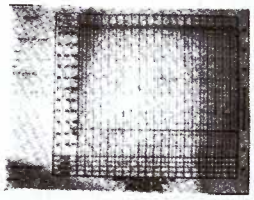
Sutures with Needle

Silk suture fitted to an eyeless needle for surgical suturing. Vacuum sealed in a sterile packet.

39 14 04	Suture with needle, medium	Pkt
05	" , large	"

Temperature Charts

Charts for recording and monitoring measurements of temperature, pulse, and respiration.



39 14 20	Temperature chart	Pc.

Clinical Thermometers

Available only in centigrade degrees.

39 14 22	Thermometer, clinical	Pc.

Digital Clinical Thermometers

Battery operated thermometer graduated in increments of 0.1°C. Furnished with batteries and a protective case.

39 14 24	Thermometer, clinical, digital	Pc.

Tongue Depressors

Wooden tongue depressors with an overall length of 15 cm.

39 14 26	Tongue depressor, wooden	Pc.

Tourniquets

Esmarch type tourniquet for stopping excessive bleeding. Furnished with a rubber bandage and rubber tubing with a chain and hook for securing the ends.

39 14 28	Tourniquet, Esmarch type	Set

Trusses, Spring Type

Spring type hernia band with adjustable buckle. Available in single right pad, single left pad, and double pad types.

Unit Per Pc.

CODE	Type
39 14 31	Single Right Pad
32	Single Left Pad
33	Double Pad

Urine Bottles

Made of plastic with a handle attached.

39 14 40	Urine bottle, plastic	Pc.

Urine Test Paper

Rapid and convenient reagent strips for determining protein (albumin), glucose (sugar), and chloride (salt) levels in urine.

CODE	Description		Unit
39 14 42	Albumin/Sugar	300's	Btl
43	Albumin	100's	"
44	Sugar	100's	"
45	Salt	100's	Pkt

Test Tubes

Glass tube closed at one end and used for preparation of chemicals, medicines.

39 14 71	Test tube, glass, plain	Pc.
73	Test tube stand for 6 tubes	"
74	Test tube stand for 12 tubes	"

Beakers

A Cylindrical shaped glass for mixing or heating liquids for laboratory use. Capacity: 2 ltr.

Unit Per Pc.

CODE	Material	Capacity
39 14 76	Plastic	2 ltr
77	Glass	2 ltr

Marine Automated External Defibrillator (AED) LIFEFORCE

Lifeforce is the world's first and only specialist marine Type Approved automated external defibrillator (AED).

Sudden cardiac arrest (SCA) is the world's biggest killer, killing over 3 million people worldwide every year. The only proven way to treat SCA is by delivering an electric shock to the heart to restore a normal heart rhythm. Lifeforce has been designed to be used by non-medically trained crew, with clear verbal and visual instructions and bright, oversized buttons, for the quick, safe and portable delivery of a shock to the heart. Lifeforce automatically detects when a shock is required, ensuring that a shock is only delivered when required.

Lifeforce has been Type Approved by Germanischer Lloyd (GL) and tested to prove its reliability in accordance with electromagnetic compatibility, humidity, pressure, radio frequency interference, saline mist, temperature and vibration. Lifeforce is manufactured under ISO 13485:2003, cleared by the FDA and CE marked to the Medical Devices Directive 93/42/EEC and supported by a 5 year warranty.

39 15 01	Marine automated external defibrillator "LIFEFORCE"	Set

Name of Mfr.: Martek Marine Ltd.

Glucometers

A measuring device to determine the concentration of glucose in the blood, obtained by pricking the skin with a lancet (Capillary blood sampling device).

39 15 02	Glucometer with blood sampling device	Set

Publications

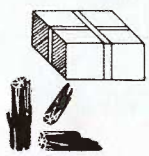
Each of the following publications is required on vessels without a doctor on board by the WHO or DTI regulations.

Unit Per Vol

CODE	Type
37 06 74	International Medical Guide for Ships
75	Merchant Shipping Medical Scale
76	Ships Captain Medical Guide
77	Supplement for Ship Captain's Medical Guide

45

PETROLEUM PRODUCTS

Miscellaneous Petroleum Products P. 45-1 ~ 2	Grease P. 45-2 ~ 8	Weicon Allround Lubricant P. 45-8
Molybdenum Disulfide Products P. 45-8 ~ 9	Molykote Products P. 45-9 ~ 10	Anti-seize Compound P. 45-10 ~ 11
Molyslip Products P. 45-11	Anti-Seize Lubricants P. 45-11 ~ 12	Aerosol Lubricants P. 45-13 ~ 19
Silicone Grease/ Compounds P. 45-19	Pipe Dressing P. 45-19	Charcoal  P. 45-19

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- **Highly adhesive, tenacious film extends maintenance intervals – reducing your costs**
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BIOLUBRI GREASKOTE

Environmentally Acceptable Lubricant (EAL)
VGP Compliance

BIOLUBRI Greaskote-100
Wire Rope Lubricant
Standard SS 155470

45 03 42 – 20 litres
45 03 43 – 200 litres

BIOLUBRI Greaskote-GR
Multi-purpose Heavy Duty Grease

45 01 60 – 450g per can
(24 cans per carton)

BIOLUBRI Greaskote-ASC
Anti-Seize Compound

45 06 73 – 450g per can
(24 cans per carton)

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Gasoline
(Petrol)

Regular car gasoline which can be used to fuel torches, lifeboat and machinery engines, or can be used for cleaning paint and other general purposes.

45 01 01	Gasoline, 4 ltr	Can
02	" 18 ltr	"
03	" 200 ltr	Drum

Kerosene
(Paraffin Oil)

Regular kerosene for use with stoves, torches, or as a paint thinner or cleaning agent for machinery parts or tools. Supplied in containers of 4 or 18 ltr, or in 200 ltr drums.

45 01 06	Kerosene, 4 ltr	Can
07	" 18 ltr	"
08	" 200 ltr	Drum

Diesel Oil
(Gas Oil/Light Engine Oil)

A light engine oil or gas oil for use in diesel engines, generators, or for cleaning machinery and parts.

45 01 11	Diesel oil, 4 ltr	Can
12	" 18 ltr	"
13	" 200 ltr	Drum

Cutting Oil

Quality special purpose oil that cools, speeds metal removal, produces smooth, clean threads, and prevents chips from welding to dies. Will not become rancid and is excellent for drilling, turning, and other cutting operations. Can be used to prolong the life of handtools or power tools.

Non-water soluble type for finishing will be supplied unless specified otherwise. Water soluble oil is also available upon request.

45 01 15	Cutting oil, spray, 350 ml	Can
16	Cutting oil, non-water soluble, 4 ltr	"
17	Cutting oil, non-water soluble, 18 ltr	"

Penetrating Oil

1. A rapid penetrating and rust solvent for removing rusty nuts and for piping repair jobs.
2. A practical, all-purpose oil used as an additive to engine lubricating oil and fuel.
3. For use in wire cable treatment.

45 01 21	Penetrating oil 4 ltr	Can
22	" 18 ltr	"

White Spirit
(White Gasoline)

Commonly known as white gasoline, used as a high quality paint thinner. Furnished in containers of 4 ltr, 18 ltr, or 200 ltr large drums.

45 01 26	White spirit 4 ltr	Can
27	" 18 ltr	"
28	" 200 ltr	Drum

Rust Preventives

For preventing parts, machinery, or tanks from rusting. Displaces and seals out moisture with a dry transparent coating. Products from a variety of global manufacturers are listed in the order table below. To order, **select the code number for Rust Preventives and indicate the brand you require separately.**

CODE	Brand	Product	Unit
45 02 01	Shell	Ensis Oil L	20 ltr/Can
04		Ensis Fluid S	"
05		Ensis Fluid SDB	"
45 02 11	Esso	Rustban 326	16 kgs/Can
45 02 16	Mobil	Mobilarma 633	20 ltr/Can
17		Mobilarma 798	20 kgs/Can
18		Metalgard 360	20 ltr/Can
19		Metalgard 240	20 ltr/Can
45 02 20	B.P.	Stemkor L	ltr
		Stemkor B1	"
	Texaco/ Caltex	Floatcoat	ltr
		Texacoat	"
		Rustproof Compound L	"
	Chevron	Rust Preventive	ltr

Hydraulic Fluid

Suitable for use as a lubricant for high speed hydraulic tool machines. Oils of viscosity grade 5 – 10 are known as spindle oils which resist emulsion, sludge formation, oxidation, and foaming. When ordering from the table below, select a code for the grade of oil which you require. Along with the code number, please specify the brand which you require.

Unit Per Ltr

CODE	**45 02 21**	**45 02 22**	**45 02 23**
Grade	15.5 mm^2/s	32.5 mm^2/s	46.7 mm^2/s
Shell	-	Tellus Oil 32	**45 02 36** Tellus Oil 46, (20 ltr)
Mobil	**45 02 54** Mobil DTE 11M, (20 ltr)	**45 02 55** Mobil DTE13M, (20 ltr)	Mobil DTE 15M
B.P.	Bartran HV 15	Bartran HV 32	Bartran HV 46
Texaco	-	Rand Oil HD 32	Rand Oil HD 46
Caltex	-	Rand Oil HD 32	Rand Oil HD 46
CODE	**45 02 24**	**45 02 25**	**45 02 26**
Grade	68.5 mm^2/s	102 mm^2/s	153 mm^2/s
Shell	Tellus Oil 68	Tellus Oil 100	Tellus Oil C150
Mobil	Mobil DTE 16 M	Mobil DTE18 M	Mobil DTE 19 M
B.P.	Bartran HV 68	Bartran HV 100	Bartran HV 150
Texaco	Rand Oil HD 68	-	Rand Oil HD 150
Caltex	Rand Oil HD 68	Rand Oil HD 100	Rand Oil HD 150

Hydraulic Fluids -–Viscosity mm^2/s at 40°C

Refrigerating Machine Oil

Oil for the lubrication of bearings and crankshaft of the compressor setup for cargo refrigeration systems. These lubricants have the correct viscosity, film strength and stability, both chemical and thermal for the operating conditions. The oils are compatible with refrigerants. Straight mineral elements with additives to prevent foaming and inhibit against chemical action with refrigerants and

system metals. When ordering, **select a code number for the appropriate grade of oil and indicate the brand you require.**

Unit Per Ltr

CODE	**45 02 75**	**45 02 76**	**45 02 77**
Grade	30.4 mm²/s	49.2 mm²/s	64.0 mm²/s
Shell	**45 02 61** Clavus - 15, (20 ltr)	**45 02 62** Clavus - 32, (20 ltr)	**45 02 63** Clavus - 46, (20 ltr)
Mobil	**45 02 71** Gargoyle Arctic 155 (20 ltr)	**45 02 72** Gargoyle Arctic 300 ID (20 ltr)	-
Esso	**45 02 66** Zerice RS 32 (20 ltr)	Zerice RS 46	Zerice R68, Zerice S68
B.P.	-	Enersyn LPS 46	Enersyn LPS 68
Texaco	Capella Premium 32	-	Capella Premium 68
Chevron	Refrigeration Oil WF 32	-	Refrigeration Oil WF 68
Caltex	Capella Oil WF 32	Capella Oil WF 46	Capella Oil WF 68

Machine Oil

Viscosity grade 46 or 56 machine oils suitable for use as a general industrial lubricant. Available in various sized containers. Please specify the volume required when ordering.

45 03 01	Machine Oil 100 ml	Can
02	" 1 ltr	"
03	" 18 ltr	"

Note: VG (Viscosity Grade) 5 ~ 10 - Spindle Oil
VG (Viscosity Grade) 46 ~ 56 - Machine Oil
VG (Viscosity Grade) 150 and over - Gear Oil

Liquid Paraffin (White Oil)

So-called white oil or sewing machine oil suitable for precision machine lubricants. Specify size of container.

45 03 11	Liquid paraffin 500 cc	Can
12	" 100 cc	"
13	" 280 cc	"
14	" 4 ltr	"

Brake Fluid

For hydraulic break and clutch systems requiring heavy duty synthetic hydraulic fluids.

45 03 16	Brake fluid, 500 cc	Can
17	" 1 ltr	"
18	" 4 ltr	"

Anti-freeze Liquid

Liquid additives for lowering the freezing point of oil.

Unit Per can

CODE	Contents	CODE	Contents
45 03 25	4 ltr	**45 03 26**	18 ltr

Turpentine

For thinning paints, varnishes. Available in 4 and 18 ltr containers or 200 ltr drums.

25 14 61	Turpentine, 4 ltr	Can
62	" 18 ltr	"
63	" 200 ltr	Drum

Fish Oil

Oil compound for cleaning and preserving decks, scaling down rust, and slushing wire rope, anchor chains and other deck equipment. Furnished in 18 ltr square cans or 200 ltr drums.

25 14 66	Fish Oil 18 ltr	Can
67	" 200 ltr	Drum

Multipurpose Grease

For the lubrication and protection of almost all kinds of gears and a variety of other uses. Listed below are some products from a variety of global manufacturers. Select the grade and brand of grease that you require from the table below. When ordering, **select a code number for the appropriate grade and specify the required brand.**

Unit Per kgs

CODE	**45 01 55**	**45 01 56**	**45 01 57**
Grade	NLGI No. 1	NLGI No. 2	NLGI No. 3
Shell	**45 01 41** Alvania S1, (16 kgs)	**45 01 42** Alvnaia S2, (16 kgs)	**45 01 43** Alvania S3, (16 kgs)
Mobil	Mobilux EP1	**45 01 52** Mobilux EP2	Mobilux EP3
Esso	**45 01 46** Lithtan 1, (16 kgs)	Lithtan 2 or **45 01 47** Beacon 2, (16 kgs)	-
B.P.	Energrease MM-EP0	Energrease MM-EP1	Energrease MM-EP2
Texaco	Marfak 1	Marfak Heavy Duty 2	Marfak Heavy Duty 2
Chevron	Dura-Lith Grease EP1	Dura-Lith Grease EP2	-
Caltex	-	Regal Starfark Premium 2	-

Note: NLGI denotes National Lubricating Grease Institute (U.S.A.)

Extreme Pressure Grease

Lithium based, multipurpose grease with corrosion and oxidation inhibitors and an extreme pressure additive. Similar products are listed below from a variety of global manufacturers. Products from other manufacturers may be available upon request. When ordering, **select a code number for the appropriate grade and specify the brand required.**

Unit Per kgs

CODE	**45 01 75**	**45 01 76**	**45 01 77**
Grade	NLGI No. 0	NLGI No. 1	NLGI No. 3
Shell	**45 01 61** Alvania EP-R0, (16 kgs)	**45 01 62** Alvania EP-1, (16 kgs)	**45 01 63** Alvania EP-2, (16 kgs)

(to be continued)

Unit Per kgs

CODE	45 01 75	45 01 76	45 01 77
Mobil	Mobilux EP-0	45 01 71 Mobilux EP-1, (18 kgs)	45 01 72 Mobilux EP-2, (18 kgs) or Mobilith SHC-460
Esso	45 01 66 Lithtan EP-0, (16 kgs)	45 01 67 Lithtan EP-1, (16 kgs)	45 01 68 Lithtan EP-2, (16 kgs)
B.P.	Energrease MM-EP0	Energrease MM-EP1	Energrease MM-EP2
Texaco	Martifak EP0	Martifak EP1	Martifak EP2
Chevron	Dura-Lith Grease EP2	Dura-Lith Grease EP2	Dura-Lith Grease EP2
Caltex	Martifak EP0	Martifak EP1	Martifak EP2

Note: NLGI denotes National Lubricating Grease Institute (U.S.A.)

Gear Grease

High-viscosity, residual type lubricants recommended principally for open gears and other applications where an adhesive product is required, e.g. wire rope. A variety of products are listed in the order table below. When ordering, select a code number for the appropriate grade and specify the brand required.

Unit Per kgs

CODE	45 01 95	45 01 96	45 01 97
Grade	NLGI No. 1	NLGI No. 2	NLGI No. 3
Shell	-	-	45 01 83 Mereuth Fluid RL, (16 kgs)
Mobil	Mobiltac MM	Mobiltac QQ	-
Texaco	-	Crater 2X	-
Chevron	-	Open Gear Lubricant	-
Caltex	-	Crater 2X	-

Note: NLGI denotes National Lubricating Grease Institute (U.S.A.)

Low Temperature Grease

Antifreeze grease suitable for ball and roller bearings and especially sealed bearings for use in very low temperatures. Supplied in 16 kgs cans. Please specify the maker and the product name which you require.

45 03 21	Grease, low temperature 16 kgs	Can

Cup Grease

A thick grease used for the lubrication of couplings, shafts, and gears which operate at low speed revolution. This product is not recommended for use with high load gears or in high temperature environments. Supplied in 2.5 or 16 kgs cans with a spring shaft dispenser.

45 03 31	Grease, cup, 2.5 kgs	Can
32	" 16 kgs	"

Bearing Grease

Smooth, non-fibrous grease with high oil content to assure lubrication and smooth starting and running torque. Suitable for general service and has a high resistance to moisture. Furnished in 2.5 and 16 kgs cans.

45 03 36	Grease, bearing, 2.5 kgs	Can
37	" 16 kgs	"

Wire Rope Grease

A non-gumming, anticorrosive petroleum lubricant which will penetrate inside of wire rope to prevent corrosion from fresh water, salt water, and other elements.

45 03 41	Grease, wire rope, 16 kgs	Can

Biodegradable Products (EAL)

Compliance of US EPA Vessel General Permit 2013

U.S. Environmental Protection Agency (EPA) signed the Vessel General Permit (VGP), with an effective date of 19th December, 2013. The permit covers vessels that are being used as a means of transportation in inland waters and within the 3 nautical mile territorial sea (Except recreational vessels).

VGP 2013 requires that all vessels must use environmentally acceptable lubricants (EALs) in all oil-to-sea interfaces (stern tubes, thrusters, controllable pitch propeller, rudder stocks and pintle bearing), unless technically infeasible.

VGP 2013 defines EALs as lubricants that are "biodegradable" and "minimally-toxic" and are "not bioaccumulative."

Appendix A– Definitions

"Biodegradable" means the following for purposes of the VGP:

- Regarding environmentally acceptable lubricants and greases, biodegradable means lubricant formulations that contain at least 90% (w/w (weight in weight concentration)) or grease formulations that contain at least 75% (w/w) of a constituent substance or constituent substances (only stated substances present above 0.10% shall be assessed) that each demonstrate either the removal of at least 70 percent of dissolved organic carbon, production of at least 60 percent of the theoretical carbon dioxide, or consumption of at least 60 percent of the theoretical oxygen demand within 28 days. Acceptable test methods include: Organization for Economic Co-operation and Development Test Guidelines 301 A-F, 306, and 310, ASTM 5864, ASTM D-7373, OCSPP Harmonized Guideline 835.3110, and International Organization for Standardization 14593:1999. For lubricant formulations, the 10% (w/w) of the formulation that need not meet the above biodegradability requirements, up to 5% (w/w) may be nonbiodegradable (but not bioaccumulative) while the remainder must be inherently biodegradable. For grease formulations, the 25% (w/w) of the formulation that need not meet the above biodegradability requirement, the constituent substances may be either inherently biodegradable or non-biodegradable, but may not be bioaccumulative. Acceptable test methods to demonstrate inherent biodegradability include: OECD Test Guidelines 302C (>70% biodegradation after 28 days) or OECD Test Guidelines 301 A-F (>20% but <60% biodegradation after 28 days).
- Regarding cleaning products, biodegradable means products that demonstrate either the removal of at least 70 percent of dissolved organic carbon, production of at least 60 percent of the theoretical carbon dioxide, or consumption of at least 60 percent of the theoretical

oxygen demand within 28 days. Acceptable test methods include: Organization for Economic Co-operation and Development Test Guidelines 301 A-F, 306, and 310, and International Organization for Standardization 14593:1999.

Biodegradable Multi-Purpose Grease

Heavy duty and multi-purpose grease containing proprietary EP additive to combat against seizing, galling of bearings and rust. It protects bearings wear through outstanding film strength under severe conditions of shock loading. Resists water wash-out from bearings under the most arduous conditions and provides long service life through high oxidation resistance.

NLGI Grade: 2, EAL and EPA / VGP Compliance product.

45 01 60	Multi-Purpose Grease, Biodegradable, 450 grm per can(24 cans per carton)	C/T

Biodegradable Wire Rope Grease

A wire rope conditioner & lubricant that exhibits excellent lubrication and anti-corrosion properties. Specially developed as environmentally friendly biodegradable grease as VGP compliance, minimally toxic and non-bioaccumulative. It is used whenever protection against rust and/or lubrication is needed: Wire ropes, Crane wires, Winches, Mooring wires, Lifeboat-davits falls, Derricks, Open gears shackles, Backsprings, Tankcover-screws, Hoists, Lashings, Hatch-cover wheels, Valves, Bearings, Screws & bolts, etc.

Unit Per Can

CODE	Contents ltr	CODE	Contents ltr
45 03 42	20	**45 03 43**	200

Environmentally Acceptable Lubricants (EAL)

High performance, specially developed rapidly biodegradable lubricants for use in all oil-to-sea interferences such as stern tubes, thrusters and rudder systems, pitch propeller etc. There are many brand of EAL available as VGP compliance, but adoption of EAL will depend on the approval by each machinery manufactures.

Please make sure to specify the EAL brand which is accepted by machinery maker when ordering.

Unit Per Ltr

CODE	Description	Application
45 03 45	Stern Tube Oil	For Stern Tube Seal
48	Wire Rope Oil	For mooring wire, deck crane wire, cables, drive and conveyor chains
49	Hydraulic Oil	For hydraulic systems, bow thrusters and rudder systems, winches and hydraulic pitch adjusters
50	Gear Oil	For gear boxes, roller bearings and slide bearings

Comparison Table of Biodegradable Grease (EAL) (Compliance of US EPA Vessel General Permit 2013)

Application \ Maker	Teho Rope (Singapore)	Panolin (Swiss)	LUKOIL	Shell
Wire Rope Grease	**Biolubri Greasekote 100**	**BIOGREASE EP2**	**PLANTOGEL 2S**	**Naturelle S2 Lubricant A**
CODE 45 03 42 (20 ltr) **CODE 45 03 43 (200 ltr)**	A canola based wire rope conditioner and lubricant providing excellent lubrication and rust protection. It meets requirements according to Swedish Standard SS 155470. Biodegradability is >60% within 28 days according to OECD 301B. Viscosity NLGI Grade: 2	Lithium soap based synthetic multipurpose grease, ultimately biodegradable, good mechanical stability, high oxidation stability, good anti-wear and anti-corrosion behavior. Biodegradability is >60% within 28 days according to OECD 301B. KPE 2 K-30 in DIN 51'502 standard	Synthetic Ester based grease, excellent performance on wire ropes. NLGI Grade 2, approved DIN 51 502:KPE 2 K-40 OG2 K-40 **NAVIGREASE BIO 2** Lithium thicker and synthetic ester based grease, suitable for wide range of deck and engine applications. NLGI Grade 2, approved DIN 51 502:KPE 2 K-30 OG2 K-30	Formulated with renewable base fluids and contains a select blend of additives for corrosion resistance and high load carrying performance. High resistance to water wash off. Biodegradability is >60% within 28 days according to OECD 301B.

Comparison Table of Biodegradable Oil (Compliance of US EPA Vessel General Permit 2013)

Description	Maker	Panolin(Swiss)	LUKOIL	SHELL	Exxon Mobil
Stern Tube Seals CODE 45 03 45	Brand	**Stella Maris 100**	**PLANTOGEAR 100S**	**Naturelle S4**	**Mobil SHC Aware ST100/220**
	Base Oil	Fully Saturated Synthetic Ester	Fully Saturated Synthetic Ester	Fully Saturated Ester	Synthetic
	Biodegradability (OECD 301B)	> 60%	-	> 60%	> 60%
	Viscosity	96.5 mm^2/s (40°C)	94 mm^2/s (40°C)	137 (ISO2909)	100/220
	Standard	ABS/ European Eco-Label-Category 3	EU Eco-Label, DIN51 517-3(CLP), ISO12925-1: CKC/CKD/CKE .	ISO 3448 VG100 Ecolabel license DE/027/134	US EPA 2013 VGP
Wire Rope Oil CODE 45 03 48	Brand	**Biotrack E**	-	-	-
	Base Oil	ECL(Environmentally Considerate Lubricant)	-	-	-
	Biodegradability (OECD 301B)	> 60%	-	-	-
	Viscosity	-	-	-	-
	Standard	-	-	-	-
Hydraulic Oil CODE 45 03 49	Brand	**HLP Synth 46**	**PLANTOSYN HVI**	**Naturelle HF-E46**	**Mobil SHC Aware H32/46/68**
	Base Oil	Fully Saturated Synthetic ester basis with special additives	Fully Saturated Synthetic Ester	Unsaturated Ester	Formulated Ester Base
	Biodegradability (OECD 301B)	> 60%	> 60%	> 60%	> 60%
	Viscosity	47.0 mm^2/s (40°C)	148 (DIN ISO2909)	188 (ISO2909)	32/46/68(40 °C)
	Standard	ABS/German Blue Angel	EU Eco-Label, DIN 51 517-3(CLP), ISO12925-1: CKC/CKD/CKE	EU Eco-label, Swedish Standard SS 15 54 34, SP listed. ISO 15380 HEES	US EPA 2013 VGP
Gear Oil CODE 45 03 50	Brand	**EP Gear Synth 100**	**PLANTOGEAR 100S**	**Naturelle S4 Gear Fluid**	**Mobil SHC Aware Gear 100**
	Base Oil	Fully Saturated Synthetic high performance Oil	Fully Saturated Synthetic Ester	Fully Saturated Ester	-
	Biodegradability (OECD 301B)	> 60%	-	> 60%	84% (OECD301 B)
	Viscosity	100 mm^2 (40°C)	94 mm^2 (40°C)	Grade 68, 100, 150	100
	Standard	DIN 51'517/CLP, FZG Test A 16.6/140 load stage 12	EU Eco-Label, DIN51 517-3(CLP), ISO12925-1:CKC/CKD/ CKE	DIN 51517/3 CLP-E, pass the FZG load test above load stage 13 according to ISO 14635 A20	US EPA 2013 VGP, AGMA 9005-E02-EP, ISO 12925-1 1996, ISO-L-CKC, ISO 12925-1 1996, ISO-L-CKD

Remark: **The adoption of biodegradable Oil is determined by approval of each machinery manufacturers. Please make sure the types of oil approved by each machinery manufacturer when ordering.**

Graphite Grease

A grease with the adhesive consistency particularly suitable for use on machine gears and bearings which are exposed to weather elements or high temperatures. This grease is also effective for lubricating and preserving wire rope.

45 03 46	Grease, graphite 2.5 kgs	Can
47	" 16 kgs	"

Asphalt Compounds

Asphalt often used as a protective, waterproof coating on deck. When dry this asphalt has a non-slip, glossy black surface. Supplied in 18 kgs cans.

45 03 51	Asphalt compound, 18 kgs	Can

Coal Tar

Used as a protective coating on deck for the prevention of rust and for the waterproofing of pipes and other fixtures. Supplied in 16 kgs cans.

45 03 56	Coal tar, 16 kgs	Can

Pitch

Black bituminous putty which bonds to any material surface, wood, metal, brick, concrete, glass, etc. Contained in 18 kgs square cans.

45 03 61	Pitch, 18 kgs	Can

Tallow

A grease derived from cow fat which has a thick consistency. Used for lubricating, wire rigging, etc.

45 03 71	Tallow, 16 kgs	Can

7TH
45

Ferryl Anticorrosive Grease

The Ferryl anticorrosive product range relies on chemical properties for the best possible results in rust prevention and lubrication. The special rust-inhibitors in the Ferryl greases, oils and coatings enable long-lasting rust protection at a low cost.

Ferryl 202 Standard Anticorrosive Grease features excellent penetration and lubrication, a high melting point, and special adhesive properties due to its rubberised binders and semi-drying film, such that the grease is resistant to high winds and seawater. The grease is excellent for all running gear and wires, crane wires, mooring wires, lifeboat falls, back springs, inside bearings on hatch cover wheels, valves, shackles, spring wire, screws, and bolts.

The Ferryl product range is provided in the order table below.

CODE	Product No./Unit	Application
45 04 01	Ferryl 101 Anticorrosive Oil 25 ltr/drum	Rust-protection and lubrication of wire ropes. Oil with enhanced penetration into wire. Specially designed for cold-climate use and fast-moving wires. Can be mixed with Ferryl 202 Standard Anticorrosive Grease.
45 04 02	Ferryl 103 Anticorrosive Drying Oil 25 ltr/drum	Drying oil. Forms water resistance film for short or long-term rust protection of metal (spare parts, machine parts, chains, propeller shafts).
45 04 03	Ferryl 202 Standard Anticorrosive Grease 25 kgs/drum	Rust-protection and lubrication of wire ropes. Properties: penetration into wire, high melting point (70°C), rust inhibition, adhesion (binds to wire), semi-drying film, lubrication. For use in all climates.
45 04 04	Ferryl 202 S Anticorrosive Grease 25 kgs/drum	Rust-protection and lubrication of wire ropes. Properties: penetration into wire, high melting point (80°C), rust inhibition, adhesion (binds to wire), semi-drying film, lubrication. For use in all climates.
45 04 05	Ferryl 202 White Anticorrosive Grease 30 kgs/drum	Rust-protection and lubrication of wire ropes. White in colour. Properties: penetration into wire, high melting point (100°C), rust inhibition, adhesion (binds to wire), semi-drying film, lubrication. For use in all climates.
45 04 06	Ferryl 202 Aluminium Anticorrosive Grease 30 kgs/drum	Rust-protection and lubrication of hatchcover rails, crane rails, container lashings, tank cover screws & bolts. Aluminium-coloured, non-cracking 'grease paint' with excellent coverage and sea-water resistance.
45 04 11	Ferryl 400R Anticorrosive White Coating 12 kgs/drum (See sec 25)	One-component product applied like paint. Flexible, non-cracking plastic-like coating. Used on non-rotating wires, standing rigging, rubber insulated electrical cables and (hydraulic) hoses.
45 04 12	Ferryl 401 Anticorrosive Transparent Coating 1 kgs/tin (See Sec 25)	One-component product applied like paint. Flexible, non-cracking, plastic-like coating. For preservation of metals' original colour (steel, brass, bronze, copper). Also used as a wood varnish.
45 04 13	Ferryl 404 Dilution & Cleaning Liquid 10 ltr/drum (See Sec 25)	Solvent for cleaning and dilution of the Ferryl coatings. Used as a general thinner.
45 04 17	Ferryl 502 Anticorrosive Fluorescent Coating 1 kgs/tin (See Sec 25)	One-component product applied like paint. Fluorescent orange-red colour. Flexible, non-cracking, plastic-like coating. Used for safety applications. (life-saving equipment, warnings, bridge, low beams / steps).
45 04 15	Ferryl 505 Anticorrosive Fluorescent Coating 1 kgs/tin (See Sec 25)	One-component product applied like paint. Fluorescent yellow colour. Flexible, non-cracking, plastic-like coating. Used for high visibility marking applications (stairs, walkways, zone markings).
45 04 19	Ferryl Armacit Pipe Sealant 150 grm/tube (See Sec 81)	Paste-like packing that dries hard for permanent sealing of threaded pipes and flanges. Resistant to oil, petrol, most gases. Temperature and pressure-resistant.
45 04 20	Ferryl Rustoil Penetrating Oil 450 ml/spray can	Pre-treatment of wire ropes: penetrates into core of wires to remove rust and moisture. Releases rust and hardened grease/oil from bolts, flanges, machine parts.
22	10 ltr/drum	
45 04 23	Ferrycid Rustremover 25 ltr/drum (See Sec 55)	Efficient removal of light and heavy rust on steel, cleaning of (wooden) decks, rust stain removal on painted surfaces, removal of limescale and cement.

(to be continued)

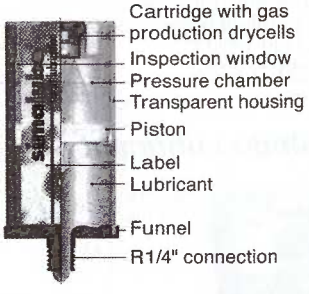
(to be continued)

CODE	Product No./Unit	Application
45 04 24	Ferryl Cleaning Fluid Oil & Grease Remover 25 ltr/drum (See Sec 55)	Water-soluble, emulsifying, solvent-based degreaser. Removes light and heavy deposits of oil and grease on decks, engine parts, oil preheaters, tools.
45 04 26 32	Ferryl Fermaid Alkaline Cleaning Liquid 25 ltr/drum 1 ltr/bottle (See Sec 55)	Alkaline cleaning liquid concentrate for general cleaning and light degreasing of decks, containers / chambers, refrigerators, fishing vessels.
45 04 28 27	Ferryl Electroclean 450 ml/spray can 25 ltr/drum (See Sec 55)	Safe cleaning liquid with a high flash point and quick evaporation for cleaning of electrical equipment and machine parts.
45 04 29	Ferryl Cabin Clean General Cleaning Liquid 25 ltr/drum (See Sec 55)	Cleaning liquid concentrate for general cleaning of cabins, mess rooms, bathrooms, sanitary installations.
45 04 30 31	Ferryl Air refreshment Bad Odour Neutraliser 500 ml/spray bottle 25 ltr/drum (See Sec 55)	Chemically neutralises bacteria in the air, removing bad odour, leaving fresh scent. For cabins, bathrooms, cargo holds, freezers, fishing vessels.

Name of Mfr.: Ferryl Sales Limited.

Automatic Grease and Oil Dispensers

These lube points are provided a consistent delivery of lubricant reliably and automatically, 24 hours a day for up to one full year, by activating with a simple twist of the dispensing dial on the top of the lubricator, and can be altered of any time. The lubricant level can be monitored through the inspection window. Available with a wide range of standard greases and oils and delivers lubricant reliably throughout a temperature range of -20 to +55°C (-4 to +131°F). Environmentally friendly as it does not contain any toxic liquids, batteries, motors, or gears. When exhausted, it can either be recycled through standard recycling channels, or fitted with a new gas generating cartridge, easily refilled and put back into service. Can be filled as well as refilled by using a standard barrel pump that is typically used to fill grease guns.



The dispensing period is variable and can be easily adjusted (1-12 months)

Standard Lubricants

No.	Application	Temperature Range (deg.C)	Base Oil	Thick-ener
SL01	Multipurpose grease	-30/ + 120	Mineral oil	Li/Ca*
SL02	Multipurpose grease + MoS_2	-25/ + 130	"	Li**
SL04	High temperature grease	-20/ + 160	"	Be***
SL14	Chain oil	-10/ + 90	"	-
SL00	Empty for option	-	-	-

Remark : * Lithium/Calcium, ** Lithium, *** Bentonite

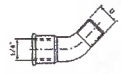
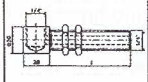
Unit Per Pc.

ml	30	60	125	250
SL01	**45 11 01**	**45 11 02**	**45 11 03**	**45 11 04**
SL02	**45 11 06**	**45 11 07**	**45 11 08**	**45 11 09**
SL04	**45 11 11**	**45 11 12**	**45 11 13**	**45 11 14**
SL14	**45 11 16**	**45 11 17**	**45 11 18**	**45 11 19**
SL00	**45 11 21**	**45 11 22**	**45 11 23**	**45 11 24**
Diam × Length mm	52 × 43	52 × 62	52 × 100	52 × 186
Thread	R 1/4			
Power Generation	Hydrogen gas producing dry cells			
Working Pressure	Max. 5 bar			
Usage Period	Within 2 years of production date			

Name of Mfr.: Simatec

Accessories for Various Application

A comprehensive accessory programme enables the simple application.

1001	1002	1005	1010/1011
			
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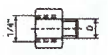
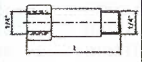
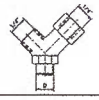
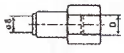
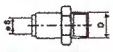
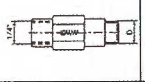
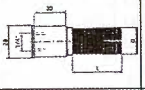
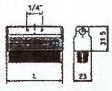
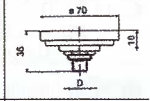
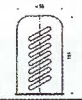
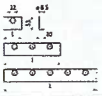
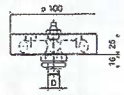
			
1070-1072	2000	2010/2013	2014
			
2020/2021	2034	2035-2038	2080
			
2081	2082 – 2084	3012	4100/4101
			
5004-5010	5050	5060	

CODE	Name	Size	No.	Unit Per Pc. Remark
45 11 51	Bent connector 45 deg.	R 1/4	1001	-
45 11 52	Bent connector 90 deg.	R 1/4	1002	-
45 11 53	90 deg. Connection with thread	L: 70 mm	1005	Incl. 2 nuts
45 11 54	Connecting nipple	R 3/8	1010	-
55		R1/2	1011	
45 11 56	Reducing nipple	R 1/8	1020	-
57		R 1/4	1021	
58		M6	1022	
59		M8	1023	
60		M8 x 1	1024	
61		M10	1025	
62		M10 x 1	1026	
63		M12	1027	
64		M12 x 1.5	1028	
65		UNF 1/4	1121	
45 11 66	Extension	L: 10 mm	1021	-
67		L: 35 mm	1040	
68		L: 50 mm	1041	
45 11 69	Y-manifold	R 1/4	1050	Contains reduction 1021
45 11 70	Quick connection	R 1/4	1060	For hose dia 8 mm
45 11 71	Quick connection	R 1/8	1070	For hose dia 8 mm
72		R 1/4	1071	
73		R 3/8	1072	
45 11 74	Hose	Per meter	2000	Max. length to greasing point: 0.5 mtr
45 11 75	Clamp for	D: 50 mm	2010	Plastic
76	roudn brush	D: 28 mm	2013	
45 11 77	Distance holder to clamp for round brush (2013)	H: 15 mm	2014	-
45 11 78	Non-return valve	R 1/8	2020	-
79		R 1/4	2021	
45 11 80	Round brush	Dia 25x45 mm	2034	Plastic bristles
45 11 81	Brush	L: 40 mm	2035	Horse bristles
82		L: 70 mm	2036	
83		L:100 mm	2037	
84		L: 25 mm	2038	
45 11 85	Mounting support for all sizes	-	2080	-
45 11 86	Protective cover to mounting support 2080	-	2081	For 125 ml or smaller
45 11 87	Bracket to	1-fold L 75 mm	2082	-
88	mounting	3-fold L240 mm	2083	
89	support	5-fold L390 mm	2084	
45 11 90	Refill nipple	R 1/4	3012	For refilling
45 11 91	4-fold adapter	R 1/2	4100	-
92		R 1/4	4101	
45 11 93	Gas generator	30 ml	5004	For refilling
94		60 ml	5006	
95		125 ml	5008	
96		250 ml	5010	
45 11 97	Closing nipple	-	5050	Plastic
45 11 98	Non-return valve plug	-	5060	Plastic

Name of Mfr.: Simatec

Weicon Allround Lubricant

CODE	Name	Description	Content
45 04 35	AL-M 400K	Strong bonding and high pressure resistant long-life grease. Classification according to DIN 51 502: KF 2K-20	Cartridge 400 grm
36	AL-M 1000		1 kgs/Tin
37	AL-W 400 K	Special lubricant and corrosion protection, also for underwater applications. Classification according to DIN51 502: KPL 1-2E -25. Effective protection against aggressive liquids (e.g. salt water, sewage water) in maritime environments and in wet plants.	Cartridge 400 grm
38	AL-W 1000		1 kgs/Tin
39	AL-H 400K	Odourless and tasteless high-temperature grease for the foodstuffs technology. Classification according to DIN 51 502: KP HC 1P -40 NSF registered, NSF H1 LMBG Section 31 and Section 21	Cartridge 400 grm
40	AL-H 1000		1 kgs/Tin
41	AL-F 350	Allround high performance grease for lubricating roller and sliding bearings and for all grease lubrication points, also in the foodstuffs industry. Classification according to DIN 51 502: KLF 2K -20. NSF registered, NSF H2; LMBG Section 31 and Section 5.	350 grm /Tin
42	AL-F 400 K		Cartridge 400 grm
43	AL-F 1000		1 kgs/Tin
44	AL-T 400 K	Allround high-temperature grease for long-life lubrication. Classification acc. to DIN 51 502: KPL 2 R-20. Temperature resistance: -25°C to +190°C (briefly +200°C)	Cartridge 400 grm
45	AL-T 1000		1 kgs/Tin

Name of Mfr. : Weicon GmbH & Co. KG

Molybdenum Disulfide Lubricant Products

Recommended for the lubrication of machinery parts during assembly.

For operational applications involving low speed at a heavy load capacity more MoS_2 is required than for light load operations at high speed. MoS_2 is also an effective lubricant for machinery operating at high or low temperatures. Many examples for use are available. MoS_2 is also quite effective as a lubricant restoring material for overheated machines.

To meet various applications and conditions, various types of products are available. The most common oil, grease, and aerosol products are listed below. When ordering, please specify the item and container size required.

Unit Per Can

CODE	Item	Size	Application
Anti-Seize paste for Metal			
45 04 51	Moly Paste 500 No. 2	500 grm	An anti-seize paste formulated with a high concentration of molybdenum disulfide (MoS_2). Positioned as the standard product in the series.
52		16 kgs	
Durable Grease			
45 04 61	Molyspeed Grease No. 2	2.5 kgs	A Bentone grease formulated with molybdenum disulfide (MoS_2) that has excellent wear resistance and anti-seize properties. Can withstand momentary exposure to high temperature up to 230°C.
62		16 kgs	
45 04 63	Molytone Grease No. 2	2.5 kgs	A variant of Moly Speed Grease formulated with a high concentration of molybdenum disulfide (MoS_2). It excels in wear resistance.
64		16 kgs	
45 04 65	Moly PS Grease No. 2	2.5 kgs	A Benton grease with a further enhanced anti-seize property over Moly Speed Grease, made possible by the addition of an extreme pressure agent.
66		16 kgs	
Heat Resistant Grease			
45 04 71	Molytherm No. 2	2.5 kgs	An inorganic grease formulated with a high concentration of molybdenum disulfide (MoS_2) that has excellent wear resistance and anti-seize properties. Its excellent heat resistance enables it to tolerate momentary exposure to high temperature up to 290°C.
72		16 kgs	
45 04 73	Hi-Moly Grease	2.5 kgs	An inorganic grease formulated with molybdenum disulfide (MoS_2) and grafite. Switches to solid film lubrication at high temperature courtesy of its low-residue synthetic base oil.
74		15 kgs	

(to be continued)

Unit Per Can

CODE	Item	Size	Application
Lithium Soap Greases for Heavy Load			
45 04 81	Moly LG Grease No. 2	2.5 kgs	A lithium soap grease formulated with a high concentration of molybdenum sulfide (MoS_2). Has exceptional wear resistance and anti-seizure properties. Ideal for heavy-duty bearings, sliding parts and gears.
82		16 kgs	
83	Cartridge Moly LG Grease No. 2	400 g/tube	
Open Gear Grease			
45 04 86	Moly Gear Compound 900	2.5 kgs	Gear compounds containing molybdenum disulfide (MoS_2). Produce a semi-dry film with superior lubricity under heavy loads.
87		16 kgs	
Wire Rope Grease			
45 04 89	Moly Rope Dresser No. 0	2.5 kgs	A Bentone grease containing molybdenum disulfide (MoS_2). Capable of penetrating deep into a wire rope to reduce inter-wire friction and prevent eccentric deformation and corrosion. Hardening and breaking off under low temperature conditions also reduced.
90		16 kgs	
Open Gear Grease Spray			
45 04 88	Moly Gear 1500 Spray	420 m/tin	Ideal for open gears. Produces a semi-dry film excellent in shear stability with regard to tooth faces.
Wire Rope Grease Spray			
45 04 91	Moly Rope Spray	420 ml/tin	Designed for wire ropes. Reduces wear and prevents eccentric deformation and corrosion by penetrating deep into inter-wire spaces.

Name of Mfr. Sumico

Molykote Products

To lubricate and prevent the seizing of machine parts during repair or reassembly. Product types for a variety of applications are listed below. When ordering, please specify the product type and the container size required.

Unit Per Can

CODE	Type	Contents per Can	Description
Powder			
45 05 01	Z	1 kgs	Can be used as run-in aid, in press-fittings, in heavy loads and slow speeds applications
02		5 kgs	
04	Micro size	0.5 kgs	
05		2 kgs	
Paste			
45 05 11	G-n	0.5 kgs	Can be used at assembly, for sliding parts under high loads at low speeds, as a screw lubricant, and in metal working.
12		1 kgs	
13		5 kgs	
45 05 14	G-Rapid Spray	330 ml (aerosol)	Multi-purpose molybdenum disulfide spray lubricant for fretting corrosion prevention, seizure prevention and run-in protection.
45 05 15	U	0.5 kgs	Can be used at assembly, for sliding parts under high loads at low speeds, as a screw lubricant, and in metal working.
16		2 kgs	
17		6 kgs	
45 05 18	M-77	0.5 kgs	Suitable for lubrication points with low to moderate loads and low speeds which are subjected to water and extreme temperatures(400°C)
19		2 kgs	
45 05 20	1000	300 ml (Aerosol)	Suitable for bolted joints that are subjected to high temperatures up to 650°C (1,202°F) and to corrosive effects.
21		1 kgs	
22		5 kgs	
45 05 23	P-37	500 grn	Lubricant paste for screws, nuts and bolts that are subjected to extremely high temperatures (1,400°C)
24		1 kgs	
25		25 kgs	
Grease			
45 05 26	BR-2 Plus	1 kgs	Used on roller bearings, plain bearings, sliding guides, roller guides, ball-and-socket joints, splined shafts and threaded spindles.
27		16 kgs	
45 05 51	111 Compound	150 grm	Seal grease for vacuum and pressure systems, transformer gasket and equipment enclosures and Rubber and plastic O-rings, gaskets and seals.
53		5 kgs	
45 05 54	6169	1 kgs	Grease for use in valve seals, valves and other components from low temperatures to high temperatures, in corrosive, solvent, liquefied natural gasses, high vacuum, etc.
55		20 kgs	
45 05 56	HP-870	100 grm	Fluorinated grease for harsh condition, high temperatures, corrosive, solvent, liquefied natural gasses, high vacuum, etc.
57		1 kgs	
58		10 kgs	
59		25 kgs	

(to be continued)

Unit Per Can

CODE	Type	Contents per Can	Description
Lubricant			
45 05 31	Supergliss	300 ml (Aerosol)	Quick penetration even in areas difficult to access, loosens rusted screw connections as well as other components, thus facilitating disassembly.
45 05 34	M	1 ltr	Lubricant for Gears–Gears at slow speeds and extreme pressures, Oil-lubricated plane bearings.
35		4 ltr	
45 05 36	M-30	1 ltr	Black dispersion of solid lubricant for chains and rollers.
Lubricant Film			
45 05 41	M-8800	360 ml (Aerosol)	Air-curing dry film lubricant for metal/metal combinations with slow to medium fast movements and high loads. It also prevents sticking rubber parts.
42		1 ltr	
43		4 ltr	
45 05 44	D 321R	223 ml (Aerosol)	Air-curing dry film lubricant for metal/metal combinations with slow to medium fast movements and high loads and the running-in of highly stressed gear wheel.
45		1 ltr	
46		4 ltr	
45 05 47	106	1 ltr	Dry lubrication for highly stressed friction combinations with low speeds or oscillating operation.
48		4 ltr	

Tanks Compounds

A protective coating. No. 1 is for interior surfaces of pressure steam tanks including boilers, economizers, calorifiers, turbines and hot water tanks of temperature above 100°C (212°F). No. 3 is for wet surfaces of a temperature below 50°C (125°F) or for dry, hot surfaces up to a temperature of 200°C (400°F).

45 05 61	Apexior compound	No. 1 1 gal	Can
62	"	No. 3 1 gal	"

MolySlip Anti-Seize Compounds

Copaslip

A high-performance compound specifically formulated to protect fasteners from seizure induced by extremes of temperature, pressure and corrosion. The semi-synthetic base fluid is reinforced with anti-oxidants, corrosion inhibitors and ultra-pure copper particles to provide outstanding protection to threads and components.

CODE	Contents	Unit
45 05 65	400 ml (Aerosol)	Tin
66	500 grm	"
64	5 kgs	Keg

Molyslip AS 40

Anti-scuffing and assembly paste is a high performance lubricant containing molybdenum disulphide (MoS_2) and graphite, formed into a soft paste.

CODE	Contents	Unit
45 05 94	500 grm	Tin
95	5 kgs	Keg

Alumslip

A high temperature anti-seize compound formulated to protect fasteners from seizure induced by extremes of temperature, pressure and corrosion. The mineral oil base fluid contains micronized particles of metal and non-metal fillers to provide excellent lubrication and protection to threads and components.

CODE	Contents	Unit
45 05 93	500 grm	Tin
97	5 kgs	Keg

Molyslip Products

CODE	Type	Contents	Application	Unit
45 05 68	ARVINA MB2.	450 g	A mineral oil based, non-melting organo-modified clay thickened grease designed to lubricate bearings operating in variety of extreme conditions.	Tin
60		4.5 kgs		Keg
45 05 69	ARVINA OG0	500 g	Heavy duty lubrication for extreme conditions. Tough, adhesive tenacity, won't be thrown off by gears or scraped off by motion.	Tin
70		4.5 kgs		Keg
45 05 71	ARVINA HL2	450 g	A premium quality, heavy duty grease designed for the lubrication of ball, roller and plain bearings operating in arduous conditions.	Tin
72		4.5 kgs		Keg
45 05 73	Liquid Grease L.Q.G.	400 ml (Aerosol)	Liquid grease for spraying into inaccessible places, it will not drain away like an oil. Will remain in place for months reducing friction and preventing metal to metal vibration and squeaking.	Tin
74		5 ltr		Tin

(to be continued)

CODE	Type	Contents	Application	Unit
45 05 75	Dry Moly Spray	400 ml (Aerosol)	Molybdenum disulphide dry film lubricant. For lubrication in situations where oil or grease are not acceptable. Good for preassembly treatment.	Tin
45 05 77	Combat	400 ml (Aerosol)	Multi purpose lubricating spray with water displacing, penetrating and anti rust protective film properties.	Tin
45 05 78	WRL-C5	400 ml (Aerosol)	Semi-fluid grease with Moly and graphite. Ideal for wire ropes and chains. Highly water repellent and tenacious – will not fling off.	Tin
79		4.5 kgs		Tin
80		18 kgs		Drm

SAF-T-EZE Anti-Seize Products

Compounded from fine metallic particles and graphite in a heat resistant lubricant. For ultimate protection to over 2,000°F use to speed assembly and prevent cold welding or carbon fusion as well as rust and other corrosion.

Unit Per Tin

CODE	No./Name	Applications	Contents
45 06 61	Regular Anti-Seize SL-16	Service to 2,000°F. Produced from copper, aluminium and graphite in grease. Resists corrosion and galvanic attack even in the presence of salt water.	16 oz /Can
45 06 62	Regular Anti-Seize SBT-8		8 oz /Can (Brush Top)
45 06 65	Nickel Anti-Seize SL-16N	Service to 2,600°F. Compounded from nickel, aluminium and graphite in a heat resistant lubricant. Recommended when very different metals are used together. Works well on stainless steel.	16 oz /Can
45 06 66	Nickel Anti-Seize SBT-8N		8 oz /Can (Brush Top)
45 06 71	Moly-Grade M-16	Service to 650°F. Compounded with molybdenum disulphide for extreme pressure applications. Prevents wear or galling on gears or splines operating under high load at low speed. Withstands pressures to 0.5 million psi.	16 oz /Can
45 06 72	Moly-Grade MBT-8		8 oz /Can (Brush Top)

Name of Mfr.: SAF-T-LOK Corporation

Anti-Seize Lubricants

Loctite® LB8150 (Silver Grade Anti-Seize 767)

Heavy-duty, temperature-resistant, petroleum-based lubricant compound fortified with graphite and metallic flake.

Inert, will not evaporate or harden in extreme cold or heat. For use in assemblies up to 1,600°C (871°F).

CODE	Contents	Unit
45 06 81	454 grm	Can
88	210 grm	Brush Top

Loctite® LB771 (Nickel Anti-Seize)

Copper-free.
Recommended for stainless steel and other metal fitting.
For preventing corrosion, seizing, and galling in harsh, chemical environments, and temperatures to 2,400°F (1,315°C).

CODE	Contents	Unit
45 06 82	454 grm	Can

Copper Anti-Seize Lubricant
Loctite® C5-A® LB8007/8008

Exclusive formula suspends copper and graphite in a high quality grease. Protects metal parts from rust, corrosion, galling, and seizing at temperatures to 982°C (1,800°F). Tested to MIL-PRF-907E. Copper colour is available.
Typically applications include original equipment and maintenance, and equipment associated with petroleum chemicals, steel mills, power plants, marine and foundries.

Unit Per Can

CODE	Product No.	Contents	Colour
45 06 83	8007	12 oz/400 ml aerosol	Copper
84	8008	13 oz	
85		1 lb/454 grm can	
86		8 lb/3.6 kgs can	
87		1 lb/454 grm brush-top can	
89		210 grm brush top	

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45

Heavy Duty Anti-Seize
Loctite® LB8009

Excellent lubricity. Metal-free formulation provides outstanding lubrication to all metals including stainless steel, aluminium, and soft metals up to 1,315°C (2,400°F). Typical applications of this product includes bolts, screws, studs, pipe joints, nuts, plugs, bushings, metal bending, mechanical packings, etc. Black colour is available.

Unit Per Can

CODE	Contents	Colour
45 06 91	1.2 lb brush-top can	Black
92	2.3 lb	

Marine Grade Anti-Seize
Loctite® LB8023

Metal-free formulation to protect assemblies exposed directly or indirectly to fresh or salt water. Loctite® Marine Grade Anti-Seize works especially well in high humidity conditions. It has excellent lubricity, superior water-washout and water spray resistance and prevents galvanic corrosion. Protects in temperatures from -29 to 1,315°C (-20 to 2,400°F). Typical applications are bolts, screws, studs, pipe joints, nuts, shafts, bushings, splines, chains, and cables in marine applications, dressing for water pump gaskets and flanges, pulp and papermills, water and waste water treatment plants.

Unit Per Can

CODE	Contents	Colour
45 06 93	8 oz	Black
94	16 oz/454 grm	

Freeze & Release
Loctite® LB8040

Releases rusted, corroded and seized components by the shock-freezing effect; wicks directly into the rust by capillary action; released parts remain lubricated and protected from corrosion.

CODE	Contents	Unit
45 07 07	400 ml	Can

Five Way Spray
Loctite® LB8201

General Purpose Lubricant.
For light lubrication of metals; cleans parts, displaces moisture and prevents corrosion.

CODE	Contents	Unit
45 07 08	400 ml	Can

Multi-Purpose Maintain Lube
Loctite® ML-11™

Oil base spray, provide lubrication, cleaning and rust prevention for protecting metal surface. Expel, eliminate and prevent water and moisture of various electrical devices. Penetrate smoothly to deep inside area for lubrication and rust prevention. Help the devices operate smoothly by reducing preparatory motion or noise.

Unit Per Can

CODE	Contents	Colour
45 07 09	360 ml	Clear/Straw

Biodegradable Anti-Seize Compound

Bio-based high temperature and EP grease. This grease is fortified with additives that provide excellent lubricating properties, stability and anti-wear capabilities. It is non-gumming, no-petroleum based grease. It has no drop point, so it will not run out of threads when heated. It sticks to the metal threads and lets joints in pipe or nuts on bolts or studs make up less torque.

NLGI Grade: 1, an EAL and EPA/VGP Compliance product.

45 06 73	Anti-Seize Compound, Biodegradable 450 grm per can (24 cans per carton)	C/T

Aerosol Products

A wide range of CRC products are available according to their applications, i.e. lubricating, penetrating, demoisturizing, anticorrosion, degreasing, rust removing, electrical cleaning, etc.

The most common items are listed below. These aerosol products do not emit harmful fluorocarbons and are ozone safe. Liquid types are also available upon request.

For further detailed information or instructions for use, please write or ask local supplier for catalogues before ordering.

Unit Per Tin

CODE	Name	Contents	Description
For Mechanical use			
45 05 81	3-36	500 ml	Rust and corrosion preventive. Penetrating and Moisture-off.
82	5-56 Power Spray	400 ml	Removing rust and corrosion, lubricant and penetrating.
83	Brakleen	500 ml	Broken parts cleaner.
84	6-66	300 ml	Moisture-off, penetrating and lubricating.
86	Seal Coat	11 oz	Rust preventing.
87	Zinc-IT	13 oz	Cold galvanize rust protector.
For Electrical Use			
45 05 91	2-26	500 ml	Moisture-off corrosion preventing, lubricating and penetrating.
92	Lectra Clean II	500 ml	Electric motor and equipment cleaner.
Cleaners for Precision Use			
45 09 01	Contact Cleaner	14 oz	Solvent cleaner for light contaminants on electric or electronic parts. Compatible with most plastics.
02	N.F. Precision Cleaner	300 ml	Non-flammable solvent cleaner for light contaminants on electrical or electronic parts.
Cleaners for Heavy Duty			
45 09 05	ECO Complex Blue	750 ml	Non-flammable, slow drying water based cleaner for heavy contaminants in food grade areas.
Anti Corrosion Products for Inhibition			
45 09 11	SP 350	250 ml	Long-term corrosion inhibitor indoor protection up to 2 years.
Anti Corrosion Products for Coatings			
45 09 15	Zinc	500 ml	Cathodic protection, even for damaged galvanized parts. Zinc-based coating with excellent adhesion to metal surfaces.
16	Urethane Coating	11 oz	Protective, urethane based varnish for electronic components.
17	Cold Galvanise	400 ml	High zinc content anti-corrosion paint that offers true cathodic protection to ISO 1461:1999.
45 09 18	Bright, Cold Galvanise	400 ml	Repair for hot-dipped galvanise steel: weathers naturally for 'invisible' repairs.
19	Galvanise Zinc Rich	400 ml	High temperature, very fast drying, 'hammered' steel finish silver paint.
Lubricants for Processing			
45 09 21	Supercut II	300 ml	Low viscous cutting liquid for normal, metal-cutting operations.
Lubricants for Oils			
45 09 26	Industrial Silicone	10 oz	Synthetic lubricating oil, suitable for plastic drives and applications at high temperatures.
Welding Products			
45 09 31	Crick 110	500 ml	Solvent cleaner to prepare the surface for examination.
32	Crick 120	500 ml	Penetrating colorant to mark the cracks and failures.
33	Crick 130	500 ml	Developer to make the marked cracks and failures visible.
Anti-corrosion Products			
45 09 35	Rust Remover	250 ml	Removes corrosion and/or rust from metals.

Name of Mfr. : CRC Industries

(to be continued)

Fault Detection Freezers for Electronics

Use on electronic circuits to identify intermittent faulty components. Non-flammable, F-Gas compliant, low GWP.

45 09 22	Freezer, fault detection for electronics, Freezer/2,400 ml	Tin

Name of Mfr.: CRC Industries (Ambersil)

Remark: F-Gas regulation

Article 13(3) Refrigeration Service Bans:

From 1 January 2020, the use of fluorinated greenhouse gases with a GWP of 2,500 or more, to service or maintain refrigeration equipment with a charge size of 40 tonnes of CO_2 equivalent (CO_2e) or more, shall be prohibited.

This paragraph shall not apply to:

- military equipment, or
- equipment intended for applications designed to cool products to temperatures below –50°C
- until 1.1.2030: reclaimed or recycled f-gases providing they have been labelled in accordance with Article 12. Recycled gases may only be used by the undertaking which carried out the recovery ... or the undertaking for which the recovery was carried out.
- refrigeration equipment for which received an exemption has been (Quoted from "Guide to updated EU f-gas regulation (517/2014)", published by the Linde Group)

Engine Igniters

Diesel engine aerosol igniter. Insures quick engine starts at low temperatures and reduces wear on the engine, starter, and battery. Also serves as a rust inhibitor and lubricant.

45 05 96	Engine Ignitor Aerosol 300 cc	Tin

Krylon Industrial Sprays

Unit per Tin

CODE	No./Name	Applications	Contents
Coatings			
45 06 01	No. 1304 Ignition Sealer	Seals all electrical connection for quick sure starts.	13 oz
02	No. 1307 Battery Protector	Effectively seals battery terminals, cables, and ignition systems.	13 oz
03	No. 1330 Belt Dressing	Provides belt gripping action. Extends belt life, and reduces machinery down time.	13 oz
04	No. 7004 Insulating Varnish	Use on re-wound motor windings, starter windings, armatures, coils, switch board parts, etc.	13 oz
Lubricants			
45 06 06	No. 1322 Open Gear Lubricant	Constant lubrication at extreme pressure. Forms a continuous film of lubrication under all loads and speed.	13 oz
07	No. 1325 All-purpose Silicone Spray	Penetrates deeply and eliminates sticking, and annoying squeaks caused by friction.	10 oz
08	No. 1332 Let-go	Penetrates deeply to free rusted and corroded parts fast. Excellent for loosening "rust frozen" nuts, bolts, etc.	13 oz
09	No. 1347 Industrial Strength Spray	Lubricates, reduces friction and stops squeaks. Used to penetrate, lubricate and free nuts and bolts, etc.	11 oz
10	No. 1349 Silicone Tube	Used as a release agent, lubricant, and parting agent on metal, plastic, rubber, wood, leather, etc.	10 oz
Cleaners			
45 06 16	No. 1323 Cleaner and Degreaser	Penetrates and dissolves engine oil, grease and grime. Excellent cleaner for all types of engines.	13 oz
17	No. 1326 Contact & Cleaner Lubricating Spray	Solvent action loosens and dissolves dirt and gummy deposits.	16 oz
18	No. 1327 Electric Motor Cleaner	Instantly penetrates, dissolves and cleans greases, oil and dirt from motors, generators, fans, etc.	16 oz
19	No. 1333 Tuner & Contact Cleaner Lubricant Spray	For contacts, switches, relays. Provides a long-lasting, non-drying film which lubricates the surface and protects against corrosion.	16 oz
20	No. 1336 Battery Cleaner	Cuts through and dissolves power-robbing acid corrosion to clean battery terminals, cable connectors, and frames.	15 oz
45 06 21	No. 1351 Electronic Contact Cleaner & Lubricant Spray	Solvent action dissolves oily deposits on switches and other electrical contacts.	10 oz
22	No. 1352 Brake Cleaner	Dissolves and flushes away brake fluid, oil, grease and dirt from brake linings, disc brake pads, etc.	16 oz

(to be continued)

Spanjaard Products

The Spanjaard range of marine products covers the entire spectrum from navy or merchant navy to leisure craft.

Unit per Tin/Can

CODE	No./Name	Applications	Contents
45 06 45	Cold Zinc Galvanising Spray	A zinc rich touch-up paint for galvanised steel. Contains >95% purity zinc. Forms a flexible, non-cracking, non-chipping coat that protects surfaces even in acidic atmospheres. Especially useful when galvanised coating has been disturbed.	400 ml /Spray
45 06 31	Spark Multi-Purpose (Non-flammable)	NON-FLAMMABLE multi-purpose lubricant for use directly onto live electrical circuits or where fire hazard or explosive conditions exist.	500 grm /Spray
45 06 32	Spark (Non-flammable)	A lubricating, penetrating, water displacing & rust preventative oil.	300 ml /Spray
45 06 34	Copper Compound (Anti-seize)	Extreme temperature anti-seize and anti-corrosion compound up to 1,100°C. Permits firmer tightening and easier loosening of threaded connections. For stainless steel use Spanjaard Chrome or Nickel Compound.	100 grm /Tube
33			400 ml /Spray
35			500 grm /Tin
45 07 10			500 grm /Brush Top Tin
45 06 30	Flaw & Crack Detector System	Set of 3 products for detecting cracks and flaws on the surfaces of metals. No. 1 Cleaner, No. 2 Penetrant and No. 3 Developer.	350 ml Spray × 3/Set

(to be continued)

Unit per Tin/Can

CODE	No./Name	Applications	Contents
45 06 46	"G" Gearbox & Differential Lubricant Supplement	A wear-reducing, mineral oil based supplement, containing MoS_2 for all types of gears. It reduces friction and gear face wear. Gives excellent performance in gearboxes, steering boxes, differentials & transmissions (non-automatic).	100 ml/ Tube
47			5 ltr/Tin
48			20 ltr /Drum
45 06 49	Lectro Kleen	A most sophisticated electrical contact cleaner. Fast drying leaving no residue. Will not attack plastics. For use on computers, PC Boards, relays, switches, electro-mechanical devices, TV, transceivers, connectors, radar and navigational equipment.	200 ml /Spray
50			400 ml /Spray
45 07 11	Lectro Kleen Non-flammable	A most sophisticated NON-FLAMMABLE electrical contact cleaner for use where fire hazard or explosive conditions exist. Check compatibility with plastics before use. High di-electric strength. Electronics: computers, PC boards, relays. Electrical: switches, electro-mechanical devices. Telecoms: TV, transceivers, connectors. Radar, navigational equipment.	430 grm /spray
45 06 53	MPG (Multi-Purpose Grease) (Premium Grade) Non-melt Grease	A non-melting anti-friction grease containing a high percentage of MoS_2. Excellent water-resistance properties. High load carrying capacity.	500 grm /Tin
54			5 kgs /Tin
55			15 kgs /Keg
45 06 41	Open Gear & Wire Rope Spray	Aerosol for lubrication of smaller open gears and wire ropes. Economical, high performance, adhesive lubricant. Contains MoS_2.. Highly water-resistant.	350 ml /Spray
45 06 43	Open Gear Lubricant 1279	A black water-resistant, heavy duty, tacky lubricant with extreme pressure, low friction and anti-corrosion properties. Contains MoS_2.. For use on open gears including winch open gears & wire ropes in marine conditions.	15 kgs /Keg
45 06 44	Wire Rope Dressing 1345	High quality Wire Rope Dressing containing specific anti-fretting and anti-corrosion additives. Tacky semi-synthetic lubricant specially developed for wire ropes in marine and industrial equipment. Excellent water-resistance performance.	15 kgs /Keg

(to be continued)

45 06 56	Rapid Kleen	A high quality solvent based heavy duty industrial aerosol cleaner & degreaser. Cleans metal parts, glass and ceramics. Flushes away oils and grease, removes dust & surface contaminants. Very fast drying and leaves no residue.	400 ml /Spray
45 06 57	Spatter Release #640 (Non-Silicone)	Prevents adherence of weld spatter on MIG nozzle. Suitable for MIG, MAG & CO_2 welding operations. Also prevents adherence around the weld zone allowing any spatter to be brushed away easily.	400 ml /Spray
45 06 58	WR Bearing Grease	A red coloured high quality, extremely tacky, extreme pressure grease with extremely high adhesion properties. For water (hot or cold) under high pressure & steam conditions.	400 grm/ Cartridge
59			15 kgs /Keg
45 07 12	Chrome Compound (Anti-Seize)	Anti-seize, anti-corrosion compound – ultra high temperature. Prevents seizing, galling and corrosion up to 1,500°C. Suitable for use on all steels including austenitic/ stainless steels.	350 ml /Spray
13			500 grm /Tin
14			500 grm /Brush Top Tin
45 07 15	Silicone Paste	Pure non-drying silicone lubricant. Non-conductive, water-resistant, colourless and non-staining. NSF H1 approved. Suitable for refrigerator door seals, swimming pool rubbers and seals, plastic gears and mechanisms.	100 grm /Tube
16			500 grm /Tin
45 07 17	Tool Joint Lubricant	A non-melt extreme pressure thread lubricant containing high percentages of graphite and MoS_2. Suitable for drill rods, other threads and joints to prevent seizing and galling and to facilitate 'breakout' of the drill rods after drilling is completed	15 kgs /Keg
45 07 18	"E" Engine Oil Supplement	Wear reducing supplement for internal combustion engines. Contains MoS_2, which remains effective under extreme heat and pressure. Reduces friction and associated wear of piston rings, cylinders and valves. Makes no significant alteration to the characteristics of the oil to which it is added.	250 ml /Btl
19			250 ml /Tin

Multi-Purpose Lubricants

These lubricants will stop squeaks, displace moisture, penetrate and prevent corrosion. Specify product name and type when ordering.

WD-40

Boeshield T-9

Three Bond 1801B

Unit Per Tin

CODE	Product	Contents	Type
45 07 02	WD-40	360 ml	Spray
03	Boeshield T-9	4 oz	"
04	Boeshield T-9	12 oz	"
05	Threebond 1801B	180 ml	"

Valvoline "Tectyl" Rust Preventives

The most common types of Valvoline products are shown below. For a further variety of products and detailed information, please write or call your local distributor.

Unit Per Tin/Can

CODE	Product	Cont.	Description
45 07 21	506	420 ml (Aerosol)	For machinery, tools, dies, tubing, stampings, structures, vehicles, overseas and domestic shipment, storage, etc. Excellent low temperature flexibility.
22		18 ltr	
23	511M	18 ltr	Soluble in most lubricating oil. Need not be removed prior to engine component installation. Polar-chemical water desplacer. Self healing film. Packaging preservative for overseas shipment of parts.
24	810	18 ltr	Soluble in most lubricating oil. Coating compatible with most non-potable water systems. Actively displaces water and soluble coolants. Anti-spatter compound in welding.

"Biral" Aerosol Lubricants

From among various types of Biral products, the two most common types are listed below with their respective specifications.

VG-HT Type

Penetrates deeply into difficult to access parts and sets into a grease type consistency which is very water repellent.

PO Type

An effective rust remover which serves as a lubricant and also prevents against further corrosion. It has exceptional penetrating qualities reaching all parts of the machine, leaving behind a thin, rust preventing film.

Unit Per Tin

CODE	Product	Cont.	Type	Major use
45 07 31	VG-HT	480 grm	Visco grease high temperature	For chains, sliding surfaces, gear wheels, transmissions, hoists, hinges, wire lubrication for ships, offshore equipment, etc. From –20 to 270°C
32		5 ltr		
33	PO	40 grm	Penetrating Oil	For rusted screws, etc.
34		5 ltr		

Weicon Spray Products

High quality spray products for maintenance and repair.

Unit Per Tin

CODE	Name/ Contents	Applications
Cleaning		
45 08 01	Cleaner Spray S 500 ml	Degreases and cleans all metals, glass, ceramics and most plastics. This spray is recommended for the pre-treatment of surfaces in applications with other Weicon products where greasy or oily layers would reduce their effectiveness.
45 08 02	Sealant and Adhesive Remover 400 ml	Quickly and easily removes residues of hardened sealants and adhesives as well as lacquers and paints, even from vertical surfaces. New formulation – free of dichloromethane.
45 08 03	Stainless Steel Care spray 400 ml	Antistatic cleaning and preserving care agent for mat and glossy stainless steel surfaces indoor and outdoor.
45 08 04	Multi-Foam 400 ml	The powerful foam cleaner for metals, plastics, lacquered surfaces, glass, tiles, textiles, carpets and upholstery.
45 08 05	Compressed Air Spray 400 ml	An allround problem solver. It removes dust and fluff quickly and reliably from sensitive surfaces and parts which are not easily accessible.
45 08 06	Visor Cleaner 200 ml	Visor cleaner is the ideal product for the cleaning and care of sensitive plastic and glass surfaces, e.g. visors, safety goggles, welding face shields, protection caps safety glass, etc.
45 08 07	Screen-Cleaner 200 ml	The ideal product for the cleaning and care even of sensitive plastic and glass surfaces. Removes dirt, dust, grease, and nicotine and cleans carefully without leaving residues.

(to be continued)

Unit Per Tin

CODE	Name/ Contents	Applications
45 08 08	Electro Contact Cleaner 400 ml	Cleaning and degreasing of electrotechnical or mechanical parts, like e.g. electric machines, measuring instruments, balances, switches or sensors. Also ideal for all electric connections, contacts, relays and switchboard plants.
45 08 09	Parts and Assembly Cleaner 500 ml	Cleaner with especially long working time, especially for coarse, oily and greasy soiling as well as for cleaning bigger areas. Due to the high flash point, it corresponds to the VbF Classification A III.
Protection		
45 08 11	Zinc Spray 400 ml	Long term cathodic corrosion protection (< 550 hours salt-spray test acc. to DIN 53167 and DIN 50021) for all metal surface. For priming and touching up hot galvanized parts.
45 08 12	Zinc Spray "Bright Grade" 400 ml	Long term corrosion protection, matches the colour of hot galvanized surfaces, temperature resistant up to 300°C. Very good resistance to salt and water.
45 08 10	Zinc-Alu-Spray 400 ml	Anti corrosion protection, tone approaching hot galvanizing.
45 08 13	Stainless Steel Spray 400 ml	Corrosion and weathering-resistant surface coating, abrasion resistant, heat up to 300°C.
45 08 14	Aluminium Spray A-100 400 ml	Aluminium pigments of a purity of < > 99.5% offer excellent corrosion protection, temperature resistant up to 800°C, abrasion resistant.
45 08 15	Corro-Protection Spray 400 ml	Due to transparent protective film corrosion protection of metal parts for indoor storage. Rust-proofing of tools and precisions parts. TUV approved.
45 08 16	Fitting Spray 200 ml	Fitting spray is a maintenance and care agent with good adhering properties for all movable parts at windows, doors, gates, etc. The transparent product is free of silicones, resins, acids and solvents.
45 08 17	Metal-Fluid 400 ml	Highly-effective product for indoor care, protection and cleaning of mat and polished metal surfaces e.g. stainless steel etc.
18	500 ml	
Rust Loosener		
45 08 21	W-44T 400 ml	Multifunctions Spray: Loosens seized threads, displaces moisture, eliminates squeaky and creaky noises, cleans dirty metal surfaces, and protects and preserves tools.
45 08 22	Rust-Shock 400 ml	The "Chemical Wrench" frees up rusted threads within seconds by its unique dual-action: chill effect and capillary effect.
45 08 23	Rust Loosener and Contact Spray 400 ml	With 6-fold function: an indispensable aid in all repair, maintenance and servicing jobs.

(to be continued)

45 08 20	Rust Converter 400 ml	For the effective neutralisation of rust on rusty cast iron and steel surfaces. Protects from corrosion and is suitable for internal and external use. Based on epoxy resin and forms a metallic-organic iron complex with the rust layer.
Lubricating		
45 08 25	Pneuma-Lub 400 ml	Lubricant for pneumatic equipment, high content of PTFE makes it a multi-purpose product for lubrication, corrosion protection, cleaning, water displacing and conservation. Temperature resistant from –50v (-58°F) up to +210°C (+410°F).
45 08 26	Top-Lub 400 ml	Long-term lubrication for power transmitting bolts, hinges, guides, bearings, joints and couplings. With high adhering properties and good resistance to centrifugation. Excellent creeping properties.
45 08 27	PTFE-Spray 400 ml	Dry, clean and grease-free PTFE-based lubricant with excellent sliding properties.
45 08 28	Silicone Spray 400 ml	Sliding and release agent for efficient production and maintenance. Temperature resistant from –50°C (-58°F) up to +250°C (+482°F).
45 08 29	Chain and Rope Lube Spray 400 ml	Synthetical chain- and rope Lube spray: high pressure-resistance, temperature resistance from -4°C up to +200°C, with excellent adhering and creeping properties, transparent.
45 08 30	AT 44 400 ml	For use in all sectors of industry and workshops. By its special formula, the product combines effectiveness in corrosion prevention, cleaning, water displacement and lubrication.
45 08 31	Bio Fluid Spray 500 ml	Free of resins and acids, water-white, high purity mineral oil, especially developed for the use in the food, pharmaceutical and cosmetic industries.
45 08 32	Anti-Friction Spray MoS_2 400 ml	Anti-Friction Spray MoS_2 forms a dust-, dirt- and water-rejecting separation layer with very good resistance to oils, grease and many chemicals. The product can be applied on almost all metals, plastic and wood surfaces.
45 08 33	Spray-on Grease, White 400 ml	All-purpose sprayable grease for highly stressed parts. Contains special wear reduction and corrosion-inhibiting additives.
45 08 34	Universal Spray-on Grease with MoS_2 400 ml	Strong-bonding and high pressure resistant long-life grease with MoS_2. Friction and wear are reduced for a long time.
45 08 35	Adhering Grease – extra strong – 400 ml	Special lubricant and corrosion protection, also for underwater applications. Effective protection against aggressive liquids (e.g. salt water, sewage water) in maritime environments and in wet plants.

(to be continued)

Unit Per Tin

CODE	Name/ Contents	Applications
Hand Protection		
45 08 36	Hand Protective Foam 200 ml	The "invisible glove" prevents the penetration of soilings in the skin's pores.
Technical Sprays		
45 08 41	Leak Detection Spray 400 ml	Non-flammable compound used for fast, convenient and reliable location of even the smallest leaks in pressurized pipes or tanks. Approved for use in gas pipelines (DIN/DVGW Approval NG-5170AO0666).
45 08 42	Welding Protection Spray 400 ml	Prevents the adhesion of weld spatter to gas nozzles and workplaces without affecting the quality of the weld seam. - Silicone-free -.
45 08 43	Contact Spray 400 ml	Dispels moisture from electrical contacts, prevents leakage current and voltage loss and keeps contacts, fuses, cable connections, etc. free of oxidation and sulphide deposits.
45 08 44	Crack Testing Agent Set	System for the non-destructive material inspection using a dye penetrant procedure. The system consists of three technical sprays: Crack Testing Agent Cleaner, Penetrant and a Developer. Suitable for metals, plastics, ceramics, glass, etc.

Name of Mfr. : Weicon GmbH & Co. KG

Anti-Seize Products

High-performance assembly pastes and sprays. Used as corrosion protection and high-performance assembly paste for statically high-stressed screw connections and assembly parts as well as for slowly rotating installations in the high temperature range. Anti-Seize Assembly-Paste, reliable protection against corrosion, seizing and cold welding.

Anti-Seize

Unit Per Pc.

CODE	Product	Content	Volume
45 08 71	AS 120 P	Brush-top can	120 grms
45 08 72	AS 400 K	Cartridge	400 grms
45 08 73 **74**	AS 450 AS 1000	Can	450 grms 1.0 kg
45 08 75 **76** **77**	AS 1800 AS 5000 AS 10000	Bucket	1.8 kgs 5.0 kgs 10.0 kgs
45 08 46	AS 500 P	Brush-top can	500 grms

Name of Mfr. : Weicon GmbH & Co. KG

ASW "High-tech" Metal-Free White

Anti-Seize "High Tech" is used as corrosion protection and high-performance assembly paste for statically high stressed screw connections and assembly parts as well as for slowly rotating installations in the high temperature range.

Anti-Seize Assembly-Psate "High-Tech", reliable protection against corrosion, seizing and cold welding, especially on stainless steel.

Unit Per Pc.

CODE	Product	Content	Volume
45 08 81	ASW 120 P	Brush-top can	120 grms
45 08 82	ASW 400 K	Cartridge	400 grms
45 08 83 **84**	ASW 450 ASW 1000	Can	450 grms 1.0 kg
45 08 85 **86** **87**	ASW 1800 ASW 5000 ASW 10000	Bucket	1.8 kgs 5.0 kgs 10.0 kgs
45 08 47	ASW 500 P	Brush-top can	500 ml

Name of Mfr. : Weicon GmbH & Co. KG

Copper Paste

A protecting, separating and lubricating agent for highly stressed parts, used as assembly lubricant for threaded joints and sliding surfaces of all kinds. The strongly adhering paste consists of special additives and a combination of solid lubricants made of graphite and copper particles. This ensures low friction values in threaded joints and excellent separating characteristics. Copper Paste provides an efficient lubricating and separating layer on plug-in tools, wear bushings and threaded, plugged-in or bayonet joints of all kinds, thus protecting the functional surfaces from corrosion and seizing. Temperature resistant from -20°C (-4°F) up to +1,100°C (+2,012°F).

Unit Per Pc.

CODE	Product	Content	Volume
45 08 88	KP 120P	Brush-top can	120 grms
45 08 89	KP 450	Can	450 grms
45 08 90	KP 500 P	Brush-top can	500 grms
45 08 91	KP 1000	Can	1.0 kg
45 08 92	KP 10000	Bucket	10.0 kgs

Name of Mfr. : Weicon GmbH & Co. KG

Triton-Leo Products

Q20 displaces moisture, stops rust in its tracks, protects and lubricates all household appliances and industrial machinery. It has a scientifically advanced technical formula, it is ozone friendly and it does not contain flammable propellant gases by using carbon dioxide as the propellant gas in the aerosol which is 100% safe for consumers and our environment.

CODE	Name	Application	Contents
45 08 51 **52**	Moisture Repellant, Q20	For protecting and removing moisture from wet ignition systems on cars, trucks, motorbikes, marine engines and electric motors.	300 grms /Aerosol 5 ltr/Drum

(to be continued)

CODE	Name	Application	Contents
45 08 53	Penetrating Oil, Q10	A quick acting, penetrating rust solvent and release agent for rusted or seized nuts, bolts, pipe fittings etc.	400 grms /Aerosol
54			500 ml /Bottle
45 08 55	Antibacterial Hand Cleaner, Q4-45	A fast-acting hand cleaner that removes oil, grease, wet paint, printing ink and bitumen. A high content of Lanolin which protects the skin and prevents dry hands. Can be used with or without water.	500 grm/Tin
56			1 kgs/Tin
57			4.5 kgs/Tin
45 08 58	Rust Remover, Q12	A non-abrasive solvent blended rust remover that dissolves rust, prevents recurring corrosion and prepares the surface for repainting	200 ml /Bottle
45 08 59	Silicone Q8	A high quality silicone spray that waterproofs and insulates electrical components, protects rubber and plastic components, inhibits rust and corrosion and is anti static lubricant.	400 grms /Aerosol
45 08 61	Multi Purpose Oil, Q-in-One	A high-tech general purpose lubricant for all household and special industrial applications.	100 ml /Bottle
45 08 62	Graphite-Based Penetrating Oil, Q5	A graphite based quick acting penetrating and release agent for rusted nuts, bolts, pipes, fittings etc.	150 grms /Aerosol
45 08 63	Gasket Sealant Hylomar	A non-setting gasket and jointing compound that is resistant to water, coolant, gases, oils, fuel and chemicals. Wide operating temperature from -40°C to 250°C.	100 grms /Tube
64			350 grms /Cartridge

Name of Mfr. : Triton Leo (Pty) Ltd.

Silicone Grease/Compounds

Has superior conductivity and is an effective lubricant in a wide temperature range. Can be applied to most materials, including plastic resin. As a wide variety of products are available, please specify the application of the product and the size of the container required from the code table below.

	CODE	Application	Cont.	Major Usage
Grease	**45 07 51**	Low Temperature (-70 – 160°C)	100 grms/tin	Lubricating of bearings, motor gears and measuring tools.
	52		200 grms/tube	
	53		1 kgs/can	
	54		4 kgs/can	
	45 07 56	Normal Temperature (-40 – 180°C)	100 grm/tin	Lubricating of bearings, and fan motors.
	57		200 grms/tube	
	58		1 kgs/can	
	59		4 kgs/can	
	45 07 61	High Temperature (-20 – 250°C)	100 grms/tin	Lubricating of motors, pumps and valve gears of steam turbines.
	62		200 grms/tube	
	63		1 kgs/can	
	64		4 kgs/can	

(to be continued)

Compound	**45 07 65**	General Electric Insulation	200 grms/tube	Insulation for electric contacts, terminals and cables.
	66		1 kgs/can	
	67		4 kgs/can	
	45 07 71	General Radiation	1 kgs/can	Radiation from electric & electronic equipment.
	72		5 kgs/can	
	73		15 kgs/can	

Heat Resistant Pipe Dressing

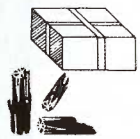
Possessing high resistance against both high & low temperature. Surface-drying type and anticorrosion coating agent. It is particularly suitable for dressing hydraulic and steam lines, windlasses and deck winch cylinders, etc.

Specifications

Outward Appearance	Caramel color, with homogenous soft texture
Cone Penetration	310 - 340 mm
Specific Gravity	0.940
Film Type	Semi-transparent and rubbery
Drying Time	Dries in 48 hours (Surface dry)
Ideal Film Thickness	3 mm - 4 mm
Coverage	0.5m²/kg at 2 mm thick
Contents	16 kgs/can

45 07 91	Heat resistant pipe dressing, 16 kgs	Can

Charcoal



For broiling meat or barbecuing. Furnished in 6 kgs bags.

45 10 01	Charcoal, broilling meat, 6 kgs	Bag

Miscellaneous Oil

Oil, Colza (Rape-seed) Oil:

An oil produced by the expression of rape seed. It is used as a lubricant, illuminant and in small quantities in the heat treatment (quenching) of steel.

Oil, Fish:

An oil produced by cooking or pressing the bodies of fish, principally the menhaden (moss bunker or pogy fish). It is used in the manufacture of low-grade paints, slushing decks, in the preparation of lubricant compounds such as are used for sluicing down rigging and hawsers, for tempering steel, as a leather dressing, and in the treatment of oil skins, it has a very disagreeable odor.

Oil, Linseed, Boiled:

Made by heating the raw oil (obtained from the flax plant) to a temperature of from 300° to 500°F or by adding about 2% oxide of lead or oxide of manganese, or both, which produces the same effect as boiling. Paint made with boiled oil requires about 24 hours to dry hard.

Oil, Linseed, Raw:

Pressed from the seed of the flax plant and used chiefly on surfaces exposed to the weather. It requires about five times longer to dry than boiled linseed oil. However, the addition of driers greatly reduces the time required.

Oil, Storm:

A vegetable or animal oil used to spread on the sea in heavy weather to reduce the breaking crests of the waves. Animal and vegetable oils have better spreading qualities than mineral oil, in the order named, as follows : Soapsuds, sperm, rape seed (colza), linseed, petroleum.

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Responsible Supply Chain Management

Time to ACT.

IMPA ACT: Improving CSR and RSCM in the International Shipping and Marine Industry

IMPA ACT is an initiative of the International Marine Purchasing Association (IMPA) that encourages ship owners, ship operators, and ship suppliers to demonstrate a tangible commitment to responsible supply chain management (RSCM) and corporate social responsibility (CSR).

At the core of the IMPA ACT Initiative is the Supplier Code of Conduct, a set of social, environmental and economic principles that are based on internationally endorsed UN minimum expectations for businesses and represent current best practice. Those participating in the IMPA ACT Initiative commit to working towards alignment with the Supplier Code of Conduct over time, both internally and within their supply chains.

The two main ways in which ship owners, ship operators, and ship suppliers participate in IMPA ACT:

1. By becoming an IMPA ACT Supporter for free, or
2. By becoming an IMPA ACT Member and gaining access to the full range of resources, guidance, and database.

IMPA ACT also offers tailored trainings on RSCM and CSR on an ongoing basis and provides consulting on RSCM policy, strategy and implementation for the shipping and marine industry.

IMPA ACT Supporter Benefits

As a first step, you may wish to demonstrate your support for the IMPA ACT Supplier Code of Conduct online for free. Your logo will be included in the IMPA ACT Supporters section and you will receive regular updates from the IMPA ACT community.

IMPA ACT Member Benefits

IMPA ACT Membership is an affordable solution that allows shipping professionals to become aligned with internationally endorsed corporate governance principles, CSR and RSCM at their own pace. IMPA ACT Membership takes the guesswork out of RSCM and corporate social responsibility (CSR).

IMPA ACT Members gain access to pragmatic advice, draft content and resources, case studies, as well as step-by-step guides to assist the development of a RSCM and CSR strategy. The online IMPA ACT Members section also allows IMPA ACT Members to identify suppliers that are engaging in the IMPA ACT RSCM process and track the performance of their suppliers. The database allows IMPA ACT Members to share the effort of engaging with suppliers by avoiding overlaps.

For more information

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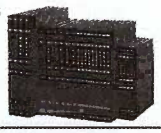
STATIONERY

Notebooks/ Memo Pads  P. 47-1 ~ 2	Files/Paper Holders/ Trays P. 47-2 ~ 5	Paper Bags/ Envelopes P. 47-5	Pens/Markers/ Pencil Sharpeners P. 47-5 ~ 8
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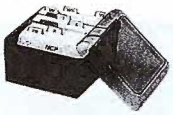
Chairs P. 47-14	Desk Accessories P. 47-14	Name Card Holders  P. 47-14	Drawing Instruments/ Rules P. 47-14 ~ 15
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473317	47-27	473409	47-11	473483	47-11
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473320	47-27	473412	47-11	473486	47-11
473321	47-27	473413	47-11	473487	47-11
473322	47-27	473414	47-11	473488	47-11
473323	47-27	473415	47-11	473489	47-11
473324	47-27	473416	47-11		

Standard Paper Size

"A" Size		Size No.	"B" Size	
mm	inch		mm	inch
841 x1189	33-1/8 x 42-7/8	0	1030 x 1456	40-1/2 x 57-3/8
594 x 841	23-3/8 x 33-1/8	1	728 x 1030	28-5/8 x 40-1/2
420 x 594	16-1/2 x 23-3/8	2	515 x 728	20-1/4 x 28-5/8
297 x 420	11-5/8 x 16-1/2	3	364 x 515	14-3/8 x 20-1/4
210 x 297	8-1/4 x 11-5/8	4	257 x 364	10-1/8 x 14-3/8
148 x 210	5-7/8 x 8-1/4	5	182 x 257	7-1/8 x 10-1/8
105 x 148	4-1/8 x 5-7/8	6	128 x 182	5 x 7-1/8
74 x 105	2-7/8 x 4-1/8	7	91 x 128	3-5/8 x 5
52 x 74	2 x 2-7/8	8	64 x 91	2-1/2 x 3-5/8

Notebooks

Hard Cover Notebooks

Lined notebooks bound in a hard cover. 100 or 200 page notebooks are available. Pages are not numbered.

Unit Per Vol.

CODE	Size No.	Actual Size mm	Pages
47 01 01	A-5	210 x 148	100
47 01 02	B-5	257 x 187	100
03			200
47 01 04	A-4	296 x 220	100
05			200

School Notebooks

Horizontal lined notebooks.

Unit Per Vol.

CODE	Size No.	Actual Size mm	Pages
47 01 10	A-6	148 x 105	96
47 01 11	A-5	210 x 148	60
12			100
13			140
47 01 14	B-5	252 x 179	60
15			80
16			160
17			200
47 01 18	A-4	297 x 210	80

Spiral Back Notebooks

Horizontal lined pages bound by PVC coated wire spiral.

Unit Per Vol.

CODE	Size No.	Actual Size mm	Pages
47 01 21	A-5	210 x 157	80
22	B-5	257 x 191	80

Pocket Notebooks

Hard cover pocket notebook useful for engineers.

47 01 38	Pocket notebook hard covered 150 page	Vol

Notepads

Report Pads, Lined

Can be used for drafting reports, etc. Horizontal lined pages of 50 sheets/pad.

Unit Per Vol.

CODE	Size No.	Actual Size mm
47 01 26	B-5	251 x 178
27	A-4	300 x 210

Memorandum Pads

Pocket size memo pads for jotting down brief notes whenever required. Furnishable also with "tear off" pages if required.

Unit Per Pad

CODE	Size No.	Actual Size mm	CODE	Size No.	Actual Size mm
47 01 31	B-7	125 x 88	**47 01 33**	A-6	150 x 106
32	Tear Off	134 x 75	**34**	B-6	177 x 125

Scratch Pads

Four rough calculations, sketches, etc. provided with horizontal lines, except in the A-5 size, "Tear off" pages.

Unit Per Pad

CODE	Size No.	Dimensions mm	Remark
47 01 41	A-5	210 x 148	Blank
42	A-4	297 x 210	Rough
43	A-4	297 x 210	Fine
44	A-4	297 x 210	Yellow

Typewriting Paper Pads

Specially manufactured typewriting paper, furnished for original or copies, as requested. The regular size is A-4 (297 x 210 mm). Other sizes will have to be specially ordered.

Unit Per Pad

CODE	Size No.	Actual Size mm	Remark	Shts
47 01 50	A-4	297 x 210	Original	50
51	A-4	297 x 210	Copy	50
52	B-4	255 x 358	"	100
53	-	280 x 216	"	50

Airmail Writing Pads

Plain, white, airmail letter writing paper, white or lined. Standard size is 250 x 177 mm (9-3/4 x 7").

Unit Per Pad

CODE	Size No.	Dimensions mm	Remark	Shts
47 01 56	B-5	250 x 177	White	50
57				100
47 01 58	B-5	250 x 177	Lined	40
59				70

Electronic Memo Pads
(Digital Notebooks)

The electronic memo pad which digitizes paper notebooks or memo pad, and automatically adjust angle and shape to fit

the screen. You can sort and organize digitized notes, and digitize the handwritten character you wrote and recognize your handwritten character and change to text. (This feature is Japanese only). Also, search notes on your smartphone and tablet, and share your notes by cloud services. Available memo pad type and notebook type with A-5 size.

47 01 54	Memo pad, electronic, A-5	Pc.
55	Notebook, digital, A-5	"

White Paper

Crisp, white paper, which is suitable for typing or writing, of any medium. When ordering, please specify the size and type of paper required.

Unit Per Pkg.

CODE	Type	Size	Package Cont. Papers
47 01 61	Thick bond paper	Foolscap 13 x 8" (300 x 203mm)	500 shts (1 Ream)
62	Thin onion paper		1,000 shts (2 Reams)
63	Thick bond paper	Quarto 11" x 8-1/2" (280 x 216mm)	500 shts (1 Ream)
64	Thin onion paper		1,000 shts (2 Reams)

Note: 500 shts - 1 Ream.

Sectioned Paper

A thick, white paper with 1 mm square grid lines for drawing, designing, and making statistical charts.

Unit Per Pad/Sht.

CODE	Size			Unit
	Paper Size	Sectioned mm	Square mm	
47 01 70	B-5	220 × 150	1	40/Pad
71	A-4	250 × 180	1	50/Pad
72	B-4	250 × 350	1	25/Pad
73	B-3	350 × 500	1	Sht
74	B-2	500 × 700	1	Sht
75	B-1	700 × 1,000	1	Sht

Design Notebooks
with Square Grid Lines

30 page, sectioned paper, notebook for designing and drawing. Square grid lines available in 4 sizes (1 mm, 2 mm, 3 mm and 5 mm).

Unit Per Vol.

CODE	Grid Size mm	Size No.	Actual Size mm
47 01 80	1	A-5	210 x 148
81	2		
82	3		
83	5		
47 01 84	1	B-5	252 x 179
85	2		
86	3		
87	5		

Duplicate Books

B-5 (263 x 182 mm) sized thin duplicate paper. Regular and carbon type papers available. Furnished in books of 50 copies.

47 01 90	Duplicate book,B-5 50 copies, carbon	Pad
91	Duplicate book,B-5 50 copies, carbonless	"

Tracing Paper
(Translucent Paper)

Suitable to use for chart correction, and have a resistance to oil grease and impervious to water. Please specify thickness of paper (grm per square meter) if exact thickness paper is required.

47 01 99	Tracing paper, A-4, 500 sht (1 ream)	Pkt

Carbon Paper

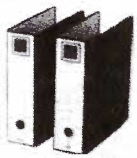
"Non-curl" carbon paper furnished in boxes of 100 sheets. Available in black colour only.

Unit Per Box

CODE	Size	Dimens. mm	CODE	Size	Dimens. mm
47 01 94	A-4	216 x 330	**47 01 96**	B-4	260 x 360
95	A-3	297 x 420	**97**	B-3	364 x 515

Hard Cover Letter Files
Arch Holder with Lever Fastener

Hard cover Z ringed letter file with vinyl reinforced binding. Furnished in A-4 size (307 x 282 x 85 mm).



47 02 01	File, letter, hard cover, w/arch holder & fastener, 307 x 282 x 85 mm "AZ"	Pc.

Arch Holder with Lock Fastener

Same as A-Z files. Vinyl reinforced with a hard cover and a two-ringed clip. Size is 307 x 270 x 60 mm.

47 02 03	File, letter, hard cover, w/arch holder & fastener, 307 x 270 x 60 mm "small"	Pc.

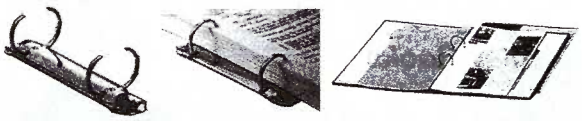
Arch Holder with Clip Fastener

Semi-small file with hard paper cover and spring clip. Furnished in A-4 size (307 x 260 x 35 mm).

47 02 05	File, letter, hard cover, w/arch holder & fastener, 307 x 260 x 35 mm "semi-small"	Pc.

with Arch Holder

Hard cover letter files with "ring type" clip.



Unit Per Pc.

CODE	Size No.	Actual Size mm	No. of Rings
47 02 07	B6-E	138 x 217 x 40	2
08	B5-S	267 x 230 x 50	2
09	A4-S	307 x 247 x 40	2
10	A4-S	307 x 247 x 40	4

Semi-Hard Cover Letter Files

Spring Wire Holder with Fastener

Semi-hard cover files with spring clips.

Unit Per Pc.

CODE	Size	Height x Width x Thick mm
47 02 14	B-5S	267 x 202 x 30
15	B-4S	267 x 379 x 30
16	A-4S	307 x 225 x 30
17	A-4E	220 x 312 x 30

Letter Files

with Lever Fastener

A "pressing" file system which requires no holes to be punched in the paper. Available with hard board or plastic cover in the following colours : red, blue, yellow, green and black.

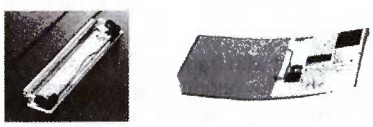
Unit Per Pc.

CODE	Size No.	Dimensions mm	Remark
47 02 21	B-5S	267 x 218 x 18	Hard Board
22	A-4S	307 x 236 x 18	"
23	B-4S	374 x 288 x 18	"
47 02 24	B-5S	267 x 218 x 16	Plastic
25	A-4S	307 x 236 x 16	"

Hard Cover Letter Files

with Clip Fastener

Rigid hard cover with strong spring clip for filing paper without holes. Available in grey only. When ordering, specify the size and code.



Unit Per Pc.

CODE	Size	Dimensions mm
47 02 30	B-5S	267 x 204 x 30
31	A-4S	307 x 232 x 30
32	A-4E	220 x 319 x 30

Soft Cover Letter Files

Soft but durable paper covers available in pink, blue, yellow or green. Designed for general purpose filing.

S-type (Vertical) E-type (Horizontal)

Unit Per Pc.

Side Filing S-Type			Top Filing E-Type		
CODE	Size	Actual Size mm	CODE	Size	Actual Size mm
47 02 36	A5-S	220 x 163 x 15	**47 02 44**	A5-E	158 x 225 x 15
37	A4-S	307 x 230 x 15	**45**	A4-E	226 x 312 x 15
38	A3-S	430 x 312 x 15	**46**	A3-E	307 x 435 x 15
39	B6-S	192 x 143 x 15	**47**	B6-E	138 x 197 x 15
40	B5-S	267 x 197 x 15	**48**	B5-E	192 x 272 x 15
47 02 41	B4-S	374 x 272 x 15	**47 02 49**	B4-E	267 x 379 x 15

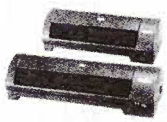
Box Files

Throw in type file for temporary sorting of documents, or thin files and folders.
Made of cardboard.

Unit Per Pc.

CODE	Size	Outer Size WxHxD
47 02 51	A-4E	75 x 260 x 317
52		100 x 260 x 317
47 02 53	B-4E	100 x 292 x 384

Pouch Laminators



An easy way to provide protection to documents and signage from humidity, or deterioration by rough handling. Lamination gives a good appearance enriching colors, and long-term protection for your documents. Please specify the maximum width of laminating pouch to be applied with power source voltage when ordering.

Unit Per Set

CODE	Max. Width	Voltage	CODE	Max. Width	Voltage
47 02 81	230mm (A-4)	AC	**47 02 85**	230mm (A-4)	AC
82	325mm (A-3)	100V	**86**	325mm (A-3)	220V

Laminating Pouch Films

Unit Per Pkt

20's/Pkt			100's/Pkt		
CODE	Size		CODE	Size	
47 02 88	B-6	138x192 mm	**47 02 94**	B-6	138x192 mm
89	A-5	158x220 mm	**95**	A-5	158x220 mm
90	B-5	188x263 mm	**96**	B-5	188x263 mm
91	A-4	216x303 mm	**97**	A-4	216x303 mm
92	B-4	263x370 mm	**98**	B-4	263x370 mm
47 02 93	A-3	303x426 mm	**47 02 99**	A-3	303x426 mm

Clip Boards

Vertical

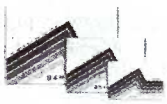
Horizontal

Available in a hard backed clip board, with metal reinforced corners, or a plastic clipboard. A strong spring clip holds papers in place while writing, checking, or tallying. Good for use when walking around checking inventory, or surveying the deck area or engine room.

Unit Per Pc.

CODE	Size	Height × Width mm	CODE	Size	Height × Width mm
Hard Board					
Vertical Type			**Horizontal Type**		
47 03 01	B-6	210 × 150	**47 03 08**	B-6	150 × 210
02	A-5	240 × 170	**09**	A-5	170 × 240
03	B-5	300 × 210	**10**	B-5	210 × 300
04	A-4	330 × 230	**11**	A-4	230 × 330
05	B-4	390 × 300	**12**	B-4	300 × 390
Plastic					
Vertical Type			**Horizontal Type**		
47 03 16	B-6	198 × 144	**47 03 24**	B-6	144 × 198
17	A-5	226 × 164	**25**	A-5	164 × 226
18	B-5	273 × 198	**26**	B-5	198 × 273
19	A-4	313 × 226	**27**	A-4	226 × 313
20	B-4	380 × 273	**28**	B-4	273 × 380
21	A-3	436 × 313	**29**	A-3	313 × 436

Plastic Card Holders



For protecting drawings, lists, or circulars which are handled often. Excellent for storing certificates or other official paperwork to prevent it from being torn or faded.

Hard Plastic Covers

Unit Per Pc.

"A" Sizes			"B" Sizes		
CODE	No.	Size mm	CODE	No.	Size mm
47 03 31	1	599 × 846	**47 03 41**	1	733 × 1,035
32	2	425 × 599	**42**	2	520 × 733
33	3	302 × 425	**43**	3	369 × 520
34	4	215 × 302	**44**	4	262 × 369
35	5	151 × 213	**45**	5	185 × 260
47 03 36	6	107 × 151	**47 03 46**	6	131 × 185
37	7	76 × 108	**47**	7	93 × 131
-	-	-	**48**	8	66 × 94

Soft Plastic Covers

Unit Per Pc.

"A" Sizes			"B" Sizes		
CODE	No.	Size mm	CODE	No.	Size mm
47 03 51	1	599 × 846	**47 03 61**	1	733 × 1,035
52	2	425 × 599	**62**	2	520 × 733
53	3	302 × 425	**63**	3	369 × 520
54	4	215 × 302	**64**	4	262 × 369
55	5	151 × 213	**65**	5	185 × 260
47 03 56	6	107 × 151	**47 03 66**	6	131 × 185
57	7	76 × 108	**67**	7	93 × 131
-	-	-	**68**	8	66 × 94

Plastic Holders

Convenient file holders with the top and one side open making it easy to take papers from inside. These holders are transparent. Making documents easy to see and safe from being stained. Available in a clear type or in assorted colours.

Unit Per Sht

A-4		B-5	
CODE	Colour	CODE	Colour
47 03 75	Clear	**47 03 81**	Clear
76	Orange	**82**	Orange
77	Blue	**83**	Blue
78	Yellow	**84**	Yellow
79	Green	**85**	Green

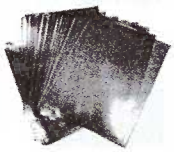
Display Books

Bound in stiff black covers for the presentation and protection of documents. There are 20 document holders in each book.

Unit Per Pc.

CODE	Size	Height × Width mm	CODE	Size	Height × Width mm
47 03 90	A-5S	228 × 175	**47 03 93**	B-4S	383 × 285
91	B-5S	275 × 210	**94**	A-3S	438 × 328
92	A-4S	315 × 240			

Refills for Display Books



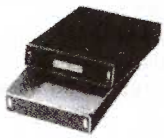
Clear plastic pockets with multi punched filling. 10 sheets per packet.

Unit Per Pc.

CODE	Size	Height × Width mm	CODE	Size	Height × Width mm
47 03 95	A-5S	215 X 170	**47 03 98**	B-4S	369 X 275
96	B-5S	262 X 201	**99**	A-3S	426 X 315
97	A-4S	302 X 231			

Letter Trays

Made in hardboard or plastic types. A matching cover is furnished with the hardboard type.



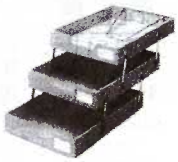
Hardboard

Plastic

Unit Per Pc.

CODE	Material	Width × Depth × Height
47 04 01	Hardboard	257 × 355 × 68 mm
02	Plastic	252 × 337 × 55 mm

Steel Trays



Steel file trays with a painted finish and a labelling index card, on the front, to distinguish what documents are inside. Can be furnished in a one, two, or three tiered tray.

Unit Per Pc.

CODE	Tiers	Size mm W × D × H
47 04 05	Single	241 × 338 × 56
06	Double	241 × 338 × 104
07	Triple	241 × 338 × 152

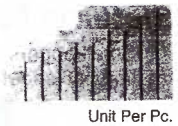
Letter Cabinets

A steel cabinet with transparent plastic drawers suitable for storing letters and documents.

Unit Per Pc.

CODE	Number of Drawers	W x D x H mm
47 04 61	3	256 x 330 x 169
62	5	256 x 330 x 261
63	7	256 x 330 x 353
64	10	256 x 330 x 492

Jiffy Bags



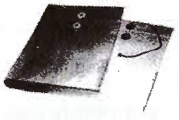
Strong padded envelopes for packaging fragile items.

Unit Per Pc.

CODE	No.	Outer Size mm Width x Length	CODE	No.	Outer Size mm Width x Length
47 04 11	000	100 x 150	**47 03 16**	3	215 x 370
12	00	130 x 255	**17**	4	240 x 370
13	0	150 x 255	**18**	5	265 x 405
14	1	185 x 305	**19**	6	320 x 485
15	2	215 x 305	**20**	7	365 x 510

Envelopes

Kraft Paper Envelope with Sealing String

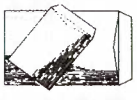


Kraft paper envelope with a cotton string for sealing the contents inside. Available in flat or expandable type.

Unit Per Pc.

CODE	Type	Size mm
47 04 25	Flat	240 x 332
26	Expandable	240 x 332 x 30

Kraft Paper Envelope



Unglued envelopes made of kraft paper. Envelopes of sizes other than those listed below, or envelopes with printed addresses must be made to order.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
47 04 31	120 x 235	**47 04 35**	197 x 267
32	120 x 277	**36**	216 x 277
33	142 x 332	**37**	240 x 332
34	190 x 240	**38**	270 x 382

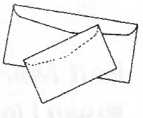
Kraft Large Paper Envelope

Made of hard, lightweight kraft paper. Economical for bulk mailing.

Unit Per Pc.

CODE	Gauge No.	Size
47 04 41	129	28.5 x 38 cm
42	130	24 x 33 cm
43	133	28.5 x 38 x 4.5 cm
44	134	25 x 33 x 3 cm

White Paper Envelope



Plain white envelopes for ordinary or personal mail. Furnished in boxes of ten envelopes each.

Unit Per Pc.

CODE	Size	Dimensions mm	Unit
47 04 51	Small	92 x 165	Pkt
52	Medium	98 x 190	"
53	Large	105 x 235	"

Airmail Envelope

Lightweight envelopes with the traditional "airmail" symbol ready printed on the front.

CODE	Size	Dimensions mm	Unit
47 04 56	Small	92 x 165	Pkt
57	Medium	98 x 190	"
58	Large	105 x 235	"

Mechanical Lead Pencils

A lead will be projected by knocking pencil head or twisting pencil body.

The leads are a separate order.

47 04 81	Mechanical lead pencil, 0.5 mm	Pc.

Leads for Mechanical Pencil

CODE 16's/Pkt	CODE 40's/Pkt	No.	Size
47 04 86	**47 04 91**	2H	0.5 mm
87	**92**	H	
88	**93**	HB	
89	**94**	B	
90	**95**	2B	

Pencils

There are various types of lead pencils for a variety of purposes as listed below. These pencils are available with or without eraser tips. Furnished 12 pieces in a box.

Unit Per Doz

Without Rubber Tip			With Rubber Tip		
CODE	No.	Use	CODE	No.	Use
47 05 01	2H	Chart room	**47 05 11**	2H	Chart room
02	H	"	**12**	H	"
47 05 03	HB	Office	**47 05 13**	HB	Office
04	B	"	**14**	B	"
05	2B	"	**15**	2B	"
47 05 06	3B	Carpenter	**47 05 16**	3B	Carpenter
07	4B	"	**17**	4B	"
08	5B	"	**18**	5B	"

Coloured Pencils

Pencils of the most common assorted colours are supplied with 12 pieces per box. Sets of a dozen pencils supplied in only one colour are also available.

Single Colour			Assorted Colour		
CODE	Colour	Unit	CODE	Colours	Unit
47 05 21	Blue	Pc.	**47 05 24**	12	Pkt
22	Red	"	**25**	24	"
23	Blue/Red	"			

Dermatograph Pencils (Chinagraph Pencils)

Capable of writing on almost any surface : glass, cellophane, plastic, etc. Not necessary to sharpen, just unravel the string to extend the pencil tip.

Unit Per Pc.

CODE	Colour	CODE	Colour	CODE	Colour
47 05 31	Blue	**47 05 34**	White	**47 05 37**	Brown
32	Red	**35**	Green	**38**	Orange
33	Yellow	**36**	Black	**39**	Purple

Pencil Sharpeners

Rechargeable

Compact and lightweight. Auto start when pencil is inserted. Built in safety device. Operated by 4 pcs LR6 (AM-3) batteries.

47 05 41	Pencil sharpener, rechargeable	Pc.

Desk Fixture Manual

A rigid, plastic made pencil sharpener which can be securely fitted to any desk or table by an adjustable clamp. Electric pencil sharpeners are also available upon request.

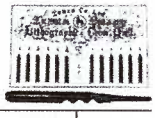
47 05 44	Pencil sharpener, desk fixture	Pc.

Plastic Pencil Trays

Plastic made tray with separate compartments for pencils and pens.

47 05 46	Pencil tray plastic, ordinary 235 × 80 mm	Pc.
47	Pencil tray plastic, ordinary 240 × 100 mm	"

Pen Holders and Pen Nibs



With 12 pieces "G" pens and pen holders especially suitable for chart corrections.

47 05 51	Pen holder with 12 pen nibs	Set
52	Pen holder	Pc.
53	Pen nib	"

Ink

Various ink for ordinary, chart correction, stamp pad and drawing use.

Unit Per Btl

CODE	Description	Colour	cc
47 05 54	General Office Use	Blue Black	30
55	"	Red	"
56	"	Black	"
47 05 57	Chart Correction	Blue Black	60
47 05 58	Stamp Pad	Blue	60
59	"	Red	"
60	"	Black	"
47 05 61	Drawing	Black	30

Stamp Pads

Unit Per Pc.

Size 40 × 63 mm			Size 68 × 109 mm		
CODE	No.	Colour	CODE	No.	Colour
47 05 70		Blue	**47 05 76**		Blue
71	1	Red	**77**	3	Red
72		Black	**78**		Black
Size 56 × 90 mm			**Size 88 × 139 mm**		
47 05 73		Blue	**47 05 79**		Blue
74	2	Red	**80**	4	Red
75		Black	**81**		Black

Blotters

A handy, light, plastic made ink blotter. Size 67 mm width and 142 mm length.

47 05 90	Blotter, plastic, 67 × 142 mm	Pc.

Blotting Paper

Small papers for hand blotters and large paper for desk matting. 16 sheets in one packet for blotter.

Unit Per Pc.

CODE	For	Size mm	Unit
47 05 93	Hand Blotter	60 × 277	Pkt
94	Desk Mats	636 × 469	Sht

Ball Point Pens

Regular Type

Retractable Type (Knock Type)

Ball Point Pen

Unit Per Pc.

Regular Type		Retractable Type (Knock Type)	
CODE	Colour	CODE	Colour
47 06 01	Blue	**47 06 06**	Blue
02	Red	**07**	Red
03	Black	**08**	Black
04	Green	**09**	Green

Refill for Ball Point Pen

Unit Per Pc.

Refill for Regular Type		Refill for Retractable Type (Knock Type)	
CODE	Colour	CODE	Colour
47 06 26	Blue	**47 06 36**	Blue
27	Red	**37**	Red
28	Black	**38**	Black
29	Green	**39**	Green

Water-soluble Ball Point Pens

Water-soluble ball point pen with fine tip.

Unit Per Pc.

Colour	CODE		
	Tip Size		
	0.2 mm	**0.3 mm**	**0.5 mm**
Black	**47 06 11**	**47 06 14**	**47 06 17**
Red	**12**	**15**	**18**
Blue	**13**	**16**	**19**

Felt Marker Pens

Broad Line

Broad markers with permanent, waterproof ink. The tip is wedge shaped to produce broad or fine lines on almost all surfaces. Available in 8 colours.

Broad Line Line Width 3.0 - 5.0 mm			Extra Broad Line Line Width 3.0 - 12.5 mm		
CODE	Colour	Unit	CODE	Colour	Unit
47 06 21	Blue	Pc.	47 06 31	Blue	Pc.
22	Red	"	32	Red	"
23	Black	"	33	Black	"
24	Green	"	34	Green	"
30	Yellow	"	35	Yellow	"
47 06 25	8-Colours	Pkt			

Medium Thick

Medium thick felt tipped pen. Line width 1.0 mm.

Single			Assorted		
CODE	Colour	Unit	CODE	Colours	Unit
47 06 41	Blue	Pc.	47 06 48	8	Pkt
42	Red	"	49	12	"
43	Black	"			
44	Green	"			
50	Yellow	"			

Sign Pens

Sign pens which can write on a variety of clear surfaces including glass. The ink is easy to wipe off with rags or water. Available in individual pieces or in a set of assorted colours.

Pencil Type

Pocketable

Pencil Type			Pocketable		
CODE	Colour	Unit	CODE	Colours	Unit
47 06 51	Blue	Pc.	47 06 61	Blue	Pc.
52	Red	"	62	Red	"
53	Black	"	63	Black	"
54	10-Colours	Pkt	64	8-Colours	Pkt

Water-soluble

Water-soluble sign pen with extra fine tip.

Unit Per Pc.

Colour	CODE Tip Size	
	0.1 mm	0.2 mm
Black	47 06 81	47 06 84
Red	82	85
Blue	83	86

Fluorescent Marking Pens

Fluorescent, high lighter marker. Wedged tip allows for writing in broad or fine lines. Available in individual pieces or in a set of assorted colours.

Single Colour			Assorted Colour Pack		
CODE	Colour	Unit	CODE	Colour	Unit
47 06 71	Blue	Pc.	47 06 78	5	Pkt
72	Pink	"	79	8	"
73	Yellow	"	80	10	"
74	Green	"			
75	Orange	"			

Paint Markers

Useful for marking on metal, glass, porcelain, plastic, rubber, leather, wood, cardboard and other industrial materials. 6 colours available.

Unit Per Pc.

CODE	Colour	CODE	Colour
47 06 90	Yellow	47 06 94	White
91	Red	95	Black
92	Blue	96	Orange
93	Green		

School Chalks

For writing on black board or marking machine parts, etc. Supplied 100 pieces per box.

Unit Per Box

CODE	Colour	CODE	Colour
47 07 01	White	47 07 03	Blue
02	Red	04	Yellow

Carpenters' Chalks

Pastel crayons for marking wood. 12 crayons of assorted colours packed in each box.

47 07 06	Carpenters' chalk 12's assorted colours	Pkt

Rotring Pen Ink

Specially made ink for the Rotring Pen that is waterproof and will not become discoloured.

Unit Per Btl

CODE	Colour	Contents	CODE	Colour
47 07 41	Black	23 ml	47 07 44	Red
42	Blue	"	45	Green
43	Yellow	"	46	Brown

Rotring Pen Cleaners

Specially made fluid for cleaning the Rotring Pen.

47 07 50	Rotring Pen cleaner, 100 ml	Btl

Rotring ISO graph Pens

A special designed technical pen following ISO standard. For chart correction, drawing, lettering, etc.

Unit Per Pc.

Complete		Spare Nib	
CODE	Drawing Thickness	CODE	Drawing Thickness
47 07 51	0.10 mm	47 07 65	0.10 mm
52	0.13 mm	66	0.13 mm
53	0.18 mm	67	0.18 mm
54	0.20 mm	68	0.20 mm
55	0.25 mm	69	0.25 mm

(to be continued)

Unit Per Pc.

Complete		Spare Nib	
CODE	Drawing Thickness	CODE	Drawing Thickness
47 07 56	0.30 mm	**47 07 70**	0.30 mm
57	0.35 mm	**71**	0.35 mm
58	0.40 mm	**72**	0.40 mm
59	0.50 mm	**73**	0.50 mm
60	0.60 mm	**74**	0.60 mm
47 07 61	0.70 mm	**40 07 75**	0.70 mm
62	0.80 mm	**76**	0.80 mm
63	1.00 mm	**77**	1.00 mm

Rubber Daters

2.5 mm or 4 mm size characters held by an alignment bar.

47 07 81	Rubber dater, 2.5 mm characters	Pc.
82	Rubber dater, 4.0 mm characters	"

Rubber Stamps for Ship Use

A variety of stamps that are required for ships use can be provided. Select the type of stamp that you require and type out the phrase with indications of the full dimensions of the stamp. Some standard types of stamps are listed below. Other types of stamps are made to order and may require extra time for delivery.

Unit Per Pc.

CODE	Description
47 07 91	"AIR MAIL"
92	"ORIGINAL"
93	"COPY"
94	Ship's name .....

Stamp Boxes

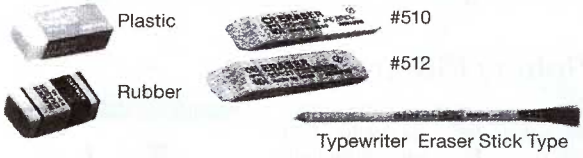
For storage stamps.
Inner partitions can be removed.

Unit Per Pc.

Wood		Steel	
CODE	Outer Size W×D×H	CODE	Outer Size W×D×H
47 08 01	155 × 118 × 85 mm	**47 08 06**	153 × 127 × 93 mm
02	195 × 140 × 85 mm	**07**	196 × 156 × 93 mm
03	217 × 175 × 85 mm	**08**	221 × 188 × 93 mm
04	240 × 195 × 85 mm	**09**	262 × 188 × 93 mm

Erasers

Available in various types, made of plastic or rubber.



Unit Per Pc.

CODE	Description
47 08 61	Plastic pencil eraser large for Chartroom/Office
62	Plastic pencil eraser medium for Office
63	Plastic pencil eraser small for Office
47 08 64	Rubber pencil eraser medium for Office
65	Rubber ink pencil eraser #510
66	Rubber typewriter eraser #512
67	Rubber typewriter eraser Stick type with brush

Correction Fluid

An ideal correcting fluid for typewriters and ball point pens.

CODE	Type	Cont cc	Description	Unit
47 08 71	Emulsion Type	20	Emulsion type and quick dry for mistype writing, felt pen, marking pen	Btl
47 08 72	Oil Base Type	24	Oil base type, quick dry, attached with thinner. For use with fountain pens, sign pens, etc.	Set
47 08 73	Pencil Type	13	For general purpose (oil and emulsion type pen)	Pc.

Typewriter Correction Paper

For correcting typing errors. Cover the error with a sheet and retype the wrong letter onto the sheet. Sheet size is 25 x 62 mm and furnished 10 sheets per packet.

47 08 76	Typewriter correction paper, 10's	Pkt

Correction Tape in Dispenser

Ideal for correcting miss-typed or miss-handwritten characters. It does not need waiting time to dry as liquid type, and can write over instantly.

Unit Per Pc.

CODE	Tape Width mm	CODE	Tape Width mm
47 08 81	4	**47 08 83**	5
82	4.2	**84**	6

Refill Tape for Correction Tape Dispenser

Unit Per Pkt

CODE	Tape Width mm	Pc's/Pkt	CODE	Tape Width mm	Pc's/Pkt
47 08 86	4	10	**47 08 88**	5	10
87	4.2	"	**89**	6	"

Paper Scissors

Stainless steel made scissors for stationery use.

Unit Per Pr.

CODE	O.A. Length	CODE	O.A. Length
47 10 01	120 mm	**47 10 03**	185 mm
02	155 mm		

Paper Knives

Stainless steel made paper knife with an extra small knife in the handle.

47 10 06	Knife, paper	Pc.

Paper Shredders

Available several levels of maximum sheet feeding capacity and cutting patterns. Micro cut is the smallest cutting pattern.

Unit Per Pc.

Strip Cut		Cross Cut		Micro Cut	
CODE	Max. Sheet Capacity	CODE	Max. Sheet Capacity	CODE	Max. Sheet Capacity
AC 110V					
47 10 07	6	**47 10 17**	6	**47 10 25**	6
08	8	**18**	8	**27**	8
09	10	**19**	10	**28**	10
10	16	**20**	16	**29**	16
16	20	**24**	20	**30**	20
AC 220V					
47 10 34	6	**47 10 39**	6	**47 10 44**	6
35	8	**40**	8	**45**	8
36	10	**41**	10	**46**	10
37	16	**42**	16	**47**	16
38	20	**43**	20	**48**	20

Handy Cutters

Razor blade sharp trimming knives for multi purpose jobs such as curving, paper forming, cutting, etc. Each cutter has a snap off tool on the handle. Spare blades are sold separately.

Handy cutter for light duty jobs.

Pocketable with clip for light duty jobs.

For light and medium duty job. Can cut leather, plywood, etc.

CODE	For	Blade mm	Unit
47 10 11	Light duty job	9	Pc.
12	Light duty job w/clip	9	"
13	Medium duty job	18	"
47 10 14	Blade only, 10's/pkt	9	Pkt
15	Blade only, 6's/pkt	18	"

Paper Punches

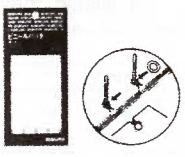
8 cm gauge. Fixed and adjustable types are available.

Unit Per Pc.

CODE	No. of Hole	Description
47 10 21	2	Fixed
22	2	Adjustable
23	4	"

Reinforcing Washers

Self adhesive, vinyl round washer to prevent paper from tearing and coming loose from notebook binder rings.



47 10 26	Reinforcing washer, vinyl 240's/pkt	Pkt

Mounted Cutters

A sharp edged, carbon steel blade mounted on a multiply polished wood cutting board. Accurate square cutting is ensured by a graduated ruler with right angles indicated on the board and a fitted guide plate to hold the paper firmly in place. This device will easily cut paper, cardboard, leather, cloth, rubber, and many other materials.

Unit Per Pc.

CODE	Cutting Capacity mm	Board Size mm	Weight kgs
47 10 31	319	275 × 484 × 61	1.9
32	388	327 × 570 × 72	3.6
33	451	368 × 630 × 71	4.2

Glue

Below listed are various types of glue for different purposes.

Paper Liquid Glue

Stick Glue

Spray Glue

CODE	Name	Unit	Description of Uses
47 10 51	Cemedine contact transparent	20 ml/tub	Synthetic rubber which bonds instantly to rubber, leather, cloth, canvas, felt, etc.
52		50 ml	
47 10 56	Cemedine Super	15 grms/set	Multipurpose liquid glue for metal, glass, chinaware, and stone.
57		40 grms	
58		110 grms	
47 10 61	Cemedine C Concrement	25 grms/tub	For filling cracks in concrete, gluing tiles or tex boards to places where nailing can not be applied.
62		60 grms	
47 10 66	Cemedine white	50 ml/btl	Clear glue for use with wood only.
67		180 ml	
47 10 71	Cemedine C	7 ml/tub	For wood working Instant curing for gluing wood to wood or wood to paper.
72		20 ml	
73		50 ml	
47 10 76	Cemedine C vinyl	20 ml/tub	For use with plastic and vinyl only. Not affected by water or chemicals after curing completely.
77		50 ml	
47 10 81	Paper liquid glue	60 cc/btl	Liquid for gluing paper to paper only. Easy to apply by a specially designed no mess spout.
82		140 cc	
47 10 86	Paper paste glue	100 grms/tub	Jelly like paste for gluing paper only.
87		220 grms	
88		380 grms/btl	
89		800 grms	
47 10 91	Stick glue	6.2 grms/pc	Multipurpose clear adhesive formed into glue stick for easy application.
92		21 grms	
47 10 94	Spray glue	80 ml/tin	Suitable for permanent or temporary bonding on wide surface of paper, film, etc.
95		430 ml/tin	

Staplers

Hand type of small (No. 10) and Desk type of large (No. 3) sizes are most common.

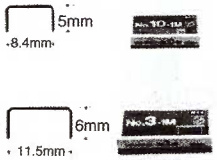
No. 10 No. 3

Unit Per Pc.

CODE	No.	Description	Staple Width mm
47 11 01	10	Hand Type	9
02	3	Desk Type	13

Staples

Usually packed with 1,000 pieces per box. However, the amount per box may vary based upon the manufacturer. Please specify the type of the stapler currently in use or the length of the staple required.



Unit Per Box

CODE	No.	For	Width mm
47 11 05	10	No. 10 Hand Type	9
06	3	No. 3 Desk Type	13

Staple Removers

Easy to remove staples without damaging the stapled paper sheets. One size works with all staples.

Spring Hook Stick

Unit Per Pc.

CODE	Type	CODE	Type
47 11 08	Spring hook	**47 11 09**	Stick

Paper Pins

Made of chromed iron.

Unit Per Box

CODE	Length mm	Contents grm	App. Pcs. Per Box
47 11 11	27	50	500
12	27	100	1,000

Pins

For temporary holding papers on the wall or marking point on the map.

Push Pins Map Pins

Unit Per Pkt

CODE	Name	Pcs/ Pkt	CODE	Name	Pcs/ Pkt
47 11 13	Push pins	20	**47 11 14**	Map pins	20

Paper Clips

Chromed wire made. Photographs below are of the actual sizes.

No. 3 No. 1 No. 10

Unit Per Box

CODE	No.	Length mm	Per Box	CODE	No.	Length mm	Per Box
47 11 16	3	22	100	**47 11 19**	1	28	500
17	3	"	500	**20**	10	50	100
18	1	28	100				

Clips

Bulldog Clips

W/Eye W/O Eye

Unit Per Pc.

CODE	Jaw Width mm	CODE	Jaw Width mm
With Eye		**Without Eye**	
47 11 25	20	**47 11 31**	40
26	30	**32**	70
27	40	**33**	109
28	50	**34**	147
29	65		

Fold Back Clips

Strong spring iron made.

Unit Per Pc.

CODE	Jaw Width mm	CODE	Jaw Width mm
47 11 41	19	**47 11 44**	41
42	25	**45**	50
43	32		

Magnetic Clips

A paper clip with a magnet built in the back to hang documents easily on metal surfaces.

Unit Per Pc.

CODE	Jaw Width mm	CODE	Jaw Width mm
47 11 51	31	**47 11 54**	51
52	36	**55**	56
53	44		

Paper Fasteners

Steel made filing clip 80 mm gauge.

Stick Type Lock Type

Unit Per Pkt

CODE	Q'ty/Pkt	Prong Length	CODE	Q'ty/Pkt	Prong Length
Stick Type			**Lock Type**		
47 11 59	50's	60 mm	**47 11 60**	50's	39.5 mm

Binding String

Suitable for binding loose sheets.

Available three types of end preparation, varnished, celluloid capped, or brass capped.

Unit Per Pkt

CODE	Type of end	Length mm	Q'ty/Pkt
47 11 62	Varnished	450	100's
63	Celluloid capped		
64	Brass capped		

Rubber Bands

47 11 65	Rubber band, I. D. 38 mm 30 grm	Pkt
68	Rubber band, I. D. 38 mm 100 grm	"
66	Rubber band, I. D. 38 mm 150 grm	"
67	Rubber band, I. D. 38 mm 500 grm	"

Drawing Thumb Tacks

Large-headed brass pins.

Unit Per Pkt

CODE	47 11 71	47 11 72
Contents	30s	60s

Synthetic Rubber Fasteners

So-called "Blu-tack". Pliable substance with many applications. Ideal for fastening charts or calendars to walls without damaging the surfaces. Also useful for cleaning typewriter keys.

Unit Per Pkt

CODE	47 11 76	47 11 77
Contents	18s	42s

Tape Writers

Electrical operated tape writer with 150 characters including alphabets, numerals, symbols, etc. The letters or figures can be adjusted into 4 sizes and 4 styles. Operated by dry batteries or AC power source with AC adapter.

AC adapter for 100 volt and cartridge tapes are sold separately.

47 11 81	Tape writer electric, "Tepra" TR-33	Pc.
82	AC adapter for AC 100 volt	"

Specifications

Input	Dial rotary system
Characters	150 characters (Alphabets, Numerals,Signs, Symbols)
Display	6 digits on L. C. D.
Font	24 or 48 dot, Gothic style
Writing Direction	Horizontal or Vertical
Tape Width	9 mm or 12 mm
Power Source	R14P (UM-2) × 5, or AC 100 Volt
Size W × D × H	170 × 128 × 56 mm
Weight	460 grm

CODE	Model	Unit
47 34 01	King Jim "Tepra-Pro"	Set
02	CASIO "Name-Land"	"
03	Dymo "Letra Tag"	"

Tape Cartridges for "Tepra" Tape Writer

Black letters will be printed on Red, Yellow, Green and Blue tapes, and gold letters will be printed on Black tape.

Unit Per Pc.

CODE Tape Width 9 mm	CODE Tape Width 12 mm	CODE Tape Width 18 mm	Colour of Tape	Colour of Letters
47 11 85	47 11 91	47 11 90	Red	Black
86	92	96	Yellow	
87	93	97	Green	
88	94	98	Blue	
47 11 89	47 11 95	47 11 99	Black	Gold

Tape Cartridges for "Tepra-Pro" Tape Writer

Tape length: 8 mtr per pc.

Unit Per Pc.

CODE Tape Width 6 mm	9 mm	12 mm	18 mm	24 mm	Colour of Tape	Colour of Letters
47 34 05	47 34 12	47 34 19	47 34 26	47 34 33		Black
06	13	20	27	34	White	Blue
07	14	21	28	35		Red
47 34 08	47 34 15	47 34 22	47 34 29	47 34 36	Red	
09	16	23	30	37	Yellow	Black
10	17	24	31	38	Green	
11	18	25	32	39	Blue	

Tape Cartridges for CASIO "Name-Land" Tape Writer

Tape length: 8 mtr per pc.

Unit Per Pc.

CODE Tape Width 6 mm	9 mm	12 mm	18 mm	24 mm	Colour of Tape	Colour of Letters
47 34 51	47 34 56	47 34 63	47 34 70	47 34 77		Black
-	57	64	71	-	White	Blue
-	58	65	72	-		Red
47 34 52	47 34 59	47 34 66	47 34 73	47 34 78	Red	
53	60	67	74	79	Yellow	Black
54	61	68	75	80	Green	
55	62	69	76	81	Blue	

Tape Cartridges for Dymo "Letra Tag"

Tape size: 12 mm width.

Unit Per Pc.

CODE	Colour	No.	CODE	Colour	No.
47 34 82	Black	12267	47 34 86	Green	91204
83	White	91201	87	Blue	91205
84	Yellow	91202	88	Metallic Silver	91208
85	Red	91203	89	Metallic Green	91209

"Dymo" Tape Writers

Hand held label maker which types directly onto plastic adhesive tapes. Available in plastic or steel body types.

Unit Per Set

CODE	Type	Letter Size mm	Body Material	Tape Width mm
47 12 02	M-1585	3.5	Plastic	6 or 9
07	M-1535	3.8	"	6 or 9
03	M-1540A	4.7	"	9 or 12
08	M-1575	4.9	Steel	6, 9 or, 12

"Dymo" Tapes

Plastic vinyl tapes of various colours for "Dymo" tape writers. Resistant to moisture, weather, abrasion, corrosion and most chemicals, and will stick to almost any smooth, clean, dry, surface.

How to order: CODE

Tape for "Dymo" tape writer, TAPE WIDTH, COLOUR

Unit Per Rol.

Colour	CODE Tape Width 6 mm	9 mm	12 mm	19 mm
Blue	**47 12 11**	**47 12 21**	**47 12 31**	**47 12 41**
Red	**12**	**22**	**32**	**42**
Yellow	**13**	**23**	**33**	**43**
Green	**14**	**24**	**34**	**44**
Black	**15**	**25**	**35**	**45**
Orange	**47 12 16**	**47 12 26**	**47 12 36**	**47 12 46**
Grey	**17**	**27**	**37**	-
Brown	**18**	**28**	**38**	-

Cellophane Tapes

A transparent cellophane that will stick to everything except greasy surfaces. Each package is furnished with a tape cutter.

Unit Per Rol.

CODE	Width mm	×	Length mtr	CODE	Width mm	×	Length mtr
47 12 51	12	×	35	**47 12 53**	24	×	35
52	18	×	35				

Tape Dispensers

Non-slip base with a long life cutting blade for desk use. Holds 35 mtrs, rolls up to 24 mm wide.

47 12 56	Tape dispenser, desk use	Pc.

Plastic Printable Tapes

Clear plastic tapes that have a surface which can be written on with ball point or felt ink and will not smear with water.

Unit Per Rol.

CODE	Width mm	×	Length mtr	CODE	Width mm	×	Length mtr
47 12 61	12.7	×	32.9	**47 12 62**	19.0	×	32.9

Paper Tapes, Double Side Gummed

Paper double side gummed tape.

Unit Per Rol.

CODE	Width × Length	CODE	Width × Length
47 12 66	5 mm × 6.5 mtr	**47 12 69**	50 mm × 5 mtr
67	10 mm × 10 mtr	**70**	50 mm × 10 mtr
68	15 mm × 20 mtr		

Sealing Tapes

Kraft Paper Sealing Tape

These ready glued and self sealing tapes have a length of 50 mtr each.

Unit Per Rol.

CODE	Width mm	CODE	Width mm
47 12 71	25	**47 12 74**	60
72	38	**75**	75
73	50		

Cloth Sealing Tapes

Ready gummed, cloth reinforced, self sealing tapes for packing works. Each roll is 25 mtrs in length. Specify the required width when ordering.

Unit Per Rol.

CODE	Width mm	CODE	Width mm
47 12 81	25	**47 12 85**	75
82	38	**86**	100
83	50	**87**	150
84	60		

Coloured Cloth Sealing Tapes

Available in 50 mm width and 25 mtr length only.

Unit Per Rol.

CODE	Colour	CODE	Colour
47 12 91	Blue	**47 12 93**	Yellow
92	Red	**94**	Green

Self-adhesive Magnet Tapes

The tape which attaches nearly any material to a metal surface. You can cut tape in any length you like, and paste it to poster paper to hold on the metal wall. Also suitable for hanging lightweight metal objects, if the tape, backed by a strong acrylic adhesive, pasted over wall or cabinet.

Unit Per Rol.

CODE	Width × Length	CODE	Width × Length
47 12 47	10 mm × 30 mtr	**47 12 59**	1/2″ × 4′
48	12 mm × 2 mtr	**60**	1/2″ × 16′
49	12 mm × 5 mtr	**63**	1″ × 4′
50	12.5 mm × 30 mtr	**64**	2″ × 10′
47 12 54	19 mm × 8 mtr		
55	Ditto with dispenser		
47 12 57	25 mm × 30 mtr		
58	40 mm × 50 mtr		

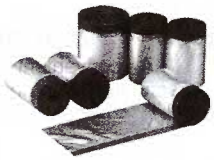
Paper Masking Tapes

Used to cover or mask areas you do not want to get paint on, or to hold sheets or boards for periods of time, while painting or working. Normally supplied in paper tape with rubber-base glue.

Unit Per Rol.

CODE	Width × Length mm	mtr	CODE	Width × Length mm	mtr
47 13 71	12 × 55		**47 13 76**	24 × 18	
72	15 × 18		**77**	24 × 55	
73	18 × 18		**47 13 78**	48 × 55	
74	18 × 55		**79**	72 × 55	
75	21 × 18				

Cloth Masking Tapes with Poly Film



Designed to cover or mask wide areas you do not want to get painted. The folded Poly film is attached to cloth tape and by stretching poly film it can cover the wide area. Fine, uneven surface on the poly film will make it difficult for the paint to drip, scatters and dirty the surrounding of paint area.

Unit Per Rol.

CODE	Tape Width (mm)	Poly Film Width×Length (mm)	(mtr)	CODE	Tape Width (mm)	Poly Film Width×Length (mm)	(mtr)
47 13 80		300 × 12.5		**47 13 85**		300 × 25	
81		550 × 12.5		**86**		550 × 25	
82	17	1,000 × 12.5		**87**	17	1,000 × 25	
83		1,100 × 12.5		**88**		1,100 × 25	
84		2,000 × 12.5		**89**		2,100 × 25	

Security Sealing Tapes

Polypropylene tape with adhesive for sealing corrugated board boxes. The tape will leave behind a red layer of tape or message such as "Opened" if it is peeled away, and if anyone tried to peel off the residue of red layer or message from the surface of the paper box it will damage the surface. And the tape is inhibited to be reapplied on the paper box as it was for proving the box was opened.

47 14 03	Security sealing tape, W 50 mm x L 500 mtr	Rol.

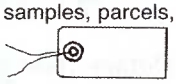
Transparent Adhesive Sheets

Transparent adhesive sheets with frost process over the surface. Suitable for protection of drawings, documents, etc. The sheets accept to write down by pencils, water-soluble pens, marker pens, etc.

47 12 96	Transparent adhesive sheet W: 62 cm × L: 2 mtr	Rol.

Tags

Specially designed for labeling parts, samples, parcels, luggage, etc. Tags are furnished with wire tie string. Each bundle contains 50 tags.



Unit Per Bdl

Paper		Cloth	
CODE	Size mm	CODE	Size mm
47 13 01	60 × 30	**47 13 03**	120 × 60
02	120 × 60		

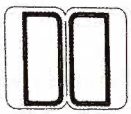
Plastic Tags with Ring

Suitable for use as a key ring. Comes with a plastic tag in which a label for a room number, chamber name, etc. can be inserted. Provided in various colours with a key ring and tag.

Unit Per Pc.

CODE	Size	Size mm	CODE	Size	Size mm
47 13 06	Large	58 × 27	**47 13 07**	Small	45 × 30

Index Tabs



A self adhesive label for indexing.

Unit Per Pkt

CODE	Actual Size mm	Contents Per Pkt
47 13 11	7 × 15	176
12	9 × 19	120
13	10 × 22	90
14	11 × 40	60

Self-Adhesive Labels

Self adhesive plain white label. Available in various sizes.

Unit Per Pkt

CODE	Size mm	Per Pkt	CODE	Size mm	Per Pkt
47 13 16	12 × 27	513s	**47 13 19**	38 × 87	57s
17	27 × 43	152s	**20**	43 × 120	38s
18	22 × 87	95s			

Post It Memo

Memo paper which adheres to various kinds of surfaces such as paper, plastic, steel, etc. Very useful when marking pages in a book or leaving memos on maps, drawings, machinery parts, etc. Memos can be easily removed without damaging the surface.

CODE	Size mm	Sht/Pad	Unit
47 13 21	14 × 75	100's × 4pad/pkt	Pkt
22	50 × 75	100's/pad	Pad
23	75 × 75	100's/pad	"

Kraft Wrapping Paper

For wrapping stores, goods and parcels. Brown coloured paper 910 mm in width, furnished in rolls.

Unit Per Rol.

CODE	Width mm	×	Length mtr	CODE	Width mm	×	Length mtr
47 13 31	910	×	30	**47 13 32**	910	×	60

Tarpaulin Paper

Heavy water proof paper for lining, wrapping, etc.

Unit Per Rol.

CODE	47 13 41	47 13 42	47 13 43
Size	900mm × 30mtrs	1,010mm × 30mtrs	1,210mm × 30mtrs

Strings

Jute String

Six-ply jute yarn for wrapping packages, etc.

Unit Per C/L

CODE	Weight Per Coil	Approx. Length
47 13 51	400 grm	200 mtr
52	1 kgs	500 mtr

Polypropylene String

Split-film polypropylene yarn for packing, etc.

Unit Per C/L

CODE	Length Per Coil	Approx. Length
47 13 56	200 mtr	350 grm
57	1,000 mtr	1.5 kgs

Air Bubble Pack Sheets

For packing and protection of products made from glass, plastic, etc., or delicate instruments, which are easy to break by shocks and vibrations in transit.

Unit Per Rol.

CODE	Width × Length	CODE	Width × Length
47 13 61	300mm × 42mtr	**47 13 63**	1,000mm × 50mtr
62	500mm × 50mtr		

Pasteboard Boxes

Made of pasteboard, and suitable for storing and packing documents, consumables, dry provisions, etc. Available various sizes upon request.

47 13 65	Pasteboard box, 370 × 310 × 270 mm	Pc.

Chairs

Folding Chairs

Made of chromed polish pipe frame with the seat and back support upholstered in vinyl. Available in green, brown, blue, etc. Seated height 480 mm, with size 360 x 360 mm.

47 15 01	Chair folding, pipe frame	Pc.

Swivel Chairs

Made of chromed polish, pipe frame with the seat and back support upholstered in vinyl. Seated height is adjustable between 360~ 460 mm. Grey colour will be furnished if not specified. Wheel stopper is furnished. Please specify if the chair should be with or without arms when ordering.

47 15 03	Chair, swivel pipe frame	Pc.
04	Armchair, swivel pipe frame	"

Desk Mats

Vinyl or rubber made soft desk mats designed to provide a better writing surface and to keep items from sliding around on the desk.

Unit Per Pc.

Rubber Green		P .V. C. Transparent	
CODE	Size mm W × D × T	CODE	Size mm W × D × T
47 15 11	450 × 300 × 2.5	**47 15 16**	600 × 450 × 2
12	550 × 390 × 2.5	**17**	900 × 620 × 2
13	600 × 450 × 2.5	**18**	1,045 × 620 × 2
14	900 × 600 × 2.5	**19**	1,045 × 715 × 2

Desk Calendars

A convenient desk diary for personal daily memorandum.

47 15 22	Desk calendar	Set

Name Card Holders

Available various types of name card holders, such as case type, binder type, rotary type, etc. Please specify type of name card holder and numbers of name card to be held.

Case Type

Book-binded

Loose-leaf

Rotary Type

Case Type

Unit Per Pc.

CODE	Numbers of Name Card	Size mm W × D × H
47 15 26	400	106 × 136 × 72
27	800	106 × 275 × 72

Binder Type

Unit Per Pc.

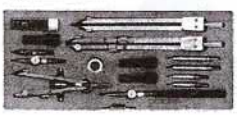
CODE	Items	Numbers of Name Card	Size mm W×D×H
47 15 31	Book-binded	60	206 × 110 × 8
32		200	206 × 110 × 32
33		300	206 × 110 × 42
47 15 35	Loose-leaf	300	262 × 315 × 25
36	Refill pocket	20	230 × 302

Rotary Type

Unit Per Pc.

CODE	Numbers of Name Card	Size mm W × D × H
47 15 38	400	180 × 170 × 190
39	600	165 × 200 × 220

Drawing Instrument Sets



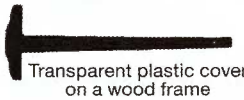
The Drawing Instruments are made from nickel plated brass with matt brushed finish. The details of the contents are as follows.

Contents							
CODE 47-15-			41	42	43	44	45
Point replaceable large compass with needlepoint 157 mm	Pencil Point		O	O	O	O	O
	Markout Point		O	O	O	O	O
	Sharp Pen Point	0.3 mm	O			O	O
	"	0.5 mm	O	O	O	O	O
Point replaceable medium compass with needlepoint 122 mm	Pencil Point			O	O	O	O
	Markout Point			O	O	O	O
	Sharp Pen Point	0.3 mm				O	O
	"	0.5 mm		O	O	O	O
Divider	Large L:155 mm		O	O	O	O	O
	Small L:115 mm					O	O
Master Blow Compass Length 100 mm	Pencil Point		O	O	O	O	O
	Markout Point		O	O	O	O	O
	Sharp Pen Point	0.3 mm	O				
	"	0.5 mm	O				
Rotating Compass Length: 130 mm	Pencil Point				O	O	O
	Markout Point				O	O	O
Sharp Pen Point	0.3 mm					O	O
	0.5 mm			O	O	O	O
Medium Markout Point			O		O	O	O
Single Curve Markout Point							O
Double Curve Markout Pen							O
Beam Compass 4's/set							O
Proportional compass w/Regulator						O	O
Spare Markout Point Rod				O			
Spare Replacements			O		O		O
Total Number of Pieces			10	11	13	18	24

Unit Per Set

CODE	Contents	CODE	Contents
47 15 41	10's	**47 15 44**	18's
42	11's	**45**	24's
43	13's		

T-Squares



Transparent plastic cover on a wood frame

White plastic cover on a wood frame

Unit Per Pc.

One Side Transparent		One Side White Plastic	
CODE	Length mm	CODE	Length mm
47 15 51	600	**47 15 56**	450
52	750	**57**	600
53	900	**58**	750
54	1,050	**59**	900
55	1,200	**60**	1,050
-	-	**47 15 61**	1,200

Straight Plastic Rules

Plastic made transparent rule with metric graduation.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
47 15 66	150	**47 15 69**	400
67	300	**70**	600
68	360	**71**	1,000

Set Squares

Plastic, transparent set squares provided in pairs of two. The length of the base of the triangle represents the size of the set square.

Unit Per Pr.

CODE	Length mm	CODE	Length mm
47 15 75	150	**47 15 78**	300
76	180	**79**	360
77	240	**80**	450

Protractors

Available full round (360°) or half round (180°). Made of transparent plastic.

180°

360°

Unit Per Pc.

Half Rond (180°)		Rond (360°)	
CODE	Dia mm	CODE	Dia mm
47 15 85	150	**47 15 87**	135
86	180	**88**	180

Desk-top Drawing Stands

A small drawing stand for use on desk top. Available in manual or mechanical angle adjustment type.

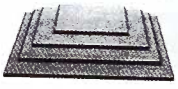
Unit Per Set

CODE	47 16 06	47 16 07
Control	Manual	Oleopneumatic
Board Size mm	450×600 ~ 600×900	600×900 ~ 750×1,050
Frame Size mm	W × D × H 560 × 480 × 78	W × D × H 700 × 515 × 86
Angle Adjustable	0 ~ 45°	0 ~ 45°

Drawing Boards

Made of plywood. Available in plain and vinyl coated.

Plain Board



Vinyl Coated Board

Unit Per Sht

Plain Board		Vinyl Coated Board	
CODE	Size mm	CODE	Size mm
47 16 11	450 × 600 × 20	**47 16 16**	450 × 600 × 30
12	600 × 900 × 30	**17**	600 × 900 × 30
13	750 × 1,050 × 30	**18**	750 × 1,050 × 30
14	900 × 1,200 × 30	**19**	900 × 1,200 × 30

Blackboards, Steel

Solid steel green coloured blackboard. Standard sizes are listed below.

Unit Per Pc

CODE	Size cm	CODE	Size cm
47 16 25 26	45 × 60 60 × 90	47 16 27 28	90 × 120 90 × 180

Whiteboards

Porcelain coated whiteboard for use with erasable markers. Standard sizes are listed below.

Unit Per Pc

CODE	Size cm	CODE	Size cm
47 16 30 31	45 × 60 60 × 90	47 16 32 33	90 × 120 90 × 180

Notice Boards

Green felt notice board with fibreboard backing. Standard sizes are listed below.

Unit Per Pc

CODE	Size cm	CODE	Size cm
47 16 36	60 × 90	47 16 37	90 × 120

Erasers for Blackboard or Whiteboard

Handy eraser for blackboard or whiteboard.

For Blackboard

For Whiteboard

Unit Per Pc

CODE	47 16 40	47 16 41
Description	Blackboard	Whiteboard

Whiteboard Markers

For use on all whiteboard surfaces, easily erased with dry cloth.

Unit Per Pc

CODE	Size cm	CODE	Size cm
47 16 45 46	Blue Red	47 16 47 48	Green Black

Paper Holding Magnets

Magnets with plastic coloured caps for hanging papers on a steel surface.

How to order: CODE

Magnet, paper holding, DIAM, COLOUR

Unit Per Pc

Diam. mm		15 CODE	20 CODE	30 CODE
Colour	Blue	47 16 51	47 16 58	47 16 65
	Red	52	59	66
	Green	53	60	67
	Yellow	54	61	68
	Black	55	62	69
	White	56	63	70

Magnet Rubber Sheets

Synthetic soft rubber sheet with magnetic functions. Can be cut by knife or scissors into desired shape.

Unit Per Sht

CODE	Colour	Size mm
47 16 71	Red	W 100 × L 300 mm
72	Yellow	
73	Blue	
74	Green	
75	White	

Electronic Whiteboards

Able to print the letters written over the whiteboard sheet onto A-4 size thermosensitive paper by just pushing the copy button. By pressing the copy button, printing the letters written on the front sheet, the whiteboard will slide and be fed aside and will be replaced by the back sheet automatically.

Also, able to slide the sheet aside until desirable position by manual with a light force.

Unit Per Set

CODE	47 17 01	47 17 02
Face Size	W1,300 × H920 mm	W1,800 × H920 mm
Recording Time	11 sec./board	
Feeding System	Front sheet/Back sheet replaced by feed button Endless feeding by manual	
Recording Density	8 dots/mm	
Voltage	AC 100 volt	
Power Consumption	Waiting time : 60W Working Time: 120W	
Outer Size	W1,470 × D600 × H1,885 mm	W1,970 × D600 ×H1,885 mm
Weight	35 kgs	42 kgs
Recording Paper	Thermosensitive paper W210 mm × 30 mtr	
Standard Accessories	1 pc each of marker black, red and blue 1 pc eraser 1 roll recording paper	

Accessories for Electronic Whiteboard

Board Marker Pen

Board Eraser

Thermosensitive Recording Paper

CODE	Description	Unit
47 17 05	Board marker pen, Red	Pc.
06	Board marker pen, Blue	"
07	Board marker pen, Black	"
47 17 11	Board eraser	Pc.
47 17 13	Thermosensitive recording paper W210 mm x L30 mtr	Rol.

Safes

Handy Safe

Also called cash boxes. The most common sizes are listed below.

Unit Per Pc.

CODE	Outer Size mm	Weight kgs	Alarm
47 16 81	300 x 255 x 123	3.0	Without
82	364 x 272 x 153	4.5	With

Fireproof Safes

A heavy, steel framed safe. Completely fireproof to assure the safety of cash and important documents. Equipped with an alarm that sounds when the safe is moved, or when the door is opened by force.

Unit Per Set

CODE	Outer Size mm	Weight kgs	Alarm
47 16 86	480 x 404.5 x 368	50	Without
87	480 x 404.5 x 368	50	With
88	455 x 479 x 677	93	Without
89	455 x 479 x 677	93	With

Security Seals

Security seals are designed to protect your property and merchandise, providing wide range of application from sealing document trays and safe deposit boxes to securing medical cabinets and roll cages to help counter tampering, smuggling and espionage. Once a security seal is opened, it would depict obvious evidence of tampering. Moulded in high grade polypropylene. The strap end is simply inserted toward the head and then pulled to desired tightness, and to remove merely use hand pressure or a simple tool.

Pulltight Series

These seals are available in a variety of lengths and are offered on a mat of 10 for easy distribution.

Unit Per Pkt

Colour	Size W x L mm		
	2.2 x 210	3.6 x 235	7.0 x 380
Red	47 17 71	47 17 76	47 17 81
Blue	72	77	82
Yellow	73	78	83
Green	74	79	84
White	75	80	85

Fix Series

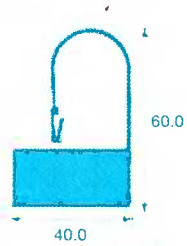
Ideally suited for cargo shipment industry. Easy to apply, the end security snaps into the enclosed locking head.

Unit Per Pc.

CODE	Colour	Size mm
47 17 87	Red	W: 6.0 x L: 195
88	Yellow	
89	Green	

Padlock Series

Easy to apply by simply pushing the hasp into the body.



Unit Per Pc.

CODE	Colour	Size mm
47 17 91	Red	W: 40 x L: 60
92	Blue	
93	Yellow	
94	Green	
95	White	

Overhead Projectors (OHP)

For enlarging and projecting letters or drawings, printed on the transparent film, over the standing screen. Those letters or drawings are easily copied from hard paper to transparent film by normal PPC. The projector can be folded into portable size. The listed item below is for your reference. Please ask your local dealer about further details.

Specifications

Projection Lens		f = 270 ~ 298 mm
Stage Size		285 x 285 mm (A-4)
Light Source		100 volt 360W Halogen lamp
Magnification		3.9X - 13.3X
Distance		130 cm - 430 cm
Angle of Elevation		Max. 17°
Power Consumption		370W
Outer Size	In Use	W318 x D419 x H510 mm
	Folded	W330 x D490 x H143 mm
Weight		6.3 kgs

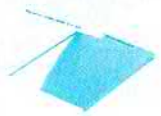
47 17 21	Overhead projector (OHP), portable	Set

Ancillary Equipment for Overhead Projector

Halogen Lamps for OHP

47 17 25	Halogen lamp for overhead projector (OHP), 100 volt, 360W	Pc.

Copy Films for OHP



Unit Per Pkt

CODE	Size	Actual Size WxLxTH mm	Type	Sht/ Pkt
47 17 31	B-5	182 x 257 x 0.1	Transparent	100's
32	A-4	210 x 297 x 0.1		

Spring Roller Screens for OHP

Unit Per Set

CODE	Type	Size WxH	Weight
47 17 35	Wall	1,200 x 1,200	2.0 kgs
36		1,500 x 1,500	2.5 kgs
47 17 37	Stand	1,500 x 1,500	5.5 kgs
38		1,800 x 1,800	7.0 kgs

Marker Pens for OHP Film

Unit Per Pc.

CODE	Thickness	Colour	CODE	Thickness	Colour
47 17 41	0.5 mm	Black	**47 17 44**	1.0 mm	Black
42		Red	**45**		Red
43		Blue	**46**		Blue

Calculators

Various types of calculators are available. Since the models of calculators change so frequently, a list of the common types of calculators is listed below as a general guide for the purchaser.

Unit Per Pc.

CODE	Type	Digit	Power Source	Remark
47 18 01	Card	8	Solar	-
47 18 06	Pocketable		Battery	
07		10		
47 18 08		8	Solar	
09		10		
47 18 16	Portable	8	Dual	AC 110V
17				AC 220V
47 18 18		10		AC 110V
19				AC 220V
47 18 20		12		AC 110V
21				AC 220V
47 18 31	Desk-top	10		AC 110V
32				AC 220V
47 18 33		12		AC 110V
34				AC 220V
47 18 41	Desk-top with Printer	10		AC 110V
42				AC 220V
47 18 43			AC	AC 110V
44				AC 220V
47 18 45		12	Dual	AC 110V
46				AC 220V

Note: Dual means Battery or AC power source applicable.

Scientific Calculators

For engineers or machinists use. Built-in various mathematical functions such as logarithms, statistics, trigonometric, etc.

Available various types and functions depend on the manufacturers and models.

Please specify required functions when ordering.

How to order: 47 - 18 - 51

Scientific calculator, with required functions,MFR'S NAME, MODEL, ETC.

Calculator Roll Paper

Recording paper rolls for calculators.

Unit Per Rol.

CODE	47 18 61	47 18 62
Width x O.D mm	57 x 50	57 x 60

AC Adaptors for Calculator

AC adaptors to be used as a power source in the place of batteries. When ordering, please specify the type of calculator the adaptor is to be used with.

47 18 66	AC adaptor 110V for calculator	Pc.
67	AC adaptor 220V for calculator	"

Palm Tally Counters

Metal body mechanism four digits counter for counting inventories, etc. with actuating push button and reset button. Handy and suitable to fit in your palm.

47 18 55	Tally counter, handy, 4-digits	Pc.

Digital Cameras

Newly developed digital system cameras. The images will be stored in digital format, and can be seen on the liquid crystal finder of the camera just after pictured. Also the images can be downloaded to a computer system, and manipulated as digital data. Can be printed as a photo image without film processing by a digital printer, or printed on photographic paper through a developing studio. The listed models are for your reference. Please ask to your local dealer about further details.

How to order: 47 - 18 - 74

Digital camera, MAX IMAGE PIXEL, MAX. ZOOM CAPACITY, MEMORY DEVICE, ***MFR'S NAME, MODEL NAME***

Flash Memory Cards (Picture Cards) for Digital Camera

A solid-state electronic flash memory data storage device used with digital cameras and other electronics. There are many different types of memory cards, such as SD/SDHC/SDXC/ Memory Stick type, and jobs they are used for, and please ask for the correct specifications to manufacturer or local dealer of your digital camera and specify manufacturer's name and model of the digital camera when ordering.

Unit Per Pc.

CODE	Capacity	CODE	Capacity
47 18 56	8 GB	**47 18 60**	128 GB
57	16 GB	**65**	256 GB
58	32 GB	**68**	512 GB
59	64 GB		

Memory Card Reader

Memory Card Reader is a device with USB interface, to access the data on memory cards and transfer to your computer. Compatible with SD / SDHC / SDXC / miniSD / microSD / microSDHC / Compact Flash Cards and Memory Stick series etc.

Please specify the type of memory cards when ordering.

Unit Per Pc.

CODE	Description	Connection
47 18 63	Memory Card Reader	USB 2.0
64	"	USB 3.0

Photograph Print Paper

A high-quality photographic print paper coated with a light-sensitive chemical formula, which can be printed by ink-jet printer.

Unit Per Pkt

CODE	Size	Q'ty/Pkt	CODE	Size	Q'ty/Pkt
47 22 51	L	100's	**47 22 56**	A-4	20's
52	(89 ×	200's	**57**	(210 ×	50's
53	127mm)	400's	**58**	297 mm)	100's
47 22 54	2L	50's	**47 22 59**	Quarto	20's
55	(127 × 178mm)	100's		(254 × 305 mm)	

Films with Lens

Films with lens and recyclable frame. Available with flash type, also.

Unit Per Pc.

CODE	Films	CODE	Films
Without Flash		**With Flash**	
47 18 75	27 shots	**47 18 76**	27 shots
77	39 shots	**78**	39 shots

Manual Typewriters

Portable

Portable, heavy duty typewriters suitable for personal use or for office work. From a wide range of products, the most common types are listed below. Standard carriage sizes are from 240 mm to 340 mm. When ordering, please specify the type required as well as the manufacturer and the model name.

Unit Per Pc.

CODE	Carriage Length		CODE	Carriage Length	
	mm	inch		mm	inch
Elite			**Pica**		
47 19 01	240	9-1/2	**47 19 06**	240	9-1/2
02	310	1/2	**07**	310	1/2
03	340	13-1/2	**08**	340	13-1/2

Office

These are robust, heavy duty manual office typewriters. From among a wide range of products, the most common type is illustrated here. Standard carriage sizes are from 310 mm to 705 mm. When ordering, please specify the type: Elite or Pica, the manufacturer and the model name.

Unit Per Pc.

CODE	Carriage Length		CODE	Carriage Length	
	mm	inch		mm	inch
Elite			**Pica**		
47 19 11	310	12	**47 19 21**	310	12
12	330	13	**22**	330	13
13	385	15	**23**	385	15
14	420	16-1/2	**24**	420	16-1/2
15	460	18	**25**	460	18
47 19 16	470	18-1/2	**47 19 26**	470	18-1/2
17	490	19	**27**	490	19
18	640	25	**28**	640	25
19	705	27	**29**	705	27

Typewriter Ribbons

According to three major spool types, typewriter ribbons are classified as shown below with their respective specifications. They are not only for use on typewriters but also for adding machines and calculators.

For Underwood

For Remington

For Din

How to order: CODE

Typewriter ribbon, TYPE, MATERIAL and COLOUR

Unit Per Spl

CODE	Tape Material	Colour	Size Width×Length mm mtr	Applicable Typewriter Model
Under wood Spool Type				
47 19 85	Cotton	Black	13 × 11	Underwood, Hermes, Homeland, Olympia, SCM, Silver, Brother, etc.
86		Black/Red		
47 19 87	Nylon	Black		
88		Black/Red		
Remington Spool Type				
47 19 90	Cotton	Black	13 × 11	Remingtonland, Underwood SX-50, Oki-typer
91		Black/Red		
92	Nylon	Black		
93		Black/Red		
Din Spool Type				
47 19 95	Cotton	Black	13 × 11	Adler, Facit, Olympia, Royal Portable, Triumph
96		Black/Red		
97	Nylon	Black		
98		Black/Red		

Electric Office Typewriters

These are full feature office electric typewriters. From among a wide range of products, the most common type is illustrated here. Required electricity is 110V or 220V AC. Standard carriage sizes are from 310 mm to 490 mm.

When ordering, please specify the style of typeset, electric power source, and the name of the manufacturer and the model name.

Unit Per Pc

CODE	Carriage Length mm	Carriage Length inch	CODE	Carriage Length mm	Carriage Length inch
	AC 110V				
	Elite			Pica	
47 19 45	310	12	47 19 55	310	12
46	330	13	56	330	13
47	385	15	57	385	15
48	420	16-1/2	58	420	16-1/2
49	460	18	59	460	18
50	490	19	60	490	19
	AC 220V				
	Elite			Pica	
47 19 65	310	12	47 19 75	310	12
66	330	13	76	330	13
67	385	15	77	385	15
68	420	16-1/2	78	420	16-1/2
69	460	18	79	460	18
70	490	19	80	490	19

Besides the typewriters above, single element, (golf ball) typewriters are also available.

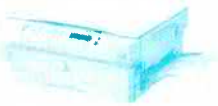
Note: PICA = 10 letters per inch
ELITE = 12 letters per inch

Cassette Ribbons for Electric Typewriter

There are various types of cassette ribbons available for electric typewriters. Please specify the manufacturer's name and model number of your typewriter when ordering.

47 19 99	Cassette ribbon for electric typewriter, with manufacturer's name, model No., etc.	Pc.

Copy Machines



Desktop

There are a large variety of copy machine models available. Each has its own capabilities and features. For the purpose of making ordering easier, we have provided the following ordering table composed of the most practical copy machines for marine use.

For any further detailed information about what copy machines are available in various ports, please contact your local supplier.

Note: In case you require a copy machine which enlarges or reduces the copy size, please specify what size range it should cover.

Specifications

Type	Desk top				
Copy Size mm	Up to A4 (210 × 297 mm)		Up to B4 (257 × 364 mm)		Up to A3 (297 × 420 mm)
Colour	Mono	Colour	Mono	Colour	Colour

Unit Per Set

CODE	Voltage	Colour	Copy Size mm
47 21 32	100 V	Mono	Up to A-4
36	220 V		
47 21 37	100 V	Colour	
38	220 V		

(to be continued)

47 21 42	100 V	Mono	Up to B-4
46	220 V		
47 21 47	100 V	Colour	
48	220 V		
47 21 52	100 V	Colour	Up to A-3
56	220 V		

Multi Functional

A copy machine which incorporates the functionality of multiple devices in one. A typical machine may act as a combination of some or all of the following devices: Photocopier / Printer / Scanner. There are various manufacturers and models recommendable to your document works. Please consult to your local supplier for more information before ordering.

Unit Per Set

CODE	47 21 65	47 21 66	47 21 67	47 21 68
Operating Systems	Windows		Macintosh	
Voltage	AC 100V	AC 220V	AC 100V	AC 220V
Printable Size	Up to A-3			
Functions	Photocopier / printer / Scanner			

Ink Cartridges for Copy Machines

Ther are various manufacturers and models of copy machines. Please specify exact manufacturer's name and model name of the copy machine you use, and type and colour of ink cartridges when ordering.

Unit Per Pc

CODE	Black	CODE	Colour
47 21 79	Black	47 21 80	Colour
		81	Cyan (C)
		82	Magenta (M)
		83	Yellow (Y)

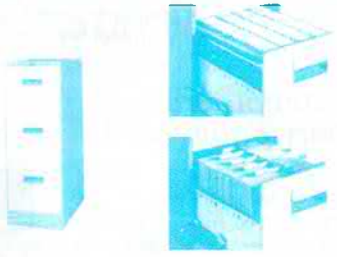
Paper for P.P.C.

Used for plain paper copiers.

CODE	Size	Actual Size mm	Unit Contents	Unit
47 21 84	A5	148 × 210	500 sht	Pkt
85	B5	182 × 257	"	"
86	A4	210 × 297	"	"
87	B4	257 × 364	"	"
88	A3	297 × 420	"	"

Steel Filing Drawer Cabinets

Steel file cabinets with drawers suspended on extension runners which are easy to open and close smoothly and are resistant to heavy use. The drawers have wire frame rails for holding letter files in place and allowing easy access to the materials inside. The handle has a clear plastic compartment in which index labels can be inserted. There are two or three subject dividers furnished with each drawer. These cabinets are available in grey or beige. The grey cabinet will be supplied unless specified otherwise when ordering.



Unit Per Pc

CODE	Type	Numbers of Drawer	Outer Size W x D x H mm
47 25 01	A4-2	2	387 x 620 x 740
02	A4-3	3	387 x 620 x 1,015
03	A4-4	4	387 x 620 x 1,335
47 25 06	B4-2	2	456 x 620 x 740
07	B4-3	3	456 x 620 x 1,066
08	B4-4	4	456 x 620 x 1,400

Filing Cabinet Drawer Accessories

Drawer accessories for the aforementioned drawer cabinet.

Hanging Frame

Separator

Hanging File

Individual Holder

CODE	Name	Type	Drawer Size W x D x H mm	Unit
47 25 11	Hanging Frame	A4	319 x 561 x 274	Set
12		B4	280 x 562 x 212	
47 25 13	Separator	A4	319 x 561 x 274	Set
14		B4	280 x 562 x 212	
47 25 15	Hanging File	A4	319 x 561 x 274	Set
16		B4	280 x 562 x 212	
47 25 17	Individual Holder	A4	319 x 561 x 274	Set
18		B4	280 x 562 x 212	

Steel Filing Door Cabinets

Designed and engineered to withstand continuous, rugged use. Available in a sliding glass door type or a steel reinforced, folding door type, with deep or shallow shelves. The parts fit together effortlessly making assembly quick and easy. Available in beige and grey. The grey cabinet will be supplied unless specified otherwise when ordering.

Steel Folding Door

Glass Framed Sliding Door

Unit Per Pc.

CODE	Type of Doors	Number of Shelves	Over size mm W x D x H
	Shallow Shelf		
47 25 31	Steel Folding	4	880 x 380 x 1,790
32	Glass Sliding	4	880 x 400 x 1,790
	Deep Shelf		
47 25 33	Steel Folding	4	880 x 515 x 1,790
34	Glass Sliding	4	"

Blank Recordable CDs (Blank Compact Discs)

A type of optical disc capable of storing large amounts of data up to 650MB or 700 MB. CD-ROMs are once stamped, CD-ROMs are particularly well-suited to information that requires large storage capacity such as colour graphics, sound, etc.

CODE	Capacity	Unit	CODE	Capacity	Unit
47 26 71	650 MB	Pc.	47 26 20	700 MB	Pc.
72		10's/pkt	24		10's/pkt
73		100's/pkt	25		100's/pkt

CD-Rewritable Discs

You can treat the CD-RW disc as the optical disc just like a hard disc, writing data onto it multiple times though CD-R.

CODE	Capacity	Unit	CODE	Capacity	Unit
47 26 74	650 MB	Pc.	47 26 29	700 MB	Pc.
75		5's/pkt	30		5's/pkt
76		10's/pkt	34		10's/pkt

USB Memory Sticks

A flash memory data storage device integrated with a USB (universal serial bus) connector allowing them to be connected directly to a port on a personal computer. Typically the data is removable and rewritable. Also available with security lock system on request.

Unit Per Pc

CODE	Data Capacity	CODE	Data Capacity
47 26 83	2 GB	47 28 70	32 GB
84	4 GB	71	64 GB
89	8 GB	72	128 GB
90	16 GB	73	256 GB

Blank DVD-R and DVD-RW

An extremely large capacity digital versatile disc for storage video movies. Typically storage capacity is 4.7 GB per disc. DVD-R is for recording only, and DVD-RW is for rewritable.

Unit Per Pkt

CODE	Q'ty/Pkt	CODE	Q'ty/Pkt
DVD-R (Recordable)		**DVD-RW (Rewritable)**	
47 26 91	5's	47 26 96	5's
92	10's	97	10's
93	20's	99	20's
94	50's	47 27 00	50's
98	100's		

CD/DVD Cases

Available transparent styrene made case for single sheet, or box type cases for a round sum of sheets.

case

Shelf

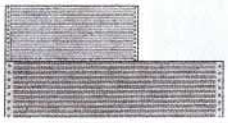
Drawer

Unit Per Pc.

CODE	Type	Capacity	Outer Size
47 27 65	Case	1 sht	W 142 × D 125 × H 10 mm
66	Shelf	27 shts	W 464 × D 139 × H 154 mm
67	Drawer	22 shts	W 165 × D 314 × H 173 mm

Data Forms

Continuous business paper forms used for computer printing. Available in various types, the most common of which are listed below.


1/3 Lined Per Inch

1/6 Colour Belt per Inch

Unit Per C/S.

CODE	Type	Size	Ply	Sheets Per Case
47 26 51	Plain	9" × 11"	1	2,000
47 26 52		15" × 11"	1	
53			2	1,000
54			3	500
55			4	
47 26 56	1/3 Lined Per Inch	9" × 11"	1	2,000
57			2	1,000
58			3	500
59			4	
47 26 60		15" × 11"	1	2,000
61			2	1,000
62			3	500
63			4	
47 26 64	1/6 Colour Belt Per Inch	15" × 11"	1	2,000
65			2	1,000
66			3	500
67			4	

Data Form Files

Blue coloured hardboard covers with a standing, pin type binder which will hold a stack of paper up to 28 mm thick. Please specify the size required and the data form size to be used with the file.

Unit Per Pc.

CODE	Size mm	Applicable Form	No. of Pins
47 26 81	304 × 237 × 39	9" × 11"	18
82	405 × 285 × 39	15" × 11"	22

Cassette Ribbons for Computer Printer

There are various types of cassette ribbons for computer printers available. Please specify the manufacturer's name and the model number of the computer printer currently in use when ordering.

47 26 85	Cassette ribbon for computer printer, with manufacturer's name, model No., etc.	Pc.

Personal Computers and Ancillary Equipment

There are various types of models available from manufacturers around the world. It is important to have a precise idea of what type of operation system, like a Windows, Macintosh, you require based upon what capabilities are needed for the work done.

Please consult with a sales engineer or refer to product brochures for necessary details about system components and their functions. Ask about the compatibility of the software you are currently using or plan to use with the system which you have in mind.

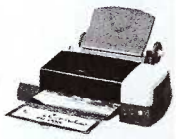
Please specify the Operation System, manufacturer's name, model number components, etc. when ordering.

How to order : Computer, personal,

1) DESK TOP or NOTEBOOK
2) OPERATION SYSTEM (Windows or Macintosh),
3) CLOCK SPEED of CPU (MHz)
4) HARD DISC VOLUME (GB),
5) CAPACITY OF RAM (MB RAM)
6) SIZE of LCD DISPLAY
7) ANCILLARY DISC DRIVER (CD Driver, DVD Driver, etc)

CODE	Description	Unit
47 27 01	Personal computer, desk top type	Pc.
02	Display for personal computer (with size)	"
03	Key board for personal computer	"
04	Printer for desk top personal computer	"
47 27 11	Personal computer, lap-top (Note) type	Pc.
12	Printer for lap-top personal computer	"

Ink-jet Printers



Printer for computer use, spraying ink at printing paper. Available various types of printers depends on capacity of the resolution, printing speed, etc. Please ask to your local dealer about further details.

How to order: CODE

Printer, ink-jet, MFR, MODEL, APPLICABLE OS, MAX PAPER SIZE, VOLTAGE COLOUR or MONO if necessary

For Windows

Unit Per Set

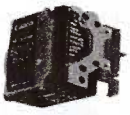
CODE	47 27 41	47 27 42	47 27 43	47 27 44
Applicable Paper Size	Up to A-4 (W: 210 mm)		Up to A-3 (W: 297 mm)	
Voltage	AC100V	AC220V	AC100V	AC220V

For Macintosh

Unit Per Set

CODE	47 27 45	47 27 46	47 27 47	47 27 48
Applicable Paper Size	Up to A-4 (W: 210 mm)		Up to A-3 (W: 297 mm)	
Voltage	AC100V	AC220V	AC100V	AC220V

Ink Cartridges for Ink-jet Printer



Special cartridge for ink-jet printers, flushing inks by heating mechanism in the cartridge. There are various manufacturers and models of ink cartridge in the world. Please check the mfr's name and type of cartridge referring to the manual of the printer, or the cartridge in use when ordering to avoid miss arrangement.

How to order: CODE

Ink cartridge, for ink-jet printer, TYPE of INK, MONO or COLOUR, MFR'S NAME & MODEL of PRINTER

Unit Per Pc.

CODE	Colour	CODE	Colour
	CANON		
47 27 25	Black only	**47 27 15**	Cyan (C)
26	Colour	**16**	Magenta (M)
		17	Yellow (Y)
	Hewlet Packard		
47 27 27	Black onlly	**47 27 18**	Cyan (C)
28	Colour	**19**	Magenta (M)
		20	Yellow (Y)
	Epson		
47 27 29	Black only	**47 27 49**	Cyan (C)
30	Colour	**50**	Magenta (M)
		51	Yellow (Y)

Scanners

A device which can read text or images printed on paper and translate the information into a file the computer can use such as jpg, tif, or bmp. The images stored in a file, can be displayed on a screen, and manipulated by program. There are two types of scanning method : Automatic document fed for loose sheets of paper or flatbed suitable for bound documents.

For further information, please contact to your local distributers.

How to order: CODE

Scanner, VOLTAGE, TYPE of SCANNING METHOD, PAPER CAPACITY, ETC.

Unit Per Set

CODE	Scan Size	Voltage	Scanning Method
47 22 05	A-4	AC 110V	Flatbed
47 22 07		AC 220V	
47 22 01	A-3	AC 110V	Automatic document fed and flatbed
47 22 03		AC 220V	

LCD Projectors

An LCD projector is a type of video projector for displaying video, images or computer data on a screen or other flat surface. There are various manufacturers and models, and please ask to your local dealers about the brochure and further details.

How to order: CODE

LCD projector, MANUFACTURER'S NAME, MODEL, RESOLUTION (Pixels), BRIGHTNESS (Lumens), PICTURE SIZE (Inch), POWER SOURCE (Voltage), etc.

Unit Per Pc.

CODE	Voltage	CODE	Voltage
47 22 11	AC 100V	**47 22 12**	AC 220V

Laser Pointers

A pen style laser spotlight emitter suitable for pointing and highlighting text or images on the presentation screen.

47 22 13	Laser pointer	Pc.

Jiffy Bags for FD/CD

Craft paper envelope lined with air bubble pack sheet for mailing floppy disc, compact disc, etc.

Unit Per Pc.

CODE	Size W x H	Application
47 27 71	120 x 180 mm	Cassette tape, Micro floppy
72	165 x 220 mm	Compact disc, Mini floppy
73	165 x 270 mm	Video cassette tape

Canned Air Dusters

Ideal for use on keyboards, laptops, printers, PCBs and photographic equipment to remove dust, dirt and microscopic debris. It's ozone safe.

47 27 75	Air duster, canned, 10 oz	Can

Air Dusters
Non-flammable

Non-flammable duster for electronics. A high pressure, inert, liquefied gas that safely removes dust and loose debris with a powerful 'air' jet. Helps prevent electronic component errors or downtime

Unit Per Tin

CODE	Name	Contents	Description
47 27 79	Air Duster/2	400 ml	Powerful, non-flammable, F-Gas compliant, low GWP, duster for electronics & optics.
80	Invertible Air Duster/2	200 ml	Same as above, but invertible.

Name of Mfr. : CRC Industries (Ambersil)

Ancillary Equipment
Mouse and Mouse Pads

A pointing device for computer. Movement will be detected by Optical or LED tracking, and available in Wired or Wireless type.

Unit Per Pc.

CODE	Type		Interface
47 27 81	DOS/V	Wired	PS/2 & serial mouth
76		Wireless	
47 27 82	Macintosh	Wired	Apple desktop bus protocol
77		Wireless	

Mouse Pad

Plain

With Wrist Rest

Unit Per Pc.

CODE	Type	CODE	Type
47 27 85	Plain	**47 27 86**	With wrist rest

CRT (Cathode Ray Tube) Filters

Unit Per Pc.

CODE	For Monitor Size	Material	Inner Size
47 27 87	14" - 15"	Acryl	W 290 × H 235 mm
88	16" - 17"		W 340 × H 265 mm
89	18" - 21"		W 425 × H 315 mm

LCD (Liquid-Crystal Display) Filters

Unit Per Pc.

CODE	For Monitor Size	Material	Inner Size
47 28 25	20"	Acryl	W 465 × H 330 mm
26	26"		W 596 × H 404 mm
27	32"		W 718 × H 480 mm
28	37"		W 840 × H 549 mm
29	40"		W 906 × H 585 mm

Printer Cables

Unit Per Lgh

CODE	Applicable P.C.	Type of Pins P.C. × Printer	Length
47 27 91	DOS/V	25 Male × 36 Male	2.0 mtr
92			3.5 mtr
47 27 95	NEC, Epson	36 Male × 36 Male	2.0 mtr
96			3.5 mtr

RS-232C (Recommended Standard-232C) Cables

Unit Per Lgh

CODE	Applicable P.C.	Type of Pins P.C. × Peripheral	Length
47 27 97	DOS/V	9 Female × 25 Male	1.5 mtr
99	NEC, Epson	25 Male × 25 Male	1.5 mtr

LAN Cables

Used for connecting the local area network of computer in small area.

Unit Per Lgh

CODE	Length mtr	CODE	Length mtr
47 28 48	1	**47 28 52**	10
49	2	**53**	20
50	3	**55**	30
51	5	**54**	50

USB Hubs

A device that allows many USB devices to be connected to a single USB port on the host computer or another hub.

Unit Per Pc.

CODE	Number of Port	CODE	Number of Port
USB 2.0		**USB 3.0**	
47 28 58	3	**47 28 92**	3
57	4	**93**	4
91	5		

USB Cables 2.0/3.0 (A,B,C) Type

This USB 2.0 cable allows you to connect USB devices such as Printer, HDD with your Computer for data transfer, and provides Hi-Speed, 480 megabit per second data transfer rates.

USB 3.0 cable is 10 times faster data transfer rates than USB 2.0(max 5 Gbps), and requires applicable PC and connecting equipment in use.

USB Connection

A type Connection

B type Connection

C type Connection

When ordering, please specify the devices (Printer etc.) you will connect with PC, type of connection and USB 2.0 or 3.0.

Unit Per Lgh

CODE	Type	Length mtr	CODE	Type	Length mtr
47 28 60	USB 2.0	1	**47 28 63**	USB 3.0	1
61	"	2	**64**	"	2
62	"	3	**65**	"	3

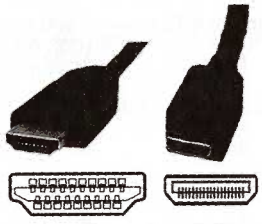
HDMI Cables
(High Definition Multimedia Interface)

Designed to carry both video and audio signals. There are now four different types of HDMI connectors, depending upon the application to be connected.

HDMI Cable Standard

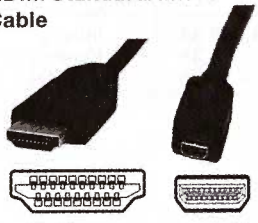
HDMI Cable
(HDMI ↔ HDMI)

HDMI Standard/Mini Cable



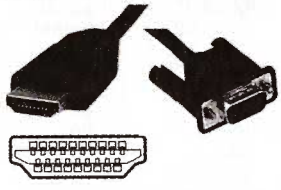
HDMI Mini Cable
(HDMI ↔ Mini HDMI)

HDMI Standard/Micro Cable



HDMI Micro Cable
(HDMI ↔ Micro HDMI)

HDMI/DVI Conversion Cable



HDMI/DVI Conversion Cable
(HDMI ↔ DVI)

Type	For Connecting	End Terminals	Length mtr
HDMI Cable	TV and Recorder/ Player	HDMI ↔ HDMI	1.0 / 1.5 / 2.0 / 3.0 & 5.0
HDMI Mini Cable	TV and Video camera	HDMI ↔ Hini HDMI	0.75 / 1.0 / 1.5 / 2.0 & 3.0
HDMI Micro Cable	TV and Smart mobile phone	HDMI ↔ Micro HDMI	1.0 / 1.5 / 2.0 / 3.0 & 5.0
HDMI/DVI Conversion Cable	TV and Personal computer	HDMI ↔ DVI	1.0 / 1.5 / 2.0 / 3.0 & 5.0

Unit Per Lgh

CODE	Length mtr	CODE	Length mtr
HDMI Cable		**HDMI Micro Cable**	
47 28 38	1.0	**47 28 59**	1.0
39	1.5	**66**	1.5
40	2.0	**67**	2.0
41	3.0	**68**	3.0
42	5.0	**69**	5.0
HDMI Mini Cable		**HDMI/DVI Conversion Cable**	
47 28 43	0.75	**47 28 74**	1.0
44	1.0	**75**	1.5
45	1.5	**76**	2.0
46	2.0	**77**	3.0
47	3.0	**78**	5.0

Modem
(Modulator-demodulator)

Data transmitting device which converts data between analogue form and digital form over telephone lines via computer. The specifications shown in the table are just for your reference purpose and there are various models with performances. When ordering please specify required power source voltage.

Please refer to your local dealer about further details.

Unit Per Set

CODE		47 28 31
Data Transfer Rate	Transmission	33,600 bps
	Reception	56,000 bps
Size		W160 x D130 x H36mm
Weight		300 grm

Note: Please specify power source voltage when ordering.

Hard Disc Drive

Hard Disc Drive (HDD) is a device for data storage, used for storing and retrieving the digital information. Available in desktop and portable HDD and both connecting with Computer via USB Cable for data transfer.

Desktop Type

Portable Type

When ordering, please specify the following point
- Version of Computer OS (Windows or MAC OS).
- OS Language.
- Type of USB Cable (2.0 or 3.0).
- Power Source (110 or 220).

Unit Per Pc.

CODE	Capacity	CODE	Capacity
External, Desktop		External, Portable	
47 28 81	500 GB	**47 28 87**	500 GB
82	750 GB	**88**	750 GB
83	1 TB	**89**	1 TB
84	2 TB	**90**	2 TB
85	3 TB		
86	4 TB		

Router
Wired/Wireless

Router is a device to provide access to the Computer Network or Internet.

It can function in connecting your computer with LAN Cable (Wired Router) or via radio wave (Wireless).

Wireless Router needs to be matched with the PC/Equipment wireless standards you want to connect. Check your PC/equipment before you order.

International Standards for Wireless Local Area Network:
- IEEE802.11b
- IEEE802.11g
- IEEE802.11a
- IEEE802.11n

When ordering, please specify following points;
- Data Transfer Speed (Mbps).
- International standard for Wireless LAN to be connected to.
- OS language (ex: English OS, Japanese OS, etc).
- Power Source(110V or 220V).

Unit Per Pc.

CODE	Description	CODE	Description
47 29 01	Wired	**47 29 02**	Wireless

Lan Switching Hub

LAN Switching Hub is a computer network device, which enable you to connect several computers to your Local Area Network and Internet.

Available in 5/8/12/16/24 port for connecting LAN cables.

Please specify the Power Source (100 or 220V) and number of port when ordering.

Unit Per Pc.

CODE	No. of Ports	CODE	No. of Ports
47 29 06	5	**47 29 09**	16
07	8	**10**	24
08	12		

Web Camera

Driver-free web camera featuring clear graphics, built-in microphone, connect with the USB cable.

It works perfectly with Local Area Network and ship/shore communication tools under Internet access environment.

Please specify the OS Language in your computer when ordering.

47 29 21	Web camera for PC	Pc.

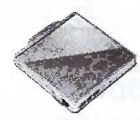
DVD Super Multi Drive

DVD Super Multi Drive is a device for reading and writing the data on DVD±R, DVD-RAM, DVD±RW discs as well as reading DVD-ROM and DVD videos. It is also enable to read and write CD-R, CD-RW.

Available in Internal Type, External Type, and Portable type.

Internal Type

External Type



Portable Type

Typical Specifications for DVD Drive

Type	Internal Type	External Type	Portable Type
Applicable OS	Windows OS / MAC OS		
Interface	Serial ATA	USB Cable (2.0 or 3.0)	
Writing Performance	DVD±R 8-24X	DVD±R 8-24X	DVD±R 6-8X
	DVD±RAM 12X	DVD±RAM 12X	DVD±RAM 5X
	DVD±RW 6-8X	DVD±RW 6-8X	DVD±RW 6-8X
	CD-R 48X	CD-R 48X	CD-R 24X
	CD-RW 32-40X	CD-RW 40X	CD-RW 24X
Reading Performance	DVD±R 12-16X	DVD±R 12-16X	DVD±R 6-8X
	DVD±ROM 12-16X	DVD±ROM 12-16X	DVD±ROM 6-8X
	DVD±RAM 12X	DVD±RAM 12X	DVD±RAM 5X
	DVD±RW 12X	DVD±RW 12X	DVD±RW 8X
	CD-ROM 48X	CD-ROM 48X	CD-ROM 24X
	CD-R 48X	CD-R 48X	CD-R 24X
	CD-RW 40X	CD-RW 40X	CD-RW 24X
Size (W×H×D)	145 × 41 × 165	160 × 50 × 220	145 × 19 × 153
Weight	640 g	1.2 kgs	340 g

When ordering, please specify the following point

Internal Type --- • Version of Computer Operating System (OS) (Windows or MAC OS)
• OS Language

External/Portable Type --- • Version of Computer OS (Windows or MAC OS)
• OS Language
• Type of USB Cable (2.0 or 3.0)
• Power Source (110 or 220V)

Unit Per Set

CODE	Type	CODE	Type
For Microsoft		For Mac	
47 29 31	Internal	**47 29 34**	Internal
32	External	**35**	External
33	Portable	**36**	Portable

Self Adhesive Characters

Individual self adhesive characters. Made of vinyl and sold in 10 pieces per package.

Alphabet with White Colour

Unit Per Pkt

Alphabet	CODE		
	Height 30 mm	**Height 40 mm**	**Height 50 mm**
A	**47 31 01**	**47 31 31**	**47 31 61**
B	**02**	**32**	**62**
C	**03**	**33**	**63**
D	**04**	**34**	**64**
E	**05**	**35**	**65**
F	**47 31 06**	**47 31 36**	**47 31 66**
G	**07**	**37**	**67**
H	**08**	**38**	**68**
I	**09**	**39**	**69**
J	**10**	**40**	**70**
K	**47 31 11**	**47 31 41**	**47 31 71**
L	**12**	**42**	**72**
M	**13**	**43**	**73**
N	**14**	**44**	**74**
O	**15**	**45**	**75**
P	**47 31 16**	**47 31 46**	**47 31 76**
Q	**17**	**47**	**77**
R	**18**	**48**	**78**
S	**19**	**49**	**79**
T	**20**	**50**	**80**
U	**47 31 21**	**47 31 51**	**47 31 81**
V	**22**	**52**	**82**
W	**23**	**53**	**83**
X	**24**	**54**	**84**
Y	**25**	**55**	**85**
Z	**47 31 26**	**47 31 56**	**47 31 86**

Alphabet with Black Colour

Unit Per Pkt

Alphabet	CODE		
	Height 30 mm	Height 40 mm	Height 50 mm
A	47 32 01	47 32 31	47 32 61
B	02	32	62
C	03	33	63
D	04	34	64
E	05	35	65
F	47 32 06	47 32 36	47 32 66
G	07	37	67
H	08	38	68
I	09	39	69
J	10	40	70
K	47 32 11	47 32 41	47 32 71
L	12	42	72
M	13	43	73
N	14	44	74
O	15	45	75
P	47 32 16	47 32 46	47 32 76
Q	17	47	77
R	18	48	78
S	19	49	79
T	20	50	80
U	47 32 21	47 32 51	47 32 81
V	22	52	82
W	23	53	83
X	24	54	84
Y	25	55	85
Z	47 32 26	47 32 56	47 32 86

Numeral with White Colour

Unit Per Pkt

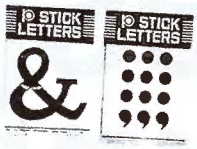
Numeral	CODE		
	Height 30 mm	Height 40 mm	Height 50 mm
1	47 33 01	47 33 11	47 33 21
2	02	12	22
3	03	13	23
4	04	14	24
5	05	15	25
6	47 33 06	47 33 16	47 33 26
7	07	17	27
8	08	18	28
9	09	19	29
0	10	20	30

Numeral with Black Colour

Unit Per Pkt

Numeral	CODE		
	Height 30 mm	Height 40 mm	Height 50 mm
1	47 33 31	47 33 41	47 33 51
2	32	42	52
3	33	43	53
4	34	44	54
5	35	45	55
6	47 33 36	47 33 46	47 33 56
7	37	47	57
8	38	48	58
9	39	49	59
0	40	50	60

&, Dot and Comma



&

Unit Per Pkt

&	CODE		
	Height 30 mm	Height 40 mm	Height 50 mm
White Colour	47 33 71	47 33 72	47 33 73
Black Colour	47 33 76	47 33 77	47 33 78

Dot and Comma

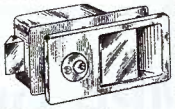
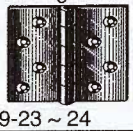
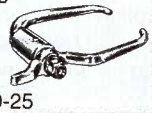
Unit Per Pkt

Dot, Comma	CODE		
	Height 30 mm	Height 40 mm	Height 50 mm
White Colour	47 33 81	47 33 82	47 33 83
Black Colour	47 33 86	47 33 87	47 33 88

MEMO

49

HARDWARE

Lock Sets P49-1~ 5	Push Latches and Locks P49-5 ~ 6	Butt Hinges P49-6 ~ 7	Padlocks and Door Fastening Items P49-7 ~ 11	Cabinet Door Accessories P49-11 ~ 12
Hooks and Fasteners P49-12 ~13	Drip Pans P49-13	Grab Rails P49-13	Holders and Racks P49-13	Curtain Rails and Accessories P49-13 ~ 14
Card Holders P49-14	Storm Rails P49-14	Schwepper Products - Dead Locks/ Cylinders P49-15 ~ 18	Schwepper Products - Handles/ Plates P49-18 ~ 20	Schwepper Products - Cabinet Locks  P49-20 ~ 22
Schwepper Products - Cabinet Hardware P49-22 ~ 23	Schwepper Products - Hinges/ Joint Hinges  P49-23 ~ 24	Bed Ladders P49-24~ 25	Schwepper Products - Waste Buckets P49-25	Schwepper Products - Dog and Bow Nut Assemblies  P49-25

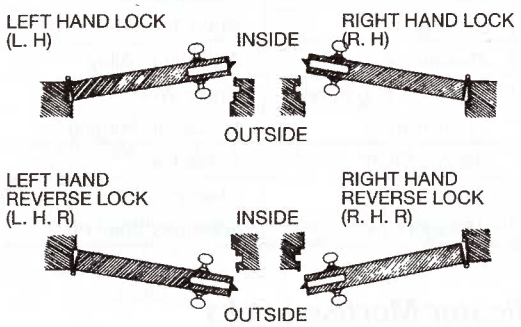
Hardware

These standard hardware products are selected from numerous kinds of interior hardware and fittings installed in ships. Chosen for their superior quality, design and easy installation, these hardware products are standardized and their value is well recognized overseas. These products are manufactured under the most careful observation of materials and process.

In order to assure the prompt, correct delivery of your requirements, please indicate the code, model number as well as the dimensions required.

"How To Determine the Hand of a Door"

Determining the correct kind of lock in relation to the directional swing of the door.



The hand of a door (left hand/right hand) is always determined as observed from the outside of the door. The outside is the weather side of an entrance door or the passage side of a room door. The outside of a communicating door is the side from which the hinges are not visible when the door is closed.

When ordering, please specify whether a left or right hand lock is required.

Door Lever Handles & Knobs

The models hereinafter described have been designed with two types of lever handles as well as 3 types of knobs. Please note that Fin Style Levers and Tulip Style Knobs are usually furnished respectively unless specified otherwise.

Fin Style | Horn Style | Tulip Style | Oval Style | Round Style

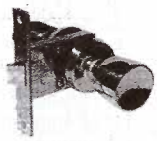
Lock Sets - Code / Type Table

CODE	Model No. (OHS)	Type
49 01 03	2115 (Ex. 2105)	Mortise Latch
05	2325 (Ex. 2205 & 2305)	Cylinder Mortise Lock
07	2110 (Ex. 2210)	Mortise Latch
08	2120 (Ex. 2210)	Indicator Mortise Latch
09	2170 (Ex. 2260)	Indicator Mortise Lock
13	2320 (Ex. 2310)	Cylinder Mortise Lock
33	2410	Lever Tumbler Mortise Lock
51	2510 (Ex. 2500)	Cylinder Mortise Dead Lock
54	2570	Cylinder Mortise Dead Lock
63	2910	Lever Tumbler Mortise Lock
75	3200	Indicator Rim Latch
83	3400	Lever Tumbler Rim Lock
87	3550	Steel Door Cylinder Rim Lock
95	3600	Steel Door Lever Tumbler Rim Lock
49 02 15-17	5075 (Ex. 5070)	Push Latch
41-49	5175 (Ex. 5170)	Push Lock
81-86	5351 (Ex. 5350)	Cylinder Cabinet Lock
49 03 18	5811 (Ex. 5810)	Push Insert Lock
19	5802	Push Insert Bolt

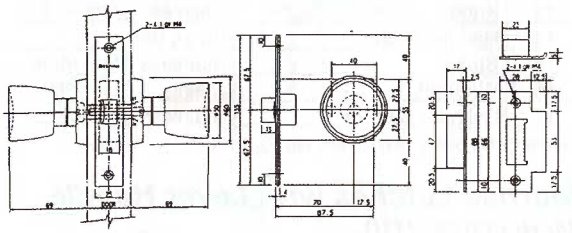
(to be continued)

Mortise Latches with Knob

Model OHS-2115



For Passage Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.

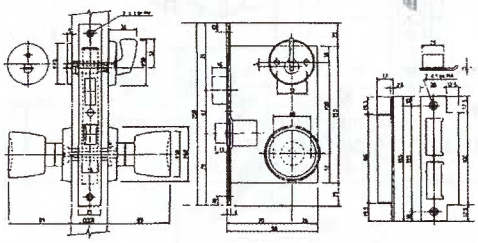


49 01 03	Mortise latch with knob Model OHS-2115 (left or right hand of lock)	Set

Cylinder Mortise Locks with Knob

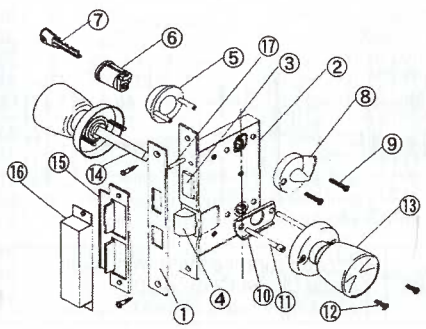
Model OHS-2325

For Private Room, Passage, Store Room and Toilet Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 05	Cylinder mortise lock with knob Model OHS-2325 (left or right hand of lock)	Set

Parts and Material List for OHS-2325 Mortise Lock

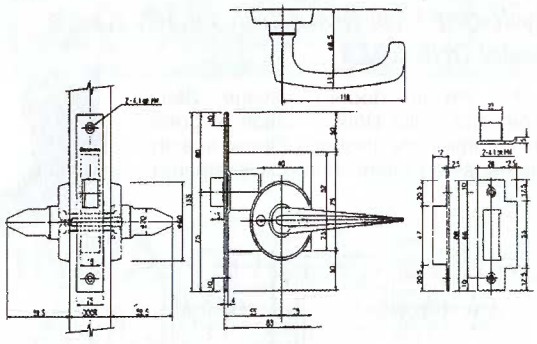


No.	Part Name	Material
1	Front	Stainless Steel Plate
2	Case	Stainless Steel Plate
3*	Dead Bolt	Stainless Steel
4*	Latch Bolt	Brass Bar(Extruded)
5	Cylinder Collar	Stainless Steel Plate
6	Cylinder Lock	Brass Bar
7	Key	Nickel Silver Plate
8	Thumbturn	Brass Bar Forging
9	Thumbturn Fitting Screw	Brass Wire
10*	Adjusting Plate	Stainless Steel Plate
11*	Adjusting Screw	Brass Bar
12*	Handle Fitting Screw	Brass Wire
13	Knob	Stainless Steel
14	Handle Shaft	Brass Bar
15	Strike	Stainless Steel Plate
16	Wrought Box	Stainless Steel Plate
17	Cylinder Set Pin	Stainless Steel Wire

Remark: No.3 & 4 : sold in set, No.10, 11 & 12 : sold in set

Mortise Latches with Lever Handle
Model OHS-2110

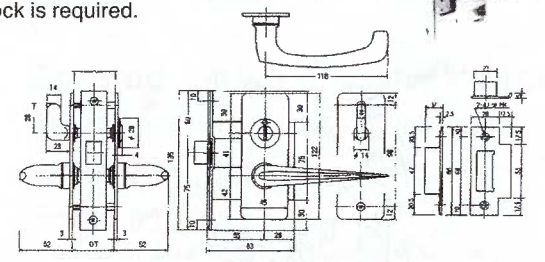
For Passage Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 07	Mortise latch with lever handle Model OHS-2110 (left or right hand of lock)	Set

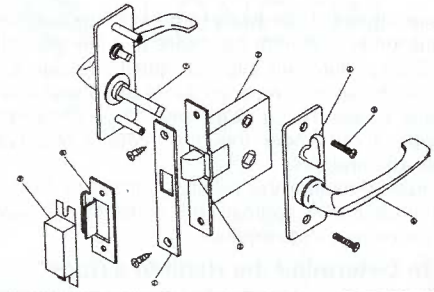
Indicator Mortise Latches
with Lever Handle Model OHS-2220

For Toilet and Mosquito Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 08	Indicator mortise latch with lever handle Model OHS-2220 (left or right hand of lock)	Set

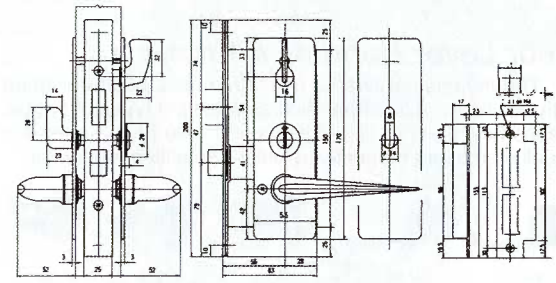
Parts and Material List for OHS-2220 Mortise Latch



No.	Part Name	Material
1	Front	Stainless Steel Plate
2	Case	Stainless Steel Plate
3	Latch Bolt	Brass Bar (Extruded)
4	Thumbturn	Aluminium Alloy
5	Handle Fitting Screw	Brass Wire
6	Lever Handle	Brass Bar Forging
7	Handle Shaft	Brass Bar
8	Strike	Stainless Steel Plate
9	Wrought Box	Stainless Steel Plate

Indicator Mortise Locks
with Lever Handle
Model OHS-2270

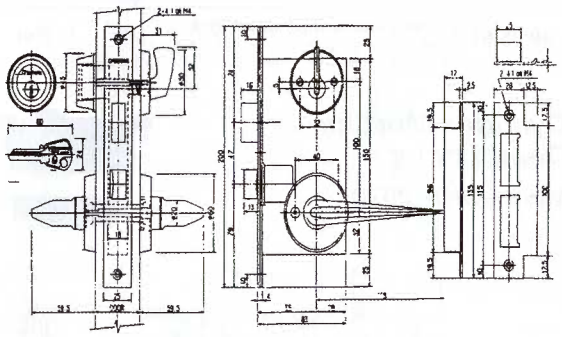
For Common Toilet Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 09	Indicator mortise lock with lever handle Model OHS-2270 (left or right hand of lock)	Set

Cylinder Mortise Locks
with Lever Handle
Model OHS-2320

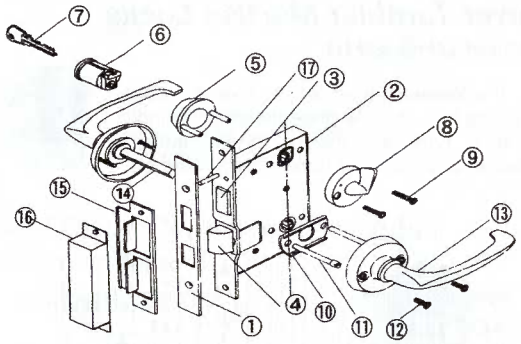
For Private Room, Passage, Store Room and Toilet Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 13	Cylinder mortise lock with lever handle Model OHS-2320 (left or right hand of lock)	Set

Parts and Material List for OHS-2320 Mortise Lock

When ordering, please ensure and indicate the set name, the model number, the part number and the name of correct furnishment as each parts differ in respective manufacturers and models.

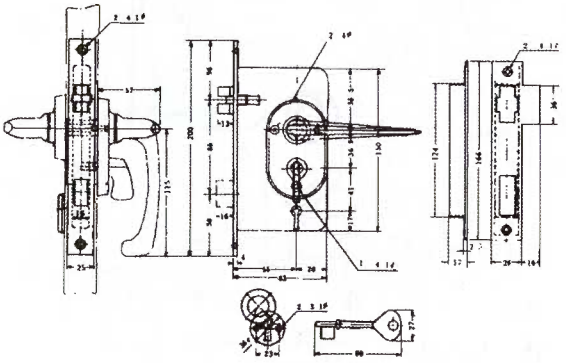


Unit Per Pc.

CODE	No.	Part Name	Material
49 01 14	5	Cylinder Collar	Stainless Steel Plate
15	1	Front	Stainless Steel Plate
16	2	Case	Stainless Steel Plate
17	3	Dead Bolt	Stainless Steel
18	4	Latch Bolt	Brass Bar (Extruded)
49 01 19	6	Cylinder Lock	Brass Bar
20	7	Key	Nickel Silver Plate
21	8	Thumbturn	Brass Bar Forging
22	9	Thumbturn Fitting Screw	Brass Wire
23	10	Adjusting Plate	Stainless Steel Plate
49 01 24	11	Adjusting Screw	Brass Bar
25	12	Handle Fitting Screw	Brass Wire
26	13	Lever Handle	Brass Bar Forging
27	14	Handle Shaft	Brass Bar
28	15	Strike	Stainless Steel Plate
49 01 29	16	Wrought Box	Stainless Steel Plate
30	17	Cylinder Set Pin	Stainless Steel Wire

Lever Tumbler Mortise Locks with Lever Handle Model OHS-2410

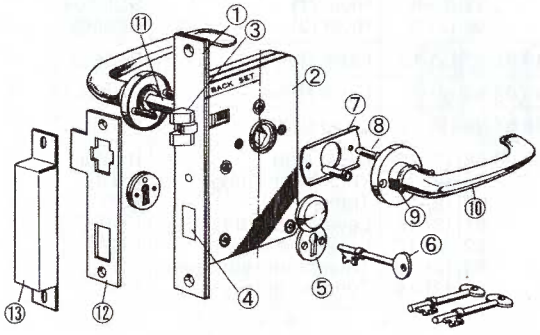
For Passage and Store Room Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 33	Lever tumbler mortise lock with lever handle Model OHS-2410 (left or right hand of lock)	Set

Parts and Material List (1) for OHS-2410 Tumbler Mortise Lock

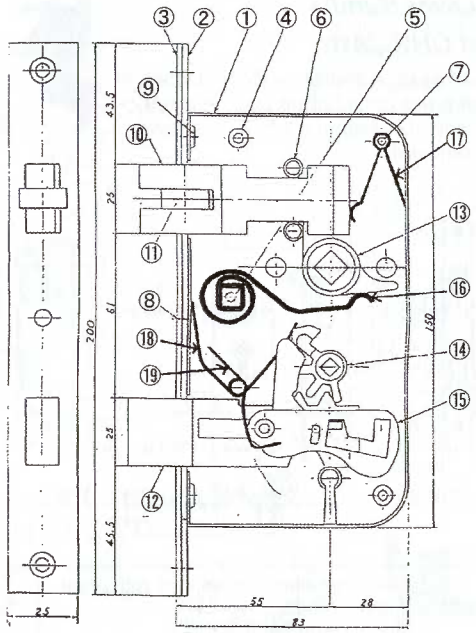
When ordering, please ensure and indicate the set name, the part number, and the name of correct furnishment.



Unit Per Pc.

CODE	No.	Part Name	Material
49 01 35	1	Front	Stainless Steel Plate
36	2	Case	Stainless Steel Plate
37	3	Latch Bolt	Brass Bar (Extruded)
38	4	Dead bolt	Brass Bar (Extruded)
39	5	Escutcheon	Stainless Steel Plate
49 01 40	6	Key	Brass Cast
41	7	Adjusting Pate	Stainless Steel Plate
42	8	Adjusting Screw	Brass Bar
43	9	Hdl Fitting Screw	Bras Wire
44	10	Lever Handle	Brass Bar Forging
49 01 45	11	Handle Shaft	Brass Bar
46	12	Strike	Stainless Steel Plate
47	13	Wrought Box	Stainless Steel Plate

Parts and Material List (2) for OHS-2410



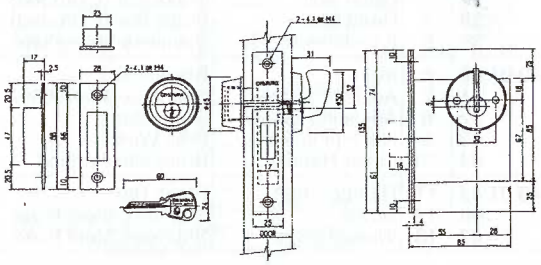
Unit Per Pc.

CODE	No.	Part Name	Material	Standard Quantity
49 01 36	(2)-1	Case	SUS304	1
35	(2)-2&3	Front (In & Out)	SUS304	1
49 03 51	(2)-4	Screw Pin (1)	BsBMD	3
52	(2)-5	Screw Pin (2)	BsBMD	1
53	(2)-6	Knock Pin	BsBMD	2
54	(2)-7	Screw Pin (3)	BsBMD	1
55	(2)-8	Rivet (1)	SUS304	1
56	(2)-9	Rivet (2)	BsBMD	2
49 01 37	(2)-10	Latch Bolt	BsBMD	1
49 03 57	(2)-11	Latch Roller	SUS304	1
49 01 38	(2)-12	Dead Bolt	BsDC	1
49 03 58	(2)-13	Lever Hub	BsBMF	1
59	(2)-14	Thumbturn Hub	BsDC	1
60	(2)-15	Tumbler	BsP	1
61	(2)-16	Lever Hub Spring	PBP	1
62	(2)-17	Latch Bolt Spring	PBP	1
63	(2)-18	Thumbturn Hub Spring	PBP	1
64	(2)-19	Tumbler Spring	PBP	1

Cylinder Mortise Dead Locks

Model OHS-2510

For Saloon, Sanitary Space and Toilet Doors. Made of brass and chrome plate finished.

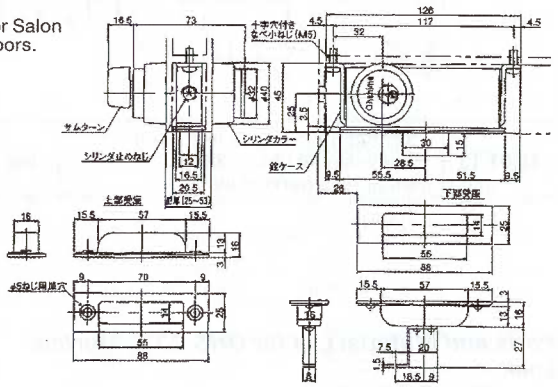


49 01 51	Cylinder mortise dead lock Model OHS-2510	Set

Cylinder Mortise Dead Locks

Model OHS-2570

For Salon Doors.

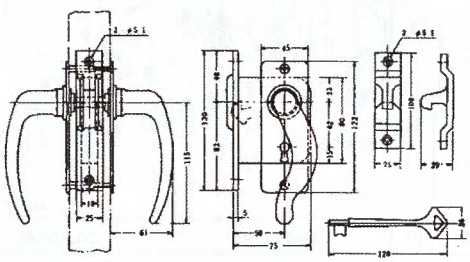


49 01 54	Cylinder mortise dead lock Model OHS-2570	Set

Lever Tumbler Mortise Locks

Model OHS-2910

For Wheel House Sliding Doors. Made of brass and chrome plate finished. Handle is lever type specified. Please specify whether a left or right hand lock is required.



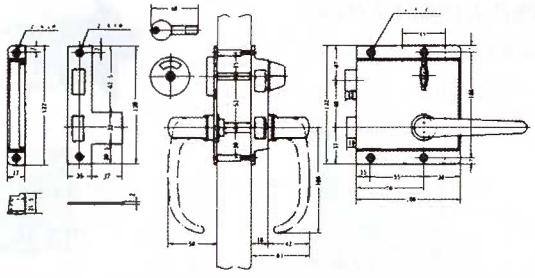
49 01 63	Level tumbler mortise lock for sliding door Model OHS-2910 (left or right hand of lock)	Set

Indicator Rim Latches

with Lever Handle

Model OHS-3200

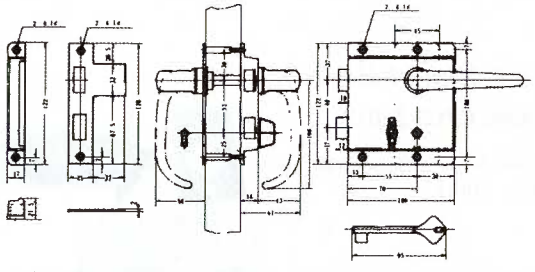
For Toilet Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 75	Indicator rim latch with lever handle Model OHS-3200 (left or right hand of lock)	Set

Lever Tumbler Rim Locks
with Lever Handle
Model OHS-3400

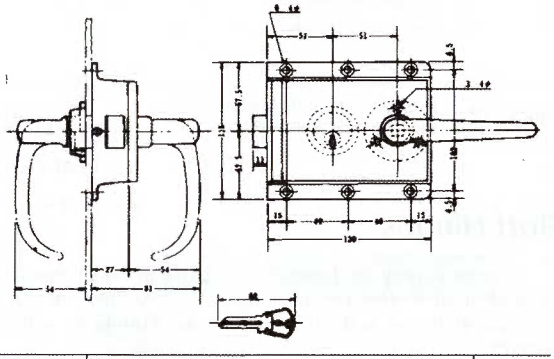
For Private Room and Store Room Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.



49 01 83	Lever tumbler rim lock with lever handle Model OHS-3400 (left or right hand of lock)	Set

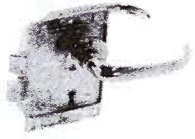
Steel Door Cylinder Rim Locks
with Lever Handle
Model OHS-3550

For Store Room, Engine Room, Emergency Exit and Water Tight Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.

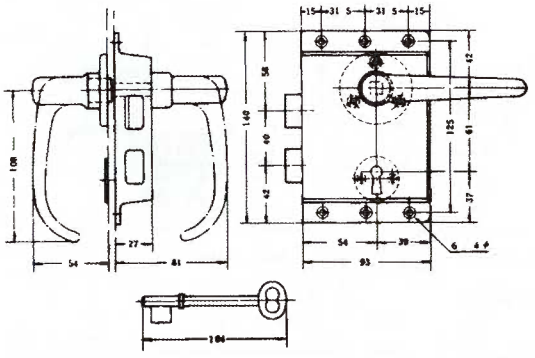


49 01 87	Steel door, cylinder rim lock with lever handle Model OHS-3550 (left or right hand of lock)	Set

Steel Door Lever Tumbler Rim Locks
with Lever Handle
Model OHS-3600



For Store Room, Engine Room and Water Tight Doors. Made of brass and chrome plate finished. Please specify whether a left or right hand lock is required.

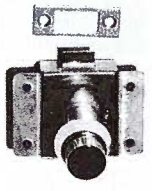


49 01 95	Steel door lever tumbler rim lock with lever handle Model OHS-3600 (left or right hand of lock)	Set

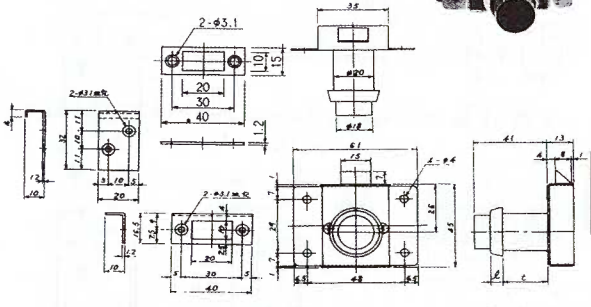
Push Latches and Locks

These models are designed with complicated sizes, and when ordering, please specify the size of "t" or "l" respectively as shown in the drawing.

Push Latches, Rim Type
Model OHS-5075



For Cabinet Drawers and Doors. The case is made of stainless steel.

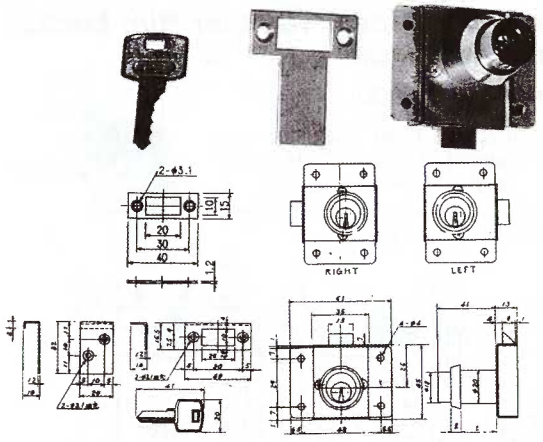


Unit Per Set

CODE	Model OHS No.	Dimension mm	
		t	L
49 02 15	5075	20	10
16		22	8
17		25	6

Push Locks, Rim Type
Model OHS-5175

For Cabinet Drawers and Doors. The case is made of stainless steel and the cylinder is brass. Please specify if it is required for drawers or doors and whether a left or right hand lock is required.



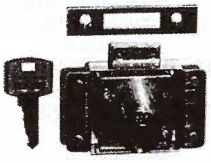
Unit Per Set

CODE	Model OHS No.	Description	Dimension mm t	L
49 02 41	5175-1	Drawer Lock	20	10
42			22	8
43			25	6
49 02 44	5175-2	Right Hand Lock	20	10
45			22	8
46			25	6
49 02 47	5175-3	Left Hand Lock	20	10
48			22	8
49			25	6

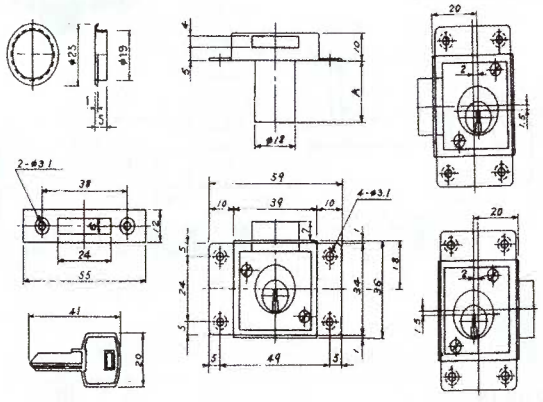
Cylinder Cabinet Locks, Rim Type

Model OHS-5351

For Cabinet Drawers and Doors. Made of brass. Please specify if it is required for drawers or doors, and whether a left or right hand lock is required.



Right Hand Lock



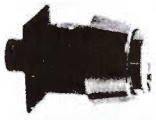
Left Hand Lock

Unit Per Set

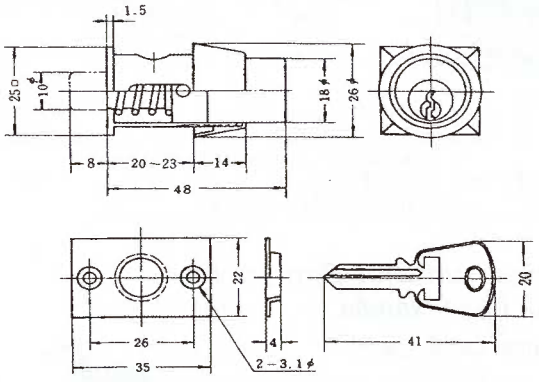
CODE	Model OHS No.	Description	Dimensions mm A
49 02 81	5351-1	Drawer Lock	22
82			25
49 02 83	5351-2	Right Hand Lock	22
84			25
49 02 85	5351-3	Left Hand Lock	22
86			25

Push Insert Locks

Model OHS-5811



For Sliding Cabinet Doors. Made of brass.

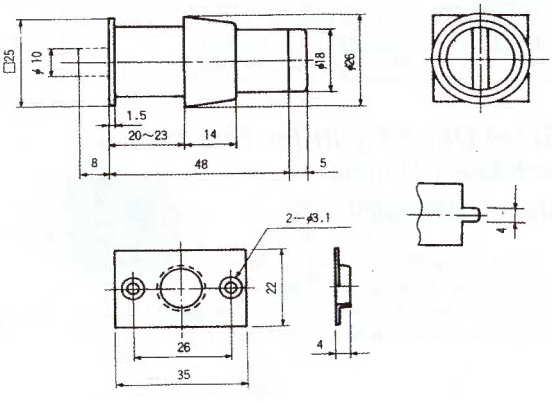


49 03 18	Push insert lock, Model OHS-5811, for sliding cabinet doors	Set

Push Insert Bolts

Model OHS-5802

For Sliding Cabinet Doors. Made of brass.



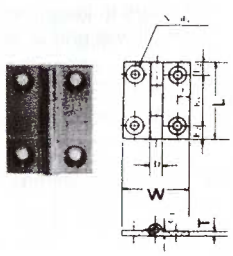
49 03 19	Push insert bolt, Model OHS-5802, for sliding cabinet doors	Set

Butt Hinges

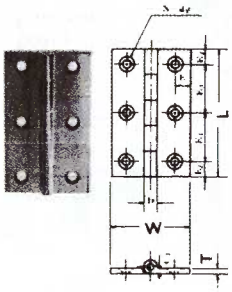
A wide variety of designs and sizes of butt hinges for cabinet or door use are available. Usually they are made of brass material and chrome plated. Furnished without screws.

In general, when ordering, please specify the opening width (not of its closed size), length, thickness, number of holes (screws) and screw size.

Butt Hinges
for Cabinet Door



49 04 01/02

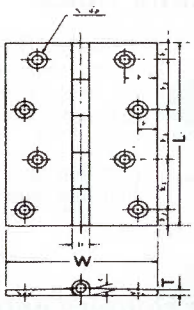


49 04 04–13

Unit Per Pr.

CODE	Material	Dimensions mm		Screw	
		L	W	ømm	Nos
49 04 01	Brass	32	25	3.1	4
02	"	38	25	3.1	4
04	"	51	30	3.1	6
05	"	64	38	3.5	6
06	"	76	50	3.5	6
49 04 11	Stainless Steel	50	29	3.1	6
12	"	75	54	3.8	6
13	"	65	38	3.5	6

Butt Hinges
for Cabin Door

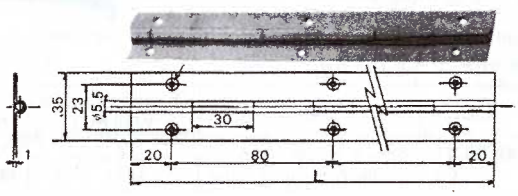


Unit Per Pr.

CODE	Material	Dimensions mm		Screw	
		L	W	ømm	Nos
49 04 08	Brass	90	54	4.1	8
09	"	100	70	4.1	8
14	"	127	90	4.5	10
15	Stainless Steel	102	71	4.1	8

Piano Hinges
for Small Cabinet

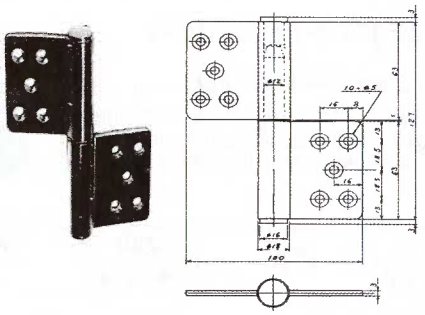
Made of brass. Length is made to order. Screw: ø3.1 mm.



49 04 19	Piano hinge, for small cabinet, brass width 36 mm × length to order	Pr.

Flag Hinges
for Cabin Door

Made of stainless steel. Please specify whether for right or left hand of use. L127 x W100 mm, Screws: ø 5 mm x 10.



49 04 36	Flag hinge for cabin door, SUS 127 × 100 mm, right hand	Pr.
37	Flag hinge for cabin door, SUS 127 × 100 mm, left hand	"

Padlocks
for Storage Door, Equipment Case

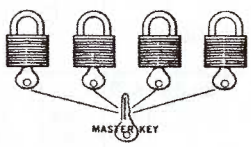
Made of brass. Each lock comes with 2 or 3 keys. Nominal size is its width. When ordering, please specify the size.

Unit Per Pc.

CODE	Size	CODE	Size
49 05 01	30 mm	**49 05 04**	45 mm
02	35 "	**05**	50 "
03	40 "	**06**	60 "

Master Key System Padlocks & Keys

All these locks have different keys, but a single master key can open any series..

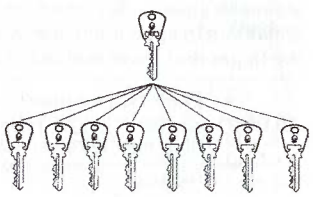


Unit Per Pc.

CODE	Padlock	CODE	Master Key only
49 05 11	40 mm	**49 05 08**	for 40 mm
12	50 mm	**09**	for 50 mm
13	60 mm	**10**	for 60 mm

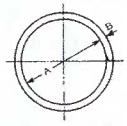
Master Key System

In this system, one master key is used to open all the locks and each lock still retains its own proper key.



7TH
49

Key Rings



A ring to hold keys. Made of spring steel.

Body diam: 2.5mm.

Unit Per Pc.

CODE	I.D.mm (A)	OHS No.	CODE	I.D.mm (A)	OHS No.
49 05 61	26	7952	**49 05 62**	33	7953

Combination Padlocks

3 digit Lock / 4-digit Lock

Available 3 resettable dial combination or 4 resettable dial combination. 4-digit lock is more difficult to crack than the 3 digit lock.

Unit Per Pc.

CODE	Digit	CODE	Digit
49 05 63	3	**49 05 64**	4

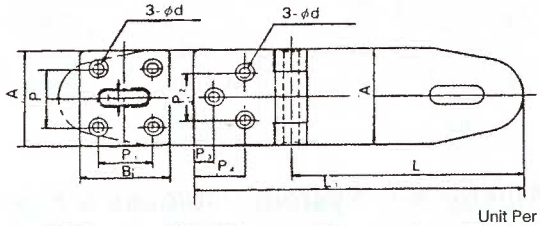
Standard Dial Combination Lock

Fixed 3 digit combination lock for keyless convenience. Metal body with stainless steel cover, hardened steel shackle.

49 05 65	Padlock, combination, standard dial	Pc.

Padlock Hasps

For Storage Door, Equipment Case.



Unit Per Pr.

CODE	Dimensions mm				Screws Ømmx Nos
	L	L1	A	B	
49 05 16	52	72	28	28	3.1 x 3 & 3.5 x 4
19	68	98	30	25	4.1 x 8
17	80	110	30	27	4.1 x 7
20	85	117	37	31	4.1 x 8
18	102	140	40	40	3.1 x 3 & 3.5 x 4

Flush Bolts for Door

For Cabin Doors (Double Leaf Doors). Made of stainless steel. Designed for cabin doors or double leaf doors to keep them opened or closed still, fixed at the upper and lower end of the door.

49 05 21	Flush bolt for door, stainless steel width 22 mm × length 148.5 mm × depth 35.5 mm, screws: ø3mm × 6	Pc.

Ref. No.: OHS-4432

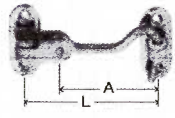
Barrel Bolts for Door

For Cabin Doors (Double Leaf Doors). Made of brass. Designed for cabin doors or double leaf doors to keep them opened or closed. Fixed at the upper and lower end of the door.

Unit Per Set

CODE	Dimensions mm			OHS No.
	Plate Length	Width	Screws	
49 05 23	105	36	ø3.1 mm × 6	4441
24	150	35	ø3.1 mm × 2 & ø3.5 mm × 4	-

Silent Door Hooks



For Cabin Doors. The base is made of brass and the hook is stainless steel. No matter how the ship shakes, there will be no metal noise, because plastic washers are inserted into the adjoining parts. Screws: ø4.1 mm x 4.

Unit Per Set

CODE	L mm	A mm	OHS No.
49 05 31	100	66	4505
32	200	166	4506
33	300	266	4507
34	400	366	4508

Indicator Bolts

For Toilet Doors. The base is made of stainless steel and sign plate is plastic. Base plate size is 70 x 46mm. Screws: 3.1 mm x 4.

49 05 36	Bolt, indicator, for toilet door Stainless steel, 70 × 46 mm	Set

Ref. no.: OHS 4422

Door Holders with Cushion

Spring Hook Type

Made of brass. For use on lightweight cabin doors. Opening between the door and the wall when fully opened must be more than 65 mm. Screws : ø4.1 mm x 5.

Angle Adjusting Type

Made of brass. For use on Cabin Doors. Adjustable in a 90 degree angle between the door and the wall by screwing three different holes. Needs a 75 mm gap between the door and the wall for installation.

Screws: ø 4.1 mm x 6.

Unit Per Set

CODE	Type	Opening Door & Wall mm	OHS No.
49 05 41	Spring Hook Type	65	4511
43	Angle Adjusting Type	75	4513

Door Catches

Fixed Type

Made of a phosphor bronze spring with a brass holder. A receptacle piece is mounted on the wall beside the door. When the door is fully opened, a clamp on the door catches on the receptacle and is held open. Screws (ø4.1 mm x 8) used to install pieces.

Swing Type

Made of a phosphor bronze spring with a brass holder. Screws: ø4.1 mm x 8.

Unit Per Set

CODE	Type	OHS No.
49 05 46	Door catch, fixed type	4531
47	Door catch, swing type	4532

Door Adjusters

Made of stainless steel. Designed to keep the door open in such a way, that each person may set the opening space by adjusting a screw. Overall length is 350 mm. Screws: ø4.1 mm x 5.

49 05 49	Door adjuster, stainless steel overall length 350 mm	Set

Ref. No.: OHS 4541

Door Cushions

49 05 51

Made of a stainless steel base with a rubber bumper. Prevents mechanical damage which may occur between the wall and the door. Base diameter is 48 mm, rubber diameter is 20 mm, and height altogether 22 mm. Screws: ø4.1 mm x 3.

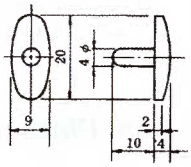
49 05 52

Same as above but for light weight door use. Made of rubber with an inserted screw for fitting. 35 mm in diam, and 20 mm in height.

Unit Per Pc.

CODE	Description	OHS No.
49 05 51	Door cushion, rubber w/s. steel base, 48 x 22 mm	4601
52	Door cushion, rubber 35 x 20 mm	4602

Door Silencers



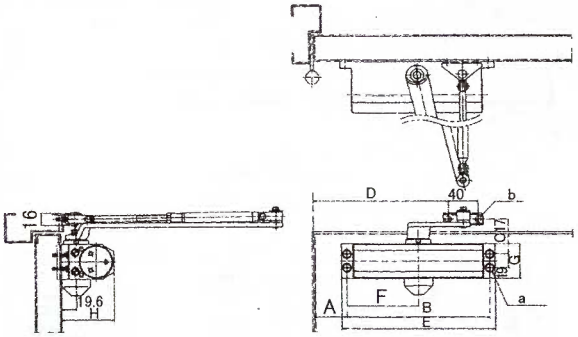
Designed for closing doors without a "bang". Made of rubber, and used for wooden doors (white coloured).

49 05 57	Door silencer rubber, for wooden door	Pc.

Ref. No. OHS-4612

Door Closers Standard Type

Made of aluminium alloy diecasting and metallic silver finished. For dimensions, please refer to the drawings and the dimension column.



How to order: CODE

Door closer, standard type, MAXIMUM DOOR WEIGHT (kgs)

Unit Per Set

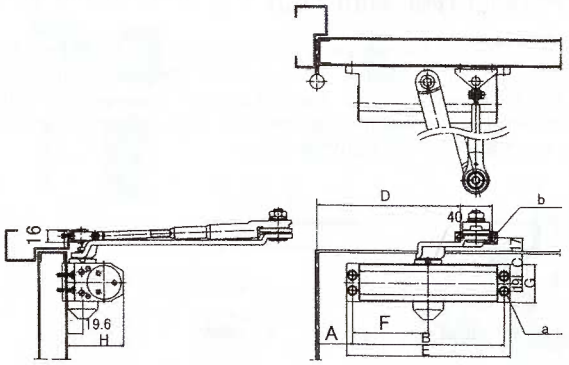
CODE	Dimensions mm							Max. Door Weight (kgs)
	A	B	C	D	F	G	H	
49 06 01	49	162	26.5	170	81	41	64.5	15- 30
02	45	190	28	180	95	48	70.5	25- 45
03	61	208	28	205	94	48	70.5	40- 65
04	65	230	29.5	220	94	48	70.5	60- 85
05	70	260	31	240	130	45	85	80-120

Ref.No.: OHS 4741-4745

Door Closers

Standard Type with Stop

The door can be stopped at an opening angle between 90° and 180°. Made of aluminium alloy diecasting and metallic silver finished. For dimensions, please refer to the drawings and the dimension column.



How to order: CODE

Door closer, standard type with stop, MAXIMUM DOOR WEIGHT (kgs)

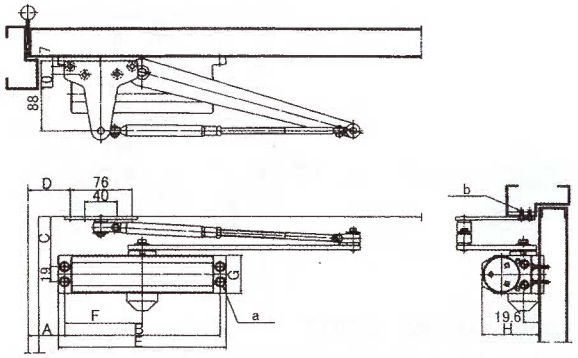
Unit Per Set

CODE	Dimensions mm							Max. Door Weight (kgs)
	A	B	C	D	F	G	H	
49 06 11	49	162	26.5	170	81	41	64.5	15- 30
12	45	190	28	180	95	48	70.5	25- 45
13	61	208	28	205	94	48	70.5	40- 65
14	65	230	29.5	220	94	48	70.5	60- 85
15	70	260	31	240	130	45	85	80-120

Ref.No.: OHS 4751-4755

Door Closers Parallel Type

Made of aluminium alloy diecasting and metallic silver finished. For dimensions, please refer to the drawing and the dimension column, and specify whether the door closer is for left or right hand use.



How to order: CODE

Door closer, parallel type, LEFT OR RIGHT HAND USE, MAXIMUM DOOR WEIGHT (kgs)

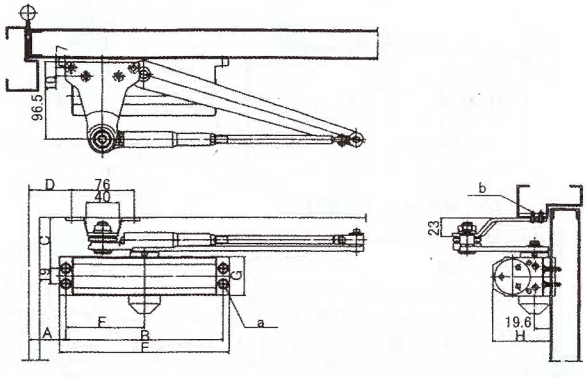
Unit Per Set

CODE	Dimensions mm							Max. Door Weight (kgs)
	A	B	C	D	F	G	H	
49 06 21	49	162	60	42	81	41	64.5	15- 30
22	45	190	63	52	95	48	70.5	25- 45
23	61	208	63	77	114	48	70.5	40- 65
24	65	230	64.5	92	136	48	70.5	60- 85
25	110	260	66.5	152	130	45	85	80-120

Ref.No.: OHS 4761-4765

Door Closers
Parallel Type with Stop

The door can be stopped at an opening angle between 70° and 180°. Made of aluminium alloy diecasting and metallic silver finished. For dimensions, please refer to the drawing and the dimension column. Also, specify if the door closer is for left or right hand use.



How to order: CODE

Door closer, parallel type with stop, LEFT OR RIGHT HAND USE, MAXIMUM DOOR WEIGHT (kgs)

Unit Per Set

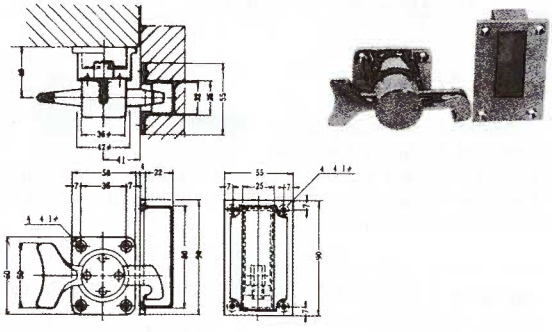
CODE	Dimensions mm							Max. Door Weight (kgs)
	A	B	C	D	F	G	H	
49 06 31	49	162	60	42	81	41	64.5	15- 30
33	45	190	63	52	95	48	70.5	25- 40
35	61	208	63	77	114	48	70.5	40- 65
37	65	230	64.5	92	136	48	70.5	60- 85
39	110	260	75	152	130	45	88.2	80-120

Ref.No.: OHS 4771-4775

Door Fasteners, Hook Type
for Sliding Door

Made of brass. It is rotary type and easily installed/ operated. When it is not in use, the hook is vertically fixed by a spring.

Screws: ø 4.1 mm × 8.

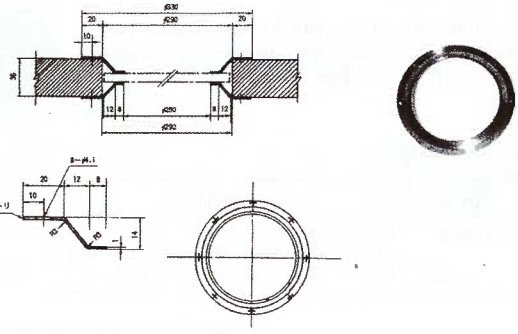


49 06 46	Door fastener, hook type, for sliding door	Set

Ref. No.: OHS 4891

Round Frames for Peep Glass

For fitting a peep glass. Made of stainless steel.

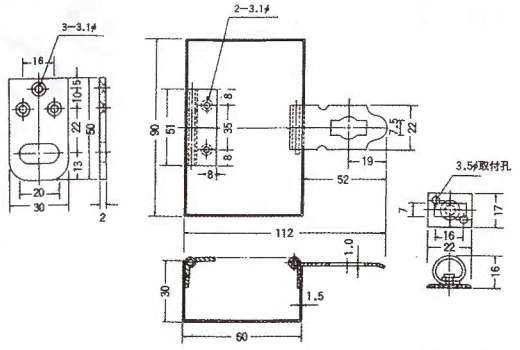


49 06 51	Frame, round, stainless steel, 250mm dia, for peep glass	Pc.

Ref. No. OHS-4903

Seal Plate and Cover

For sealing a bonded store room by fixing on the door and door frame. Can be locked with padlock cylinder. Made of stainless steel.



49 06 53	Seal plate & cover, stainless steel, W60×T30×L90 mm for sealing bonded store room	Pc.

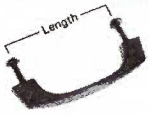
Ref. No. OHS-4911

Cabinet Pulls

To be installed as pulls for drawers or cabinet doors. When ordering, please indicate the length between the two screws as indicated in the drawing.

"A" Type

Made of brass.

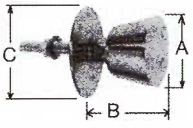


Unit Per Pc.

CODE	Length Between Screws	Overall Length	OHS No.
49 08 01	75 mm	100 mm	6001
02	100 "	123 "	6002
03	125 "	150 "	6003

Cabinet Knobs
for Cabinet Door

Made of brass.

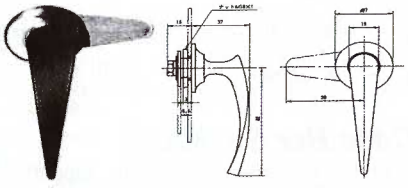


Unit Per Pc.

CODE	Dimensions mm		
	A	B	C
49 08 21	16 mm	18 mm	16 mm
22	22 "	25 "	32 "
23	30 "	35 "	40 "

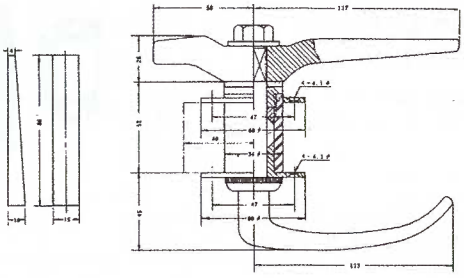
Steel Locker Handles

A spare handle of the steel locker. Made of zinc alloy die casting and steel.



49 08 26	Steel locker handle	Pc.

Tight Door Clip Handles
for Weather Tight Door



To be used for the entrance doors which requires tightly sealing on the deck or in engine room. Made of brass.

49 08 28	Handle, clip, tight door, brass for weather tight door	Pc.

Ref. No. OHS-4451

Cabinet Catches

Designed as a stopper for cabinet doors (filing cabinets, etc.) in closed position. Can be used also for drawers when fitted to the backside of the drawer.

Unit Per Set

Illustration	CODE	Type	Material	Screw Ø	Screw No
	49 08 31	B	Steel	3.5 4.0	2 2
	32	C	Phosphor Bronze	2.4	4
	33	D	Phosphor Bronze	3.1	4
	34	Box	Steel & Plastic	3.2	4

Ref No: (B) OHS 6212/-/(D) 6214/(Box) 6215

Drawer Keepers

A stopper to prevent a door from opening by vibration or rolling and pitching of the ship. Length of cross plate is equal. Plate size W 12 mm x L 45 mm. Screws: ø3.1 mm x 2. Made of stainless steel.

49 08 36	Drawer keeper, stainless steel 12 × 45 mm	Pc.

Ref. No. OHS 6222

Fixed Knobs
for Turnbuckle

When the turnbuckle is used for double leaf doors, this knob is fit on the left door as a "decoration knob".

Unit Per Pc.

CODE	Handle Diam. mm	Remark
49 08 46	30	For cupboard turnbuckle
47	40	"

Friction Latches
for Cabinet Door

Designed to keep cabinet doors closed. Made of stainless steel. Plate size is 19 x 53 mm.

Screws: ø2.7 mm x 4.

49 09 03	Friction latch for cabinet door 19 x 53 mm	Set

Ring Pull Latches
for Cabinet Door

To be used to keep the door open or as a handle. Made of zinc alloy die casting.

Unit Per Pc.

CODE	Size mm	Screw ømm x Nos.	For	OHS No.
49 09 05	15×45×68	3.5×4 & M4×2	Cabinet door	6334
06	20×75×60	4.1×6	Chart table	6335

Barrel Bolts
for Cabinet

For double leaf doors. Made of steel and zinc alloy die casting. Plate size is 27 x 43 mm.

Screws: ø2.7 mm x 8.

49 09 13	Barrel bolt for cabinet, steel and zinc alloy die casting, plate size 27 x 43 mm	Set

Ref. No.: OHS 6431

Cupboard Adjusters

This overhead door holder prevents open cabinet doors from "slamming" when the vessel is rolling or pitching. Made of brass. Maximum extended length is 166 mm.

Screws: ø3.1 mm x 4.

49 09 16	Cupboard adjuster maximum length, 166 mm	Pc.

Ref. No.: OHS 6551

Coat Hooks

To be used in Wardrobe Closets, or Cabin Walls, etc. for hanging clothes, towels, etc.

A Type

C Type

Unit Per Pc.

CODE	Type	Base Size mm	Screw ømm×Nos.	Material
49 10 02	A	24 × 39	3.1 × 2	Zinc alloy die casting
03	C	18 × 62	3.5 × 2	Aluminium alloy

Ref No.: (A) OHS 6611 / (C) -

Hat Hooks

These hooks can be used in lockers, passage ways, on cabin walls, etc.

49 10 10/11

49 10 12

Unit Per Pc.

CODE	Material	Base Size mm	Screw ømm × Nos.	OHS No.
49 10 10	Zinc Alloy Die Casting	30 × 37	4.1 × 4	7282
49 10 11	Brass	30 × 37	4.1 × 4	-
12	Brass	35 × 52	4.1 × 3	-

Towel Hooks

Designed with two hooks for hanging towels to walls. Made of brass.

Screws: ø3.5 mm x 2.

49 10 16	Towel hook, brass, plate size 86 × 22 mm	Pc.

Ref. No.: OHS 7001

Sash Hangers for Frame

Designed for fitting picture frames to cabin walls. Made of brass.

Unit Per Pr.

CODE	Plate Size mm	Screw ømm × Nos	OHS No.
49 11 01	Width 20 × Length 35	2.7 × 2	6701
02	Width 22 × Length 25	2.7 × 8	6702

Setting Plates

For fitting cabinets, frames and those without a back plate onto walls. Both are made of stainless steel.

Screws: ø3.1 mm x 3.

49 11 06/07
Flat

49 11 08
L-type

Unit Per Pc.

CODE	Type	Width mm	OHS No.
49 11 06	Flat	30	6711
07		40	6712
49 11 08	L-Type	40	6715

Mirror Fasteners

Designed to fix mirrors or similar fragile items to the wall. A soft corner packing is located on the back side to avoid cracking mirrors, etc. Made of stainless steel.

Screws: ø3.1 mm x 2.

Unit Per Pc.

CODE	Size mm	Screws	OHS No.
49 11 11	30 × 20	3.1 mm × 2	6721
12	50 × 20		-

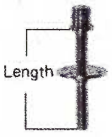
Book Case Bar Sockets

Designed for bookshelves, etc. to support wood or metal bars which divide the shelf or cabinet into different compartments. Made of stainless steel. Screws: ø2.7 mm x 2.

49 11 16	Book case bar socket, stainless steel inner size width 12 × Length 25 mm	Pc.

Ref. No.: OHS 6731

Leg Fasteners



For securing the legs of tables, chairs, cabinets, etc. to the floor. Made of a brass screw bolt of ø12 mm and a 53 mm flange containing 4 screw holes of ø4.1 mm. 100 mm in length.

49 12 01	Leg fastener, brass, length 100mm	Pc.

Ref. No.: OHS 6751

Chair Fasteners

Made of brass and stainless steel. Designed to secure chairs to accommodation floors. When ordering, please measure the height between the seat bottom and the floor referring to the list below.

Screws: ø4.1 mm x 8.

Unit Per Set

CODE	Height Between Seat & Floor mm	OHS No.	CODE	Height Between Seat & Floor mm	OHS No.
49 12 11	165 - 210	6761	**49 12 16**	310 - 360	6766
12	205 - 240	6762	**17**	350 - 400	6767
13	230 - 270	6763	**18**	390 - 420	6768
14	260 - 290	6764			
15	285 - 315	6765			

Drip Pans

with Drain Tube

Used as a drip saucer on a window frame. Made of brass.

Overall size: L153 x W54.5 mm.
Screws: ø2.7 mm x 4.

49 13 03	Drip pan, brass, 153 × 54.5 mm	Pc.
04	Drip pan, brass, with drain tube 153 × 54.5 mm	Pc.

Ref. No.: OHS 6931/6932

Grab Rails

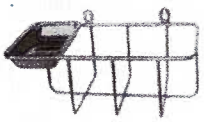
Designed to give a firm hold during ship movements. The corner parts are made of brass and the center bar is made of heavy duty plastic. The length from center to center is 250 mm and the diameter of the bar is 25 mm.

Screws : ø4.1 mm x 6.

49 13 11	Grab rail, brass bracket & plastic grab, 250 × 25 mm	Pc.

Ref. No.: OHS 7031

Sponge and Soap Holders



Designed for holding cleaning equipment such as soap, sponges, etc. Can be easily installed on sinks or wash basins. Made of brass.

49 14 01	Sponge & soap holder brass, 243 × 125 × 77.5 mm	Pc.

Ref. No.: OHS 7101

Thermos Holders

Designed to hold and fit thermos bottles. Made of stainless steel.

Size: ID160 mm x Depth 120 mm.
Screws: ø4.1 mm x 4.

49 14 13	Thermos holder, stianless steel ID 160 mm × depth 120 mm	Pc.

Ref. No.: OHS 7127

Net Racks for Bed

For storing small personal effects close to the bed or other places as required.

Unit Per Pc.

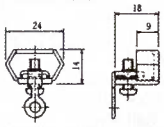
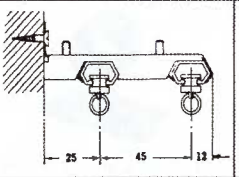
CODE	For	Size mm	Screw ømm × Nos	Material	
				Bracket	Net
49 14 51	Bed	224 × 137	4.1 × 4	Brass	Cotton

Ref. No.: OHS 7241

Rails and Fittings for Curtain

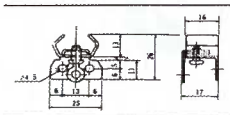
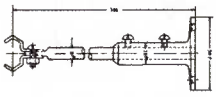
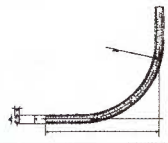
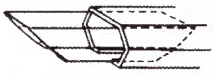
For fitting into shower rooms, over portholes, square windows, cabin doors, etc.

Unit Per Pc.

Illustration	CODE	Type	Material
	49 15 01	Rail 2 mtr	Stainless Steel
	02	Runner	Plastic
	**03**	Cap	Steel & Plastic
	04	Single Bracket	Stainless Steel
	**05**	Double Bracket	Stainless Steel

(to be continued)

Unit Per Pc.

Illustration	CODE	Type	Material
	**49 15 06**	Socket	Stanless Steel & Steel
	**07**	Sus-pender	Stainless Steel & Hydranalium
	**08**	Curved Rail Length at Random	Stainless Steel
	**09**	Joint	Stainless Steel
	10	Curtain Ring 30ø	Stainless Steel
	11	Curtain Ring 35Ø	Stainless Steel

Tassel Hooks for Curtain

Made of brass.
Screws: ø3.1 mm x 2.

49 15 16/17

49 15 18

Unit Per Pc.

CODE	Shape	Size mm	OHS No.
49 15 16 17	Oval	19 × 46 25 × 60	7581 7582
18	Square	16.5 × 28	7584

Card Holders

Vertical

Horizontal

Unit Per Pc.

CODE	Type	Size mm		Material	Screw ø mm Nos
		Inside	Holder		
49 16 01	Vertical	50 × 85	70 × 100	Aluminium	2.3 × 4
02	Horizontal	95 × 49	118 × 66	Brass	1.8 × 4

Ref. No.: OHS 7918/7929

Storm Rail Brackets

49 17 51/52 End Bracket

49 17 55 Center Bracket

For use with storm rail. Made of brass. When ordering, please make sure that the inside diameter of the bracket will suit the rod. For End Bracket, please specify whether it is for left or right hand use.

Unit Per Pc.

CODE	Remark	I.D. mm	Screw	OHS No.
49 17 51	End Bracket (R)	33	5ø × 4	8021-2
52	" (L)			8021-3
49 17 55	Center Bracket	33	5ø × 4	8026

R: Right Hand L: Left Hand

Hand Rail Brackets
for Chart Table

49 18 01/02 End Bracket

49 18 03 Center Bracket

Made of brass. They are used as chart table hand rails. When ordering, please indicate the inside diameter of the bracket. For the End Bracket, please specify whether it is for right or left hand use.

Unit Per Pc.

CODE	Remark	I.D. mm	Screw	OHS No.
49 18 01	End Bracket (R)	25.5	4.1ø × 4	8000-2
02	" (L)			8000-3
49 18 03	Center Bracket	25.5	4.1ø × 4	8001

R: Right Hand L: Left Hand

Rail Pipes

49 19 04

A brightened steel and plastic pipe to be used as a curtain hanger, luggage rack, storm rail, etc. Maximum length: 3,600 mm. Colour: Ivory or Gray.

49 19 09

A stainless steel pipe for curtain hanger, luggage rack and storm rail, etc. Maximum length: 4,000 mm.

49 19 04

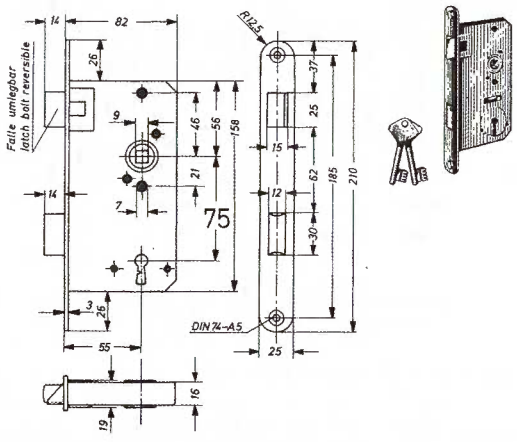
49 19 09

Unit Per Pc.

Plastic Coated Steel 3,600 mm Length			Stainless Steel 4,000 mm Length		
CODE	O.D. mm	OHS No.	CODE	O.D. mm	OHS No.
49 19 04	32	8104	**49 19 09**	32	8114

Schwepper Products

Mortise Locks

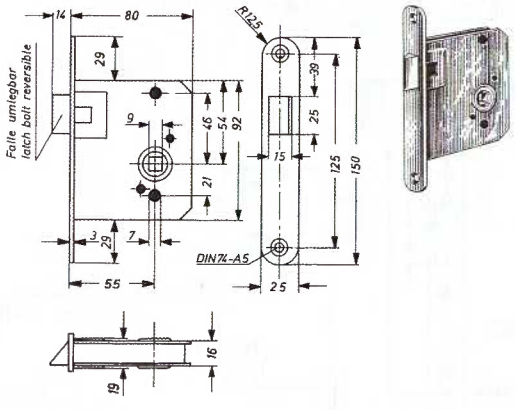


Screws: DIN74-A5 (5 mm diam) × 2

CODE	Type of Hand	Material	Unit
49 21 01 **02**	Left hand Right hand	Brass satin chrome	Set "

Name of Mfr.: Schwepper No. 3201

Mortise Latchs

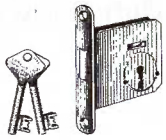


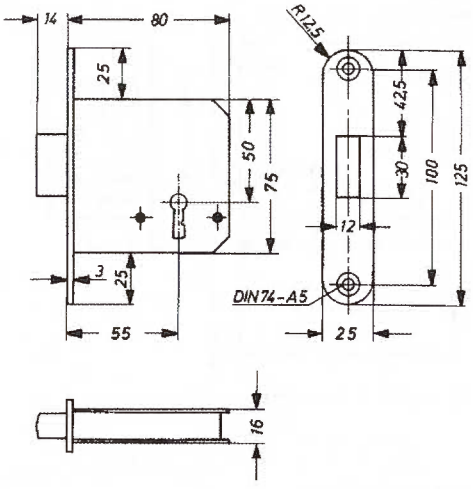
Screws: DIN74-A5 (5 mm diam) × 2

CODE	Type of Hand	Material	Unit
49 21 05 **06**	Left hand Right hand	Brass satin chrome	Set "

Name of Mfr.: Schwepper No. 3234

Mortise Dead Locks



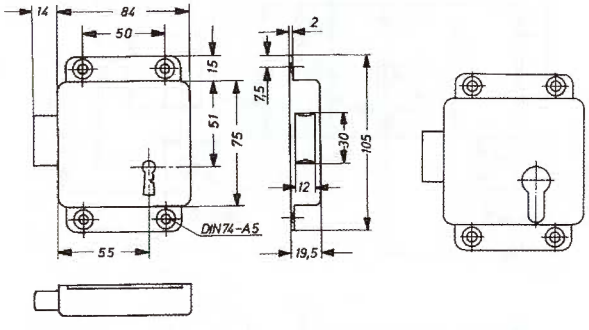


Screws: DIN74-A5 (5 mm diam) × 2

49 21 11	Mortise dead lock, brass satin chrome	Set

Name of Mfr.: Schwepper No. 1172

Rim Dead Locks

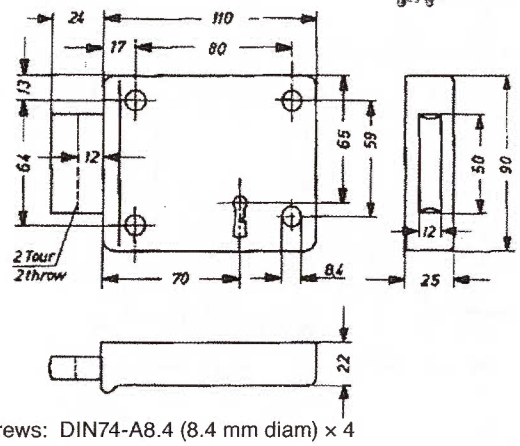


Screws: DIN 74-A5 (5 mm diam) × 4

CODE	Type of Hand	Opening Direction	Material	Unit
49 21 21 **22**	Left hand	Outward Inward	Brass satin chromed	Set "
49 21 23 **24**	Right hand	Outward Inward		Set "

Name of Mfr.: Schwepper No. 3239

Rim Dead Locks



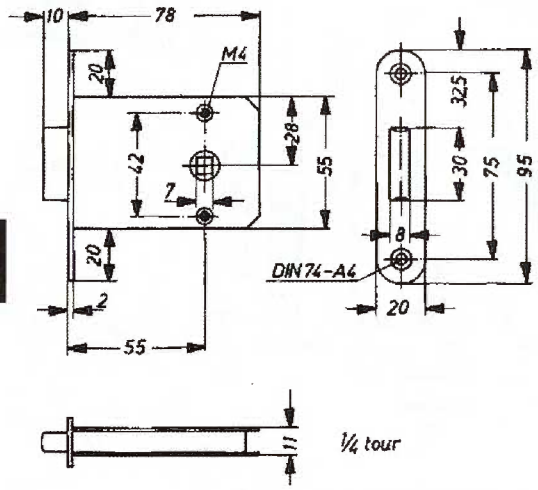
Screws: DIN74-A8.4 (8.4 mm diam) × 4

Unit Per Set

CODE	Direction	Material
49 21 25	Left hand outward	Brass satin chromed
26	Right hand inward	
27	Right hand outward	
28	left hand inward	

Name of Mfr.: Schwepper No. 3240

Mortise Indicator Bolts with Red-Green Indicator



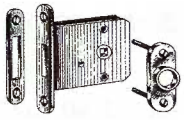
Material: Brass stain chrome

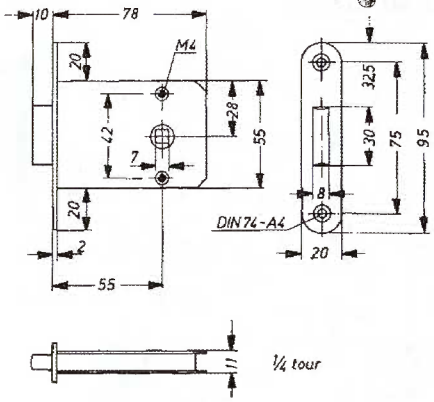
Screws: DIN 74-A5 (5 mm diam) × 2

CODE	Indicator	Locking Device	Suitable Door Thickness	Unit
49 21 31	Red - Green	Non	36 - 40 mm	Set
32	Red - Green	With	36 - 40 mm	"

Name of Mfr.: Schwepper No. 2546/2546A

Mortise Indicator Bolts





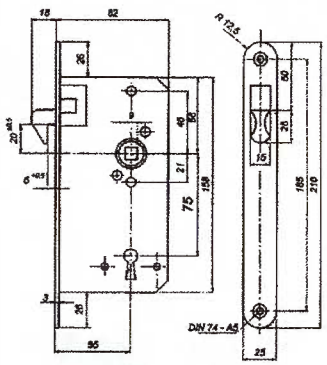
Screws: DIN74-A5 (5 mm diam) × 2

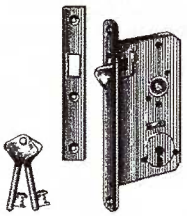
49 21 35	Mortise indicator bolt, brass satin chrome, for door thickness 35 to 40 mm	Set

Name of Mfr.: Schwepper No. 2543

Mortise Sliding Door Locks

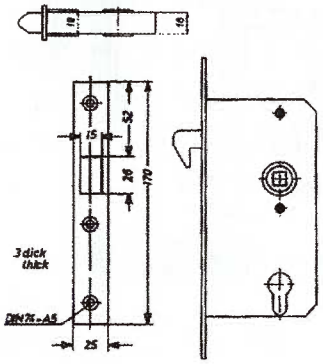
Key Length: 85 mm





Screws: DIN74-A5 (5 mm diam) × 5

49 21 41/42



Screws: DIN74-A5 (5 mm diam) × 3

49 21 43

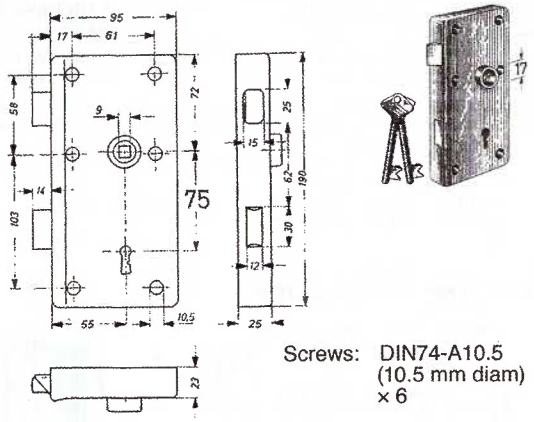
Unit Per Set

CODE	Material	Remark
49 21 41	Brass Satin Chromed	(3210S)
49 21 42		Masterkeyed (3201SH)
49 21 43		(3201SZ)

Name of Mfr.: Schwepper No. 3201S, 3201SH, 3201SZ

7TH
49

Rim Locks
for Heavy Steel Doors with Rubber Sealing



Screws: DIN74-A10.5 (10.5 mm diam) × 6

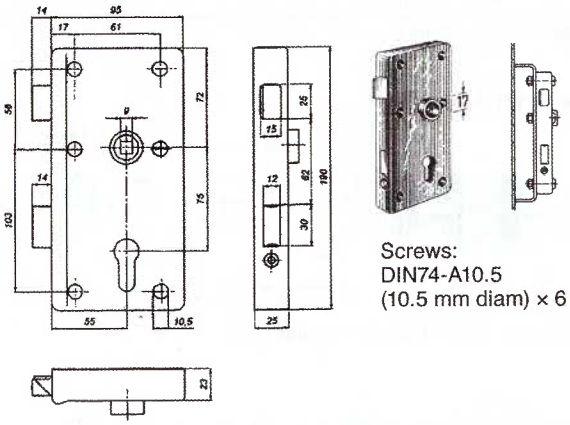
Unit Per Set

CODE	Direction	Material
49 21 51	Left hand inward	Stainless Steel (3827)
52	Left hand outward	
53	Right hand inward	
54	Right hand outward	
49 21 55	Left hand inward	Brass Satin Chromed (3027)
56	Left hand outward	
57	Right hand inward	
58	Right hand outward	

Name of Mfr.: Schwepper No. 3827, 3027

General Remark: Masterkeying possible on both model on request. (Masterkeyed No. 3827H, 3027H)

Rim Locks
for Heavy Steel Doors with Rubber Sealing



Screws: DIN74-A10.5 (10.5 mm diam) × 6

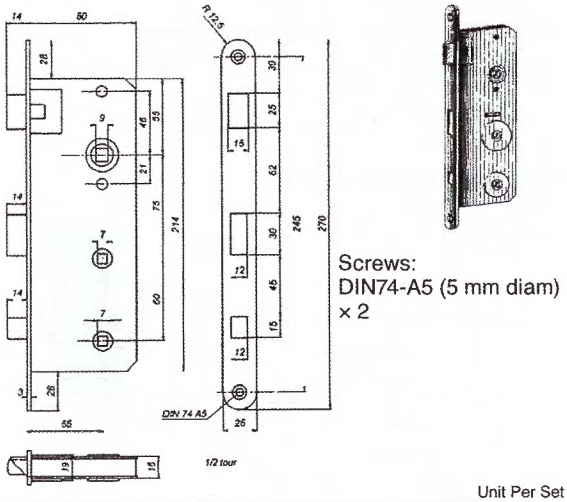
Unit Per Set

CODE	Direction	Material
49 21 61	Left hand inward	Stainless Steel (3827 Z)
62	Left hand outward	
63	Right hand inward	
64	Right hand outward	
49 21 65	Left hand inward	Brass Satin Chromed (3027 Z)
66	Left hand outward	
67	Right hand inward	
68	Right hand outward	

Name of Mfr.: Schwepper No. 3827Z, 3027Z

Mortise Toilet Locks
without Strike Plate

With locking device in the upper dead bolt to prevent unauthorized locking.



Screws: DIN74-A5 (5 mm diam) × 2

Unit Per Set

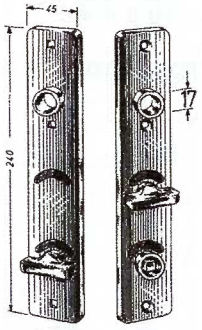
CODE	Direction	Material
49 21 71	Left hand	Brass Satin Chromed
72	Right hand	

Name of Mfr.: Schwepper No. 3596

Long Door Plates
for Toilet Side or Cabin Side

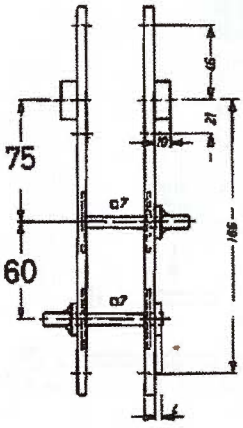
For door thickness 35 - 42 mm.

For Outside of the Door (with Square Screw Hole)



For Inside of the Door (with Round Screw Hole)

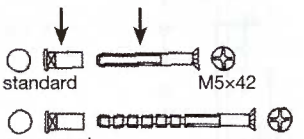
3594/1 3595/2



Screws

Throw Fixing Nut

Throw Fixing Screw



standard M5×42

on request M5×66

2 screws according to door thickness which needs to be indicated.

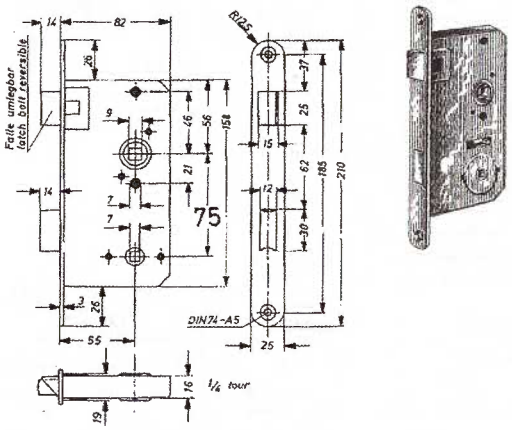
Unit Per Set

CODE	Use	Material
49 21 73	For toilet side (3594/1)	Brass Satin Chromed
74	For cabin side (3595/2)	

Remark: Long plates are to be supplied with through fixing screw and nut for tightening the plates "for outside of the door" and "for inside of the door". Standard screw size is M5 × 42 mm, but size M5 × 66 mm is available on request.

Name of Mfr.: Schwepper No. 3594/1, 3595/2

Mortise Toilet Locks



Screws: DIN74-A5 (5 mm diam) × 2

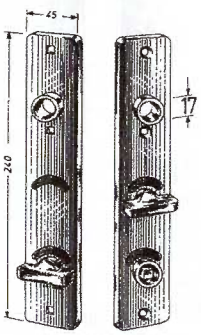
Unit Per Set

CODE	Direction	Material
49 21 75	Lefthand	Stainless Steel
76	Righthand	

Name of Mfr.: Schwepper No. 3801 WC

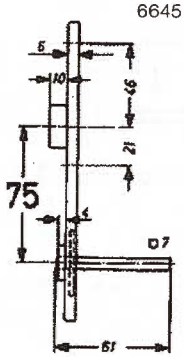
Short Plates for Door

For Outside of the Door (with Square Screw Hole)

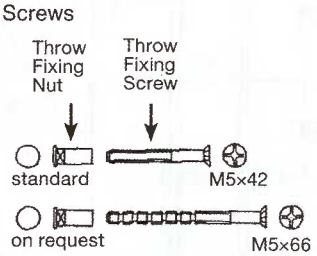


For Inside of the Door (with Round Screw Hole)

6645 WCP/75
6645 WCR/1/75 6645 WCO2/75



Screws



2 screws according to door thickness which needs to be indicated.

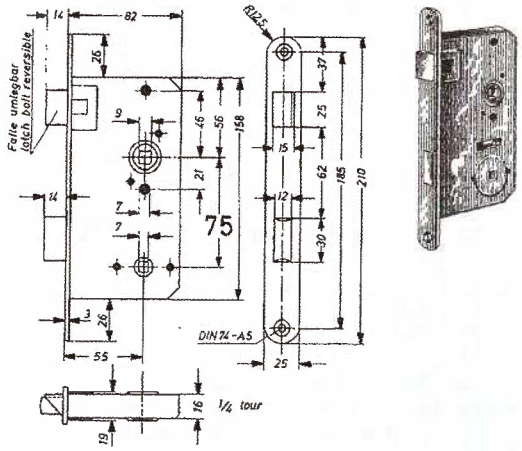
Unit Per Set

CODE	Remark	Material	Schwepper
49 21 77	-	Stainless steel	6645 WCP/75
78	With red-green indicator		6645 WCR/1/75
79	With thumbturn		6645 WCD/2/75

Remark: Short plates are to be supplied with through fixing screw and nut for tightening the plates "for outside of the door" and "for inside of the door".
Standard screw size is M5 × 42mm, but size M5 × 66mm is available on request.

Name of Mfr.: Schwepper No. 6645 WCP/75, 6645 WCR/1/75, 6645 WCO/2/75

Mortise Toilet Locks



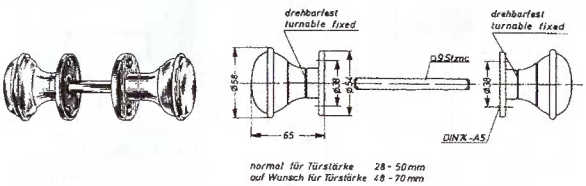
Screws: DIN74-A5 (5 mm diam) × 2

Unit Per Set

CODE	Direction	Material
49 21 81	Lefthand	Brass Satin Chromed
82	Righthand	

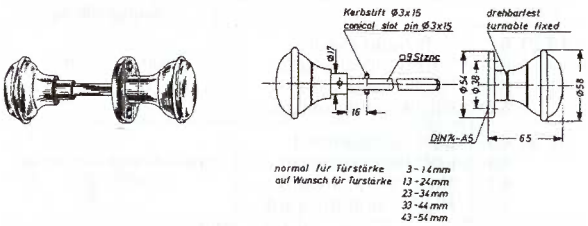
Name of Mfr.: Schwepper No. 3201 WC

Knob Handles



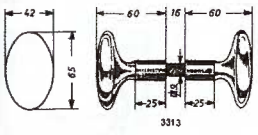
Screws: DIN 74-A5 (5 mm diam) x 2.

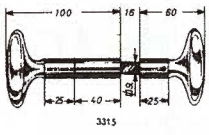
Round Knob for Mortise Lock



Screws: DIN 74-A5 (5mm diam) x 2.

Round Knob for Rim Lock





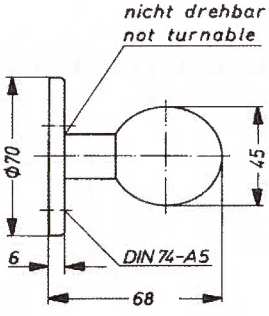
Oval Knob for Mortise Lock

Oval Knobs for Rim Lock

CODE	Type of Knob	For	Door Thickness	Material	Unit
49 22 01	Round	Mortise Lock	28 - 50 mm	Brass satin	Pc.
02		Rim Lock	3 - 14 mm	chrome	"
49 22 05	Oval	Mortise Lock	28 - 50 mm	Brass satin	Pc.
06		Rim Lock	3 - 14 mm	chrome	"

Name of Mfr. : Schwepper No. 227 / 227A / 3313 / 3315

Door Knobs

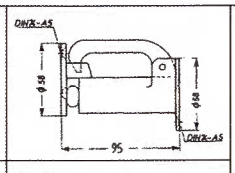
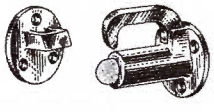
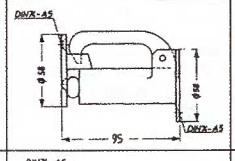
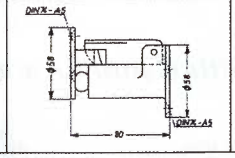
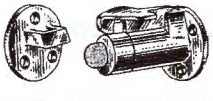


Screws: DIN 74-A5 (5 mm diam) x 2.

49 22 11	Door knob, brass satin chrome Base diam : 70 mm	Set

Name of Mfr. : Schwepper No. 5249

Door Stops with Catch

49 22 21		Fixed Type 
22		
23		Adjustable Type 

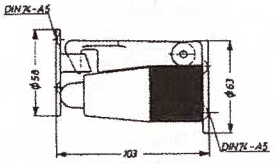
Screws : DIN 74-A5 (5mm diam) x 6

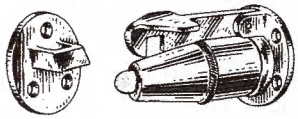
Unit Per Set

CODE	Overall Length	Material	Remark	Schwepper
49 22 21	74 mm	Brass Satin Chromed	Fixed	236
22	95 mm			236A
49 22 23	80 mm		Adjustable	2406

Name of Mfr.: Schwepper No. 236/236A/2406

Door Stops with Catch
Adjustable





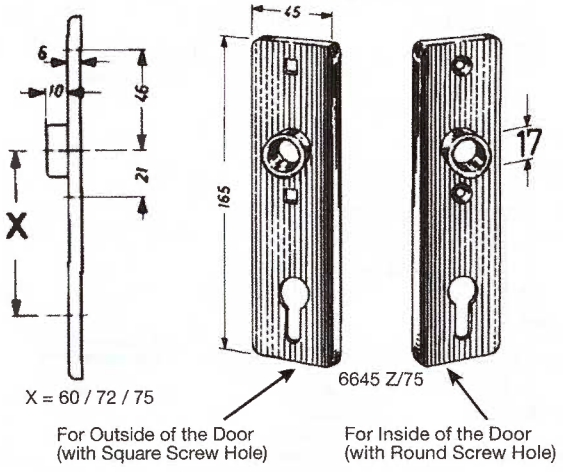
Screws: DIN 74-A5 (5mm diam) x 7

Unit Per Set

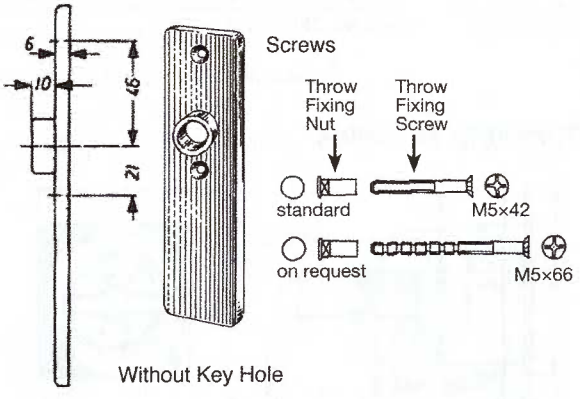
CODE	Overall Length	Material	Remark
49 22 26	103 mm	Brass Satin Chromed	Adjustable

Name of Mfr.: Schwepper No. 1346

Short Door Plates
with Cylinder Hole
Stainless Steel



With Cylinder Hole



Without Key Hole

2 screws according to door thickness which needs to be indicated.

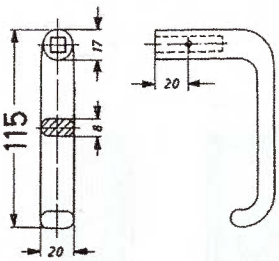
Unit Per Set

CODE	Distance between Key Hole and Handle Shaft	Material
With Cylinder Hole		
49 22 41	60 mm (6645 Z/2/60)	Stainless Steel
42	72 mm (6645 Z/2/72)	
43	75 mm (6645 Z/2/75)	
Without Key Hole		
49 22 44	- (6645 F/2)	Stainless Steel

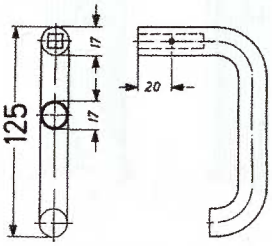
Remark: Short plates are to be supplied with through fixing screw and nut for tightening the plates "for outside of the door" and "for inside of the door".
Standard screw size is M5 × 42mm, but size M5 × 66mm is available on request.

Name of Mfr.: Schwepper No. 6645 Z/60, Z/72, Z/75, 6645 F/2

Handles, Female Part
Stainless Steel



49 22 45



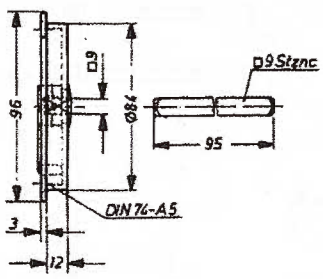
49 22 46

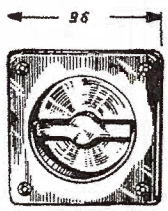
Unit Per Pc.

CODE	Handle Length	Material	For Plate Type	Schwepper
49 22 45	115 mm	Stainless	6645 Z/60 Z/72	2210
46	125 mm	Steel	Z/75 or 6645 F	6610

Name of Mfr.: Schwepper No. 2210, 6610

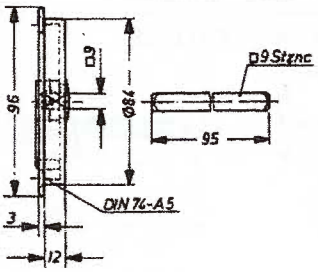
Turnable Handles

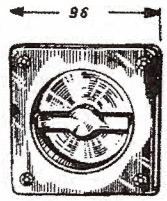




49 22 51

Screws: DIN74-A5 (5 mm diam) × 4





49 22 52/53

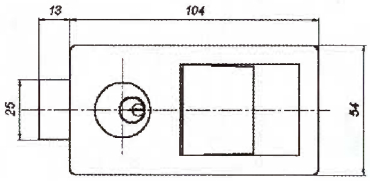
Screws: DIN74-A4 (4 mm diam) × 4

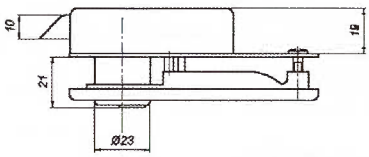
Unit Per Pc.

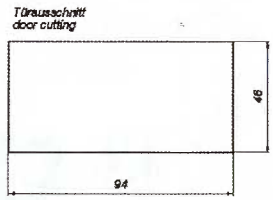
CODE	Size	Material	Schwepper
49 22 51	96 × 96 mm	Brass Satin Chromed	4033
49 22 52	90 × 90 mm	Stainless Steel	7833
53	100 ×100 mm		

Name of Mfr.: Schwepper No. 4033, 7833

Cabinet Locks with Cylinder





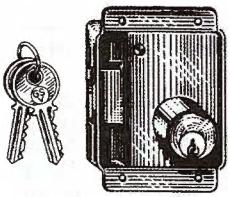


49 23 01	Cabinet lock with cylinder, brass satin chrome, for door thickness 15 - 18 mm	Set

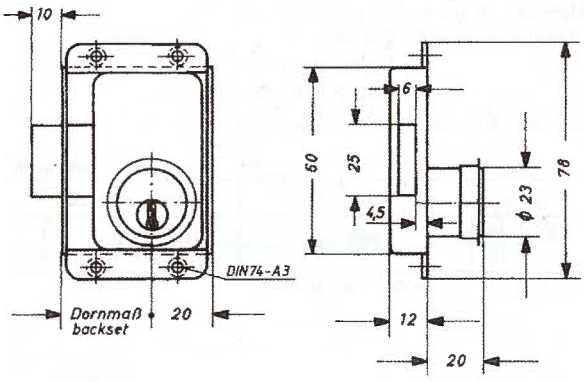
Name of Mfr. : Schwepper No. 5845

Cabinet Locks with Cylinder and Rose

Material : Brass satin chrome.
Screws : DIN 74-A3
(3 mm diam) x 4



3271 Z rechts



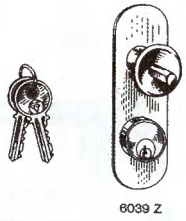
Unit Per Set

Left Hand		Right Hand	
CODE	Door Thickness	CODE	Door Thickness
49 23 21	20 mm	**49 23 26**	20 mm
22	25	**27**	25
23	30	**28**	30
24	35	**29**	35
25	40	**30**	40

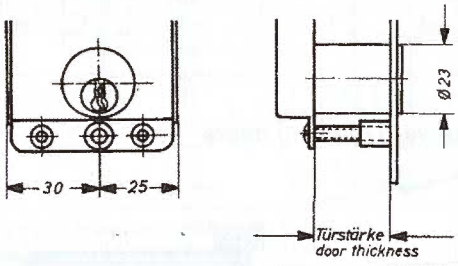
Name of Mfr.: Schwepper No. 3271Z

Cabinet Locks
with Cylinder and Knob Plate

Knob plate width: 30 mm
Normal for door thickness up to 18 mm
Screws: DIN 74-A3 (3 mm diam) x 4



6039 Z



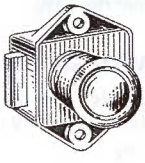
CODE	Type of Hand	Material	Unit
49 23 41	Left hand	Brass satin chrome	Set
42	Right hand		"

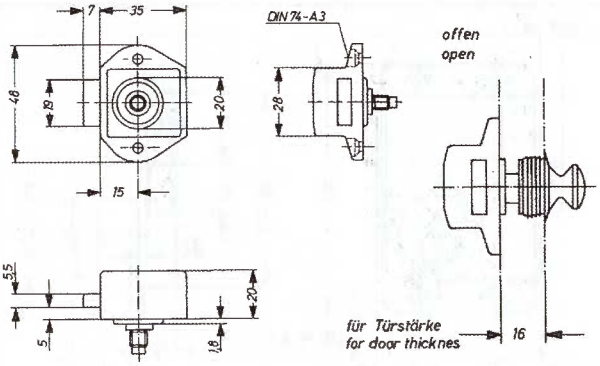
Name of Mfr.: Schwepper No. 6039Z

Push Locks

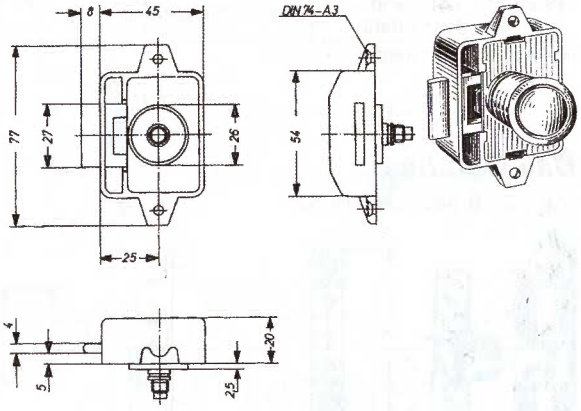
For closing push button and for opening push button again. For door thickness 16 mm.

Material: Plastic stain nickeled.
Screws: DIN 74-A3 (3 mm diam) x 2.





For Door Thickness 16 mm



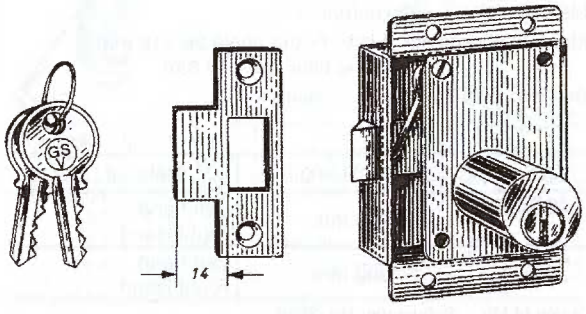
For Door Thickness 19 mm or 25 mm

CODE	For Door Thickness	Unit
49 23 45	16 mm	Set
46	19 mm	"
47	25 mm	"

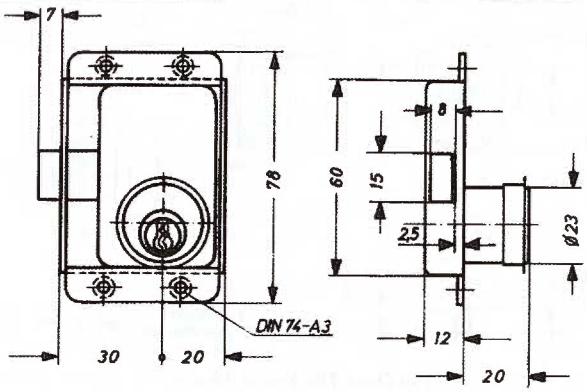
Name of Mfr. : Schwepper No. 7740 / 7741

Cabinet Locks
with Cylinder and Rose

For door thickness up to 20 mm
Screws: DIN 74-A3 (3 mm diam) x 4



7TH
49

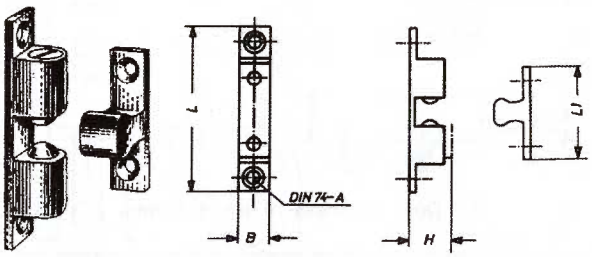


CODE	Type of Hand	Material	Unit
49 23 51	Left hand	Brass satin chrome	Set
52	Right hand		"

Name of Mfr.: Schwepper No. 3710Z

Ball Catches

Material: Brass nickel plated.



Unit Per Set

CODE	Size mm				Screws
	L	B	H	L1	
49 24 01	43	8	12	26	DIN 74-A3 (3 mm)x4
02	50	9	14	29	DIN 74-A3 (3 mm)x4
03	60	10	16	38	DIN74-A3.5(3.5mm)x4
04	70	13	19	42	DIN 74-A4 (4 mm)x4

Name of Mfr. : Schwepper No. 4090

7TH
49

Cabinet Stays with Stop

Material: Brass satin chromed
Material thickness: 2 mm, Fixing angle 26 ×12 mm
Fixing plate 34 × 13 mm
Screws: DIN 74-A3 (3 mm diam) × 4

Unit Per Set

CODE	Overall Length	Hand of Door
49 24 21	250 mm	Left hand
22		Right Hand
49 24 23	300 mm	Left hand
24		Right Hand

Name of Mfr. : Schwepper No. 2658

Material: Brass satin chromed
Material thickness: 2.5 mm,
Fixing angle 40 × 15 mm
Fixing plate 50 × 20 mm
Screws: DIN 74-A4 (4 mm diam) × 4

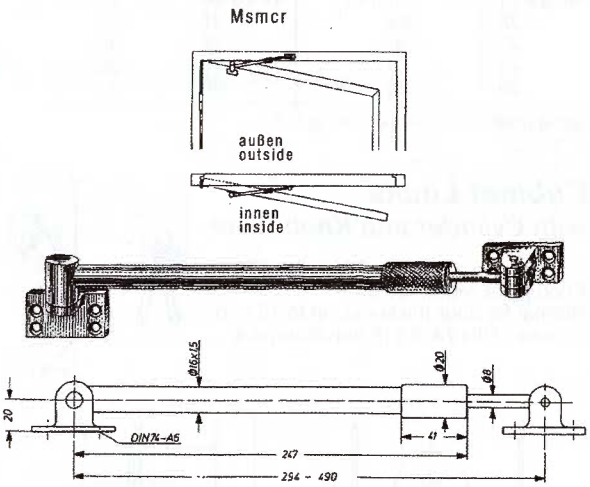
Unit Per Set

CODE	Overall Length	Hand of Door
49 24 25	265 mm	Left hand
26		Right Hand

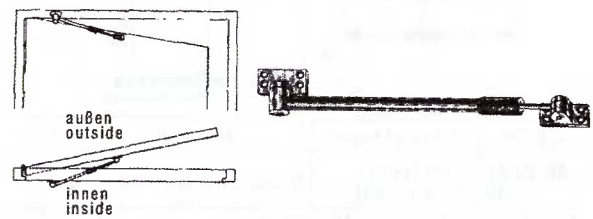
Name of Mfr. : Schwepper No. 4899

Door Stays with Set-screw

For inward opening doors



For outward opening doors



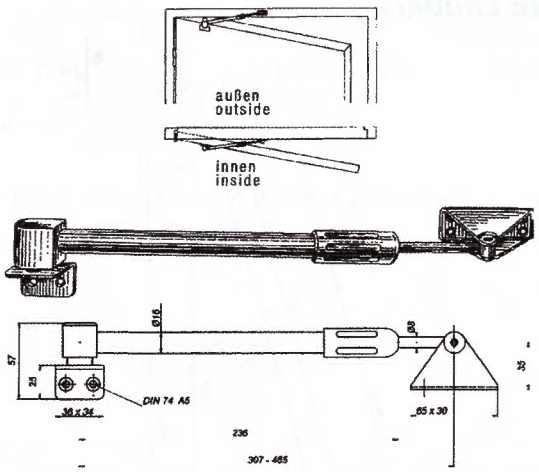
Fixing plate: 50 × 25 mm
Fixing angle: 50 × 30 mm
Screws: DIN 74 – A5 (5 mm diam) × 8

49 24 31	Door stay with set-screw, Brass Satin Chromed fixing plate 50 × 25 mm, fixing angle 50 × 30 mm	Set

Name of Mfr. : Schwepper No. 5820

Door Stays with Set-screw

For inward opening doors,
Tube rod, fixing plates: steel grey lacquered
Set screw: plastic grey
Turnhead: steel plastic grey covered



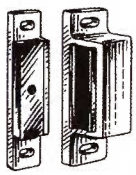
Screws: DIN 74 – A5 (5 mm diam) x 4

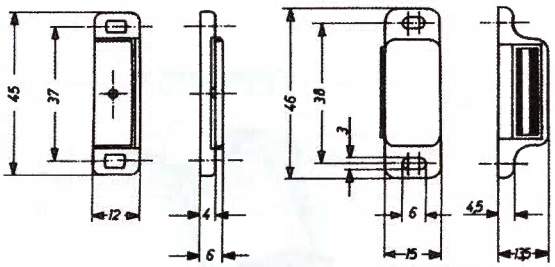
49 24 32	Door stay with set-screw	Set

Name of Mfr. : Schwepper No. 5825

Magnetic Catches

Screws: DIN 74-A3 (3 mm dima) x 4



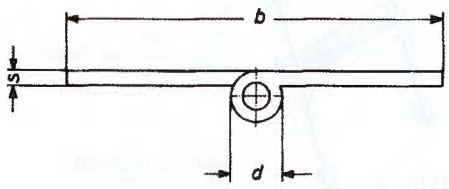


49 24 51	Magnetic catch, plastic white, adherance 40 N (4 kgf/cm²)	Set

Name of Mfr. : Schwepper No. 7812

Hinges with Fixed Pin

Material: Brass satin chrome



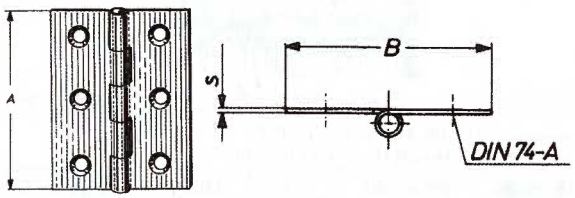
Unit Per Pc.

CODE	Size mm				Screws
	Length	b	d	s	
49 25 01	40	30	5	1.75	DIN 74-A3 x 4
02	50	40	5	2	DIN 74-A3 x 6
03	60	50	6	2	DIN 74-A3.5 x 6
04	65	40	5	2	DIN 74-A3.5 x 6
05	70	60	7	2.5	DIN 74-A4.5 x 6
49 25 06	80	65	9	3	DIN 74-A4.5 x 6
07	90	70	10	3	DIN 74-A4.5 x 8
08	100	100	12	4	DIN 74-A5 x 8
09	125	125	14	4.5	DIN 74-A5.5 x 8
10	150	150	15	5	DIN 74-A5.5x10

Name of Mfr. : Schwepper No. 145

Hinges Rolled Pin Riveted

Material : Stainless Steel

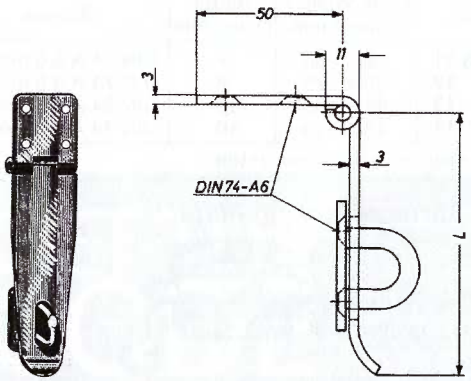


Unit Per Pc.

CODE	Size mm			Screws
	A	B	S	
49 25 21	40	32	0.9	DIN 74-A2.5 x 4
22	50	39	1.0	DIN 74-A3 x 6
23	60	46	1.2	DIN 74-A3 x 6
24	80	58	1.5	DIN 74-A3.5 x 6
25	100	72	1.5	DIN 74-A4.5 x 8

Name of Mfr. : Schwepper No. 8001

Hasps and Staples Rolled



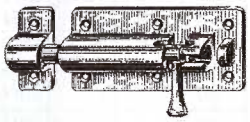
Unit Per Pc.

CODE	Size mm L x W	Material	Screws
49 25 51	90 x 45	Brass satin chrome	DIN 74-A6 x 6
52	150 x 45	"	DIN 74-A6 x 6
53	150 x 45	Steel zinc-plated	DIN 74-A6 x 6
54	220 x 45	dichromated	DIN 74-A6 x 6

Name of Mfr. : Schwepper No. 3408

Barrel Bolts

With Surface Striking Plate, Brass Satin Chromed

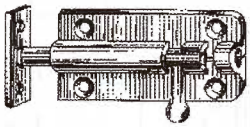


Unit Per Set

CODE	Plate Width × Length mm	Barrel Diam. mm	Screws
49 26 01	28 × 50	8	DIN 74 A 3.0 mm × 6
02	35 × 75	8	DIN 74 A 3.5 mm × 6
03	45 × 100	10	DIN 74 A 4.5 mm × 6
04	45 × 125	10	DIN 74 A 4.5 mm × 6

Name of Mfr.: Schwepper No. 2512

With Flat Striking Plate, Brass Satin Chromed

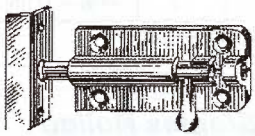


Unit Per Set

CODE	Plate Width × Length mm	Barrel Diam. mm	Screws
49 26 05	28 × 50	8	DIN 74 A 3.0 mm × 6
06	35 × 75	8	DIN 74 A 3.5 mm × 6
07	45 × 100	10	DIN 74 A 4.5 mm × 6
08	45 × 125	10	DIN 74 A 4.5 mm × 6

Name of Mfr.: Schwepper No. 2512A

With Angle Striking Plate, Brass Satin Chromed

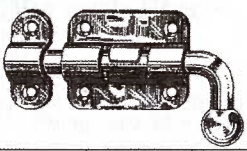


Unit Per Set

CODE	Plate Width × Length mm	Barrel Diam. mm	Screws
49 26 11	28 × 50	8	DIN 74 A 3.0 mm × 6
12	35 × 75	8	DIN 74 A 3.5 mm × 6
13	45 × 100	10	DIN 74 A 4.5 mm × 6
14	45 × 125	10	DIN 74 A 4.5 mm × 6

Name of Mfr.: Schwepper No. 2512B

With Surface Striking Plate

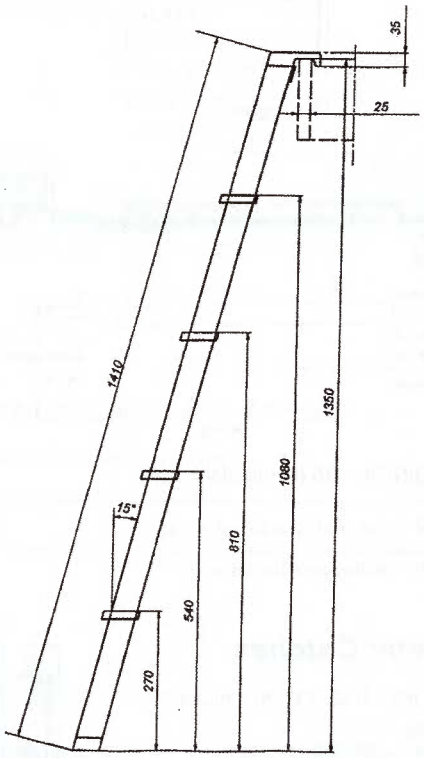


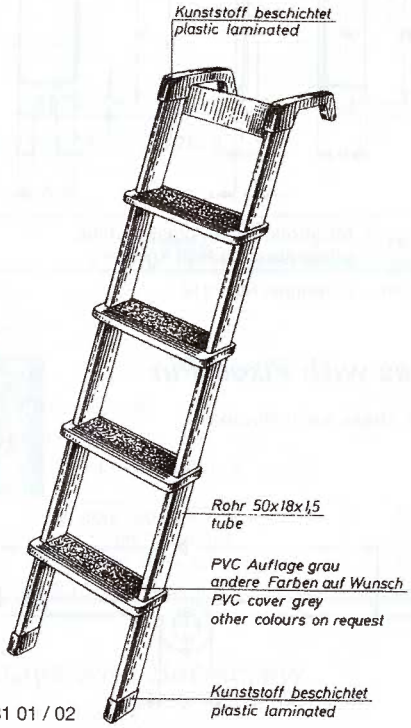
Unit Per Set

CODE	Plate Width × Length mm	Barrel Diam. mm	Screws
Material: Brass Satin Chromed			
49 26 21	50 × 60	10	DIN 74 A 5 mm × 6
22	70 × 90	16	DIN 74 A 6 mm × 6
Material: Steel Zinc Chromed			
49 26 23	50 × 60	10	DIN 74 A 5 mm × 6
24	70 × 90	16	DIN 74 A 6 mm × 6

Name of Mfr.: Schwepper No. 2526

Bed Ladders





49 31 01 / 02

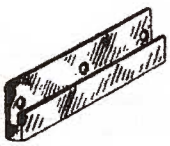
Unit Per Pc.

CODE	Steps	Material	Schwepper
49 31 01	With 3 steps	Aluminium anodized,	4400/3
02	With 4 steps	gray covered	4400/4

Name of Mfr.: Schwepper No. 4400/3, 4400/4

2 Wall Brackets for Bed Ladder

Screws: DIN74 – A4.5 (4.5 mm diam) × 3



Unit Per Prs

CODE	Size mm	Material
49 31 03	200 × 45 × 8	Aluminium anodized

Name of Mfr.: Schwepper No. 4402

Waste Buckets with Fire Ring

Raised Fire Ring

Countersink Fire Ring

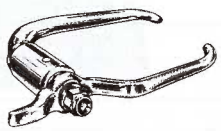
Unit Per Pc.

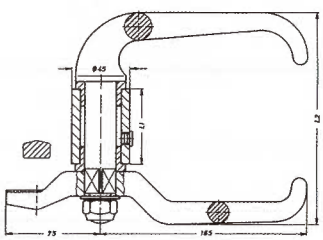
CODE	Type of Fire Ring	Material	Size mm Diam x Height
49 33 21	Raised	Aluminium silver color	245 x 300
22	Countersink	anodized EV1	232 x 310

Name of Mfr. : Schwepper No. 7946 / 7947

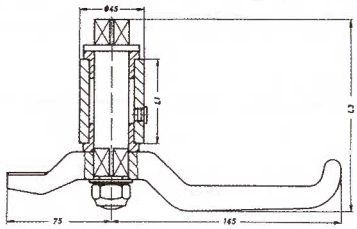
Dog Assemblies

Material: Steel prime

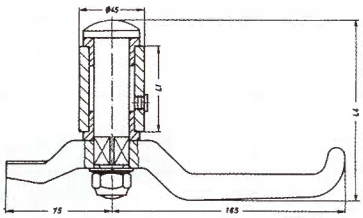




with 2 Handles



with Handle and Square Shaft



with Handle and Flat Head Shaft

Unit Per Pc.

CODE	Size mm		Type
	L1	L2	
49 34 01	73	174	With 2 handles
02	93	194	
49 34 05	73	145	With handle and
06	93	165	square shaft
49 34 11	73	133	With handle and
12	93	153	flat head shaft

Name of Mfr. : Schwepper No. 104A / 104B / 104C

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Memo

51
BRUSHES & MATS

Paint Brushes/Paint Rollers P. 51-1 ~ 4	Floor Brushes/Hand Brushes P. 51-4 ~ 5
Tube Brushes/Cup Brushes P. 51-5 ~ 6	Brooms/Carpet Brushes P. 51-6 ~ 7
Brushes for Galley P. 51-7	Cabin Cleaning Brushes P. 51-7 ~ 8
Vikan Brushes P. 51-8	Dusters/Floor Cloths P. 51-8
Floor Mats/Deck Mats P. 51-8 ~ 11	Tiles P. 51-11

Flat Paint Brushes

General flat bristle brushes for use with all oil base paints, stains, varnish and other non-water base coatings. The bristles are bound by a metal band to a varnished, wooden handle.

Unit Per Pc.

CODE	Width mm	CODE	Width mm
51 01 01	25	**51 01 06**	90
02	40	**07**	100
03	50	**08**	110
04	65	**09**	130
05	80		

Flat Varnish Brushes

Made with white bristle hair bound to a varnished wooden handle with a metal band. Square head brush used for finer, smoother surfaces such as doors and cabinets.

Unit Per Pc.

CODE	Width mm	CODE	Width mm
51 01 16	25	**51 01 21**	90
17	40	**22**	100
18	50	**23**	110
19	65	**24**	130
20	80		

Round Paint Brushes

A natural, black bristle brush sealed in rubber and bound with a metal band.

Unit Per Pc.

CODE	Diameter mm	CODE	Diameter mm
51 01 31	6	**51 01 36**	25
32	10	**37**	40
33	13	**38**	50
34	16	**39**	65
35	19	**40**	80

Angle Paint Brushes
Japanese Style

Made of black bristle hair tightly bound to a wooden handle. The brush is angled to make painting sashes, trim, or corners easy with less mess or strain on the hand. Angled varnish brushes are also available upon request.

Unit Per Pc.

CODE	Width mm	CODE	Width mm
51 01 51	10	**51 01 56**	42
52	15	**57**	55
53	25	**58**	70
54	30	**59**	84
55	36		

Angle Radiator Brushes
(Dog Leg Brushes)

Black bristle hair bound by a metal band. Provided with a long handle to reach difficult spots.

Unit Per Pc.

CODE	Width mm	CODE	Width mm
51 01 65	25	**51 01 68**	65
66	40	**69**	80
67	50		

Round Angle Brushes
With Long Handle

Black bristle brush with 1.2 mtr handle.

Unit Per Pc.

CODE	Diameter mm	CODE	Diameter mm
51 01 75	25	**51 01 77**	50
76	40		

Flat Pencil Brushes

Black bristle bound by a metal band to a 300 mm long handle. Brush sizes are listed by width below. Suitable for use painting in narrow, constricted areas, or for stenciling.

Unit Per Pc.

CODE	Width mm	CODE	Width mm
51 01 81	4	**51 01 86**	12
82	6	**87**	14
83	7	**88**	16
84	8	**89**	18
85	10		

Round Pencil Brushes

Black bristles bound by a metal band to a 300 mm long, round handle. Brush sizes are listed by diameter below.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
51 01 91	3	**51 01 95**	7
92	4	**96**	8
93	5	**97**	9
94	6	**98**	10

Oval Sash Tools

A small paint brush used on window frames or in places where a large brush can not be used conveniently.

Black bristle, chisel trim, metal binding and varnished handle. When ordering, please specify the brush diameter in mm, as number sizes differ by country.

Unit Per Pc.

CODE	Major Diam. mm	Size No.
51 02 01	15	27
02	21	26
03	30	25

Stencil Brushes

Pure black bristles sealed in rubber and bound in a metal ferrule. When ordering, specify the brush diameter as the numbers indicating brush sizes vary from country to country.

Unit Per Pc.

CODE	Diameter mm	CODE	Diameter mm
51 02 11	22	**51 02 14**	38
12	25	**15**	50
13	32		

Tar Brushes

Specially designed for use with tar. The bristles are made with a combination of horse hair and palm. Angle type tar brushes are also available.

Unit Per Pc.

CODE	Type	Hair Width	Overall
51 02 21	Flat	75 mm	230 mm
22	Angle	60 mm	250 mm

Cement Brushes

Used for smoothing cement surfaces before curing, or asphalt coating.

Unit Per Pc.

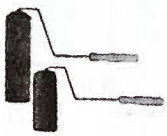
CODE	**51 02 26**	**51 02 27**	**51 02 28**
Brush Width	75 mm	100 mm	125 mm

File Cleaning Brushes
(File Cards)

For cleaning files clogged with dust. Stiff short wire teeth formed around a wood handle.

51 02 31	File brush	Pc.

Paint Rollers



Specify wool, nylon or acrylic roller when ordering. The wool type roller will be supplied unless specified otherwise in the order.

Unit Per Set

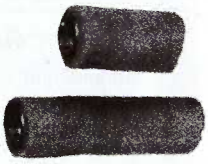
Paint Roller with Handle

Wool		Nylon	
CODE	Size mm	CODE	Size mm
51 03 01	25	**51 03 16**	25
02	50	**17**	50
03	75	**18**	75
04	100	**19**	100
05	125	**20**	125
51 03 06	150	**51 03 21**	150
07	180	**22**	180
08	200	**23**	200
09	230	**24**	230
10	250	**25**	250
51 03 11	280	**51 03 26**	280
12	300	**27**	300

Paint Roller with Handle

Acrylic			
CODE	Size mm	CODE	Size mm
51 03 61	25	**51 03 67**	180
62	50	**68**	200
63	75	**69**	230
64	100	**70**	250
65	125	**71**	280
51 03 66	150	**51 03 72**	300

Spare Paint Roller Replacements



Specify whether wool, nylon, or acrylic rollers are required.

The wool type spare roller will be supplied unless specified otherwise in the order.

Unit Per Pc.

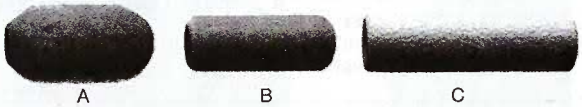
Wool		Nylon	
CODE	Size mm	CODE	Size mm
51 03 31	25	**51 03 46**	25
32	50	**47**	50
33	75	**48**	75
34	100	**49**	100
35	125	**50**	125
51 03 36	150	**51 03 51**	150
37	180	**52**	180
38	200	**53**	200
39	230	**54**	230
40	250	**55**	250
51 03 41	280	**51 03 56**	280
42	300	**57**	300

Acrylic			
CODE	Size mm	CODE	Size mm
51 03 76	25	**51 03 82**	180
77	50	**83**	200
78	75	**84**	230
79	100	**85**	250
80	125	**86**	280
51 03 81	150	**51 03 87**	300

Replaceable Roller Brushes

A synthetic roller brush which is easy to handle and detaches easily from the roller frame. Three different nap lengths are available and the rollers can be used with any kind of paint. The rollers have high paint absorption, assuring a good finish and economical use of paint.

Roller Cover Applications



A B C

Type		A	B	C
Pile Length		Long Nap 40 mm	Med Nap 13 mm	Short Nap 6 mm
Material	Acryl	80%	90%	90%
	Poly-ester	20%	10%	10%
Application		Rough surface requiring heavy paint application.	Concrete, plaster, wooden and acoustical ceilings, etc.	Smooth surfaces: building board, plained wood, smooth concrete, iron, sheet metal, etc.

Unit Per Set

Replaceable Roller Brush Complete with Frame and Handle

Roller Diam. 38 mm

Type A		Type B		Type C	
CODE	Width mm	CODE	Width mm	CODE	Width mm
51 04 01	77	**51 04 11**	77	**51 04 21**	77
02	102	**12**	102	**22**	102
03	127	**13**	127	**23**	127
04	156	**14**	156	**24**	156
05	178	**15**	178	**25**	178
51 04 06	228	**51 04 16**	228	**51 04 26**	228

Spare Roller Brushes

for Replaceable Roller

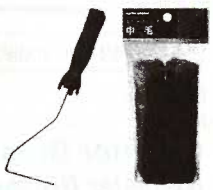
Unit Per Pc.

Spare Roller Brush Roller Diam. 38 mm

Type A		Type B		Type C	
CODE	Width mm	CODE	Width mm	CODE	Width mm
51 04 31	77	**51 04 41**	77	**51 04 51**	77
32	102	**42**	102	**52**	102
33	127	**43**	127	**53**	127
34	156	**44**	156	**54**	156
35	178	**45**	178	**55**	178
51 04 36	228	**51 04 46**	228	**51 04 56**	228

Mini Paint Rollers

Small sized rollers designed for painting radiators, trim or other narrow surfaces.



Unit Per Set — Unit Per Pc.

Complete with Handle		Spare Roller only	
CODE	Size	CODE	Size
51 04 65	50 mm	**51 04 66**	50 mm
67	75 mm	**68**	75 mm
61	100 mm	**62**	100 mm
63	150 mm	**64**	150 mm

Cushion Paint Rollers

Specially designed for painting curved surfaces such as pipes, ducts, poles, etc. Made of synthetic fiber and applicable for use with all paints. Available only in a width of 230 mm. Furnished with handle.

51 04 70	Cushion paint roller 230 mm width complete for curved surface	Pc.

Paint Roller Trays and Buckets

Paint tray with a ridged surface to remove excess paint from the roller. For 230 mm paint roller. Available in heavy tin plate or plastic with the dimensions of 395 x 285 x 100 mm.

Paint bucket with a wire net strainer. Available in heavy tin plate or plastic and provided with a carrying handle. 230 mm and 300 mm sizes are most common.

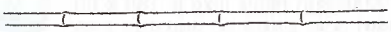
Paint bucket cartridge is a disposable container made of plastic, and cover inside the paint bucket for repeated use.

Unit Per Pc.

CODE	Kind	Material	Roller Size
51 04 75	Paint Tray	Tin Plate	230 mm
71		Plastic	"
51 04 76	Paint Bucket with Strainer	Tin Plate	180 mm
77			200 mm
78			230 mm
79			250 mm
80			300 mm
51 04 72		Plastic	180 mm
73			200 mm
74			230 mm
81			250 mm
82			300 mm
51 04 83	Paint Bucket Cartridge	Plastic	For 1 – 7 inch roller

Paint Roller Extension Bars

Bamboo pole, 4 mtr, conventional and most economical.



Polished hard wood with a thumb screw attachment slot for connecting the paint roller. 1,200 mm/lgh.

Aluminium, graduated, adjustable extension poles.

Unit Per Pc.

CODE	Length	Description	
51 04 84	4 mtr	Bamboo Pole (Manhelp)	
51 04 86	1.2 mtr	Wood Handle w/Tightening Screw	
51 04 88	1.2 mtr	Alumi Extension	0.6 x 2
89	2.4 mtr		1.2 x 2
90	2.7 mtr		0.9 x 3
91	3.6 mtr		1.2 x 3
92	4.2 mtr		1.4 x 3
93	5.4 mtr		1.8 x 3

Paint Mittens

Convenient for painting pipes, or concealed areas where paint brushes or rollers can not reach. The inner lining of the mitten eliminates paint seepage and keeps the hand clean. Only one type and size furnished. Supplied in individual pieces, not as pairs.

51 04 96	Paint mitten	Pc.

Paint Pails

Available made of plastic, tin plate or steel.

Unit Per Pc.

CODE	Material	Ltr
51 05 01	Plastic	3.0
02		4.0
51 05 05	Tin plate	3.0
51 05 08	Steel	4.0

Coir Deck Brushes
(Piasava Brooms)

Coir hair deck brush for scrubbing deck, hull, and cabin floors. Standard block size is 180 x 60 x 45 (Hair) and 300 x 60 x 45 (Hair) mm.

Unit Per Pc.

CODE		Width mm
W/Long Handle	Head Only	
51 06 01	**51 06 02**	180
03	**04**	300

Nylon Deck Brushes

Deck brush with stiff nylon bristles for scrubbing the deck or sweeping floors. Standard block size is 180 x 60 x 50 (Hair), 300 x 65 x 50 and 450 x 65 x 50 mm.

Unit Per Pc.

CODE		Width mm
W/Long Handle	Head Only	
51 06 11	**51 06 12**	180
13	**14**	300
15	**16**	450

Soft Bristle Sweeping Brushes

White soft bristle brush used to sweep the cabin or galley areas. Standard block size is 200 x 70 x 60 (Hair) and 300 x 60 x 60 (Hair) mm.

Unit Per Pc.

CODE		Width mm
W/Long Handle	Head Only	
51 06 21	**51 06 22**	200
23	**24**	300

Wire Deck Brushes

Used for sweeping rough floors or scraping surface rust on deck. The standard block size is 180 x 60 x 45 mm.

Unit Per Pc.

CODE	Description
51 06 30	With 1,200 mm Long Handle
31	Wire Brush Head only

Non-Spark Deck Brushes
with Long Handle

Furnished with a 900 mm long handle. The brush head size is 115 x 75 x 50 mm. Bristles are made of a special non-spark aluminium-bronze alloy.

51 06 33	Brush, deck, non-spark, special aluminium bronze, 115 mm width with long handle	Pc.

Universal Handle Cabin Brushes

Short, soft, black bristles for light sweeping of cabins, messrooms, etc. Available in brush sizes of 300 or 450 mm with or without a long handle.

Unit Per Pc.

CODE		Width mm
W/Long Handle	Head Only	
51 06 36	**51 06 37**	300
38	**39**	450

Brush Handles

Tapered to fit securely into the thread of a brush head. Length 1,200 mm.

51 06 42	Handle, wood 1,200 mm for brush	Pc.

Counter Brushes
(Banister Brushes)

Black bristle or nylon hair for sweeping dust or dirt on desks, counters, or tables.

51 06 46	Brush counter black hair	Pc.

Square Hand Scrub Brushes

Available in 3 kinds of bristles, coir, white hair or nylon.

Unit Per Pc.

CODE	Material	Size
51 06 51	Coir	185 x 65 x 50 (Hair) mm
52	White hair	185 x 60 x 30 "
53	Nylon	190 x 65 x 45 "

Pointed Hand Scrub Brushes

Available in coir or white hair bristles. The brush size is 265 x 55 mm with 45 mm bristles.

Unit Per Pc.

CODE	Material	Size
51 06 56	Coir	265 x 55 x 45 (Hair) mm
57	White hair	265 x 55 x 45 "

Wire Brushes

Strong wire brush for cleaning paint brushes, polishing ferrous material, or removing rust, sludge and debris on deck, or in the engine room.

Oval | Square | Standard Handle | Long Handle | Curved Handle

Unit Per Pc.

CODE	Description
51 06 60	Oval 130 x 60 mm
61	Square Block Size 180 x 60 mm
62	Straight Handled Standard Length 270 mm
63	Straight Handled Long 350 mm
64	Curved Handled 270 mm

Stainless Steel Wire Brushes

A straight brush with stainless steel wire 0.35 mm; length 290 mm; rows 3 x 15.

51 06 65	Brush, stainless steel wire, straight, L: 290 mm	Pc.

Brass Hand Brushes

Soft brass brush for cleaning delicate surfaces where heavy scraping is not suitable. These brushes will not scratch steel surfaces.

Oval | Straight

Unit Per Pc.

CODE	Description
51 06 66	Oval 145 x 65 mm
67	Straight Handled, Length 235 mm

Non-Spark Hand Brushes
Curved Handle

51 06 71	Brush, hand, curved handle, beryllium copper alloy non-spark, 22 x 250 mm	Pc.

Non-Spark Oval Hand Brushes

51 06 75	Brush, hand, oval, beryllium copper alloy non-spark, 145 x 39 mm	Pc.

Round Window Brushes

White soft hair brush, suitable for working with soap and water. Block size is 60 mm in diameter. Furnished with a long wooden handle.

51 08 31	Brush window round with handle	Pc.

Condenser Tube Brushes

An effective tool for cleaning condenser tubes. Made of steel or brass wire, or stiff nylon strings.

Unit Per Pc.

CODE	Size ø x Thread mm	CODE	Size ø x Thread mm
Steel			
51 07 01	10 x 1/4 Male	**51 07 09**	19 x 1/4 Female
02	13 x 1/4 "	**10**	19 x 5/16 "
03	13 x 1/4 Female	**11**	22 x 1/2 Male
04	13 x 5/16 "	**12**	25 x 1/2 "
05	16 x 1/4 Male	**13**	38 x 1/2 "
06	16 x 1/4 Female	**14**	50 x 1/2 "
07	16 x 5/16 "	**15**	63 x 1/2 "
08	19 x 1/4 Male	**16**	76 x 1/2 "
		17	100 x 1/2 "
Brass			
51 07 21	10 x 1/4 Male	**51 07 26**	16 x 1/4 Female
22	13 x 1/4 "	**27**	16 x 5/16 "
23	13 x 1/4 Female	**28**	19 x 1/4 Male
24	13 x 5/16 "	**29**	19 x 1/4 Female
25	16 x 1/4 Male	**30**	19 x 5/16 "
Nylon			
51 07 36	10 x 1/4 Male	**51 07 43**	19 x 1/4 Male
37	13 x 1/4 "	**44**	19 x 1/4 Female
38	13 x 1/4 Female	**45**	19 x 5/16 "
39	13 x 5/16 "	**46**	22 x 1/2 Male
40	16 x 1/4 Male	**47**	25 x 1/2 "
41	16 x 1/4 Female	**48**	38 x 1/2 "
42	16 x 5/16 "	**49**	50 x 1/2 "

Wire Cup Brushes

Designed for high speed operation on pneumatic or electric scaling and sanding machines. These brushes remove rust and scale from metal, clean tanks and boat hulls, take off old paint, and clean castings and structural metal. Threaded nut type and welded shaft types are available. When ordering, please specify the type of fitting required on the cup brush and the inner diameter of the bolt fitting.

– Caution –

Whenever ordering wire brushes, be certain that they will not be used on machines with speeds higher than the maximum safety speed shown for the brush.

Standard Cup

Knot Type Cup for Heavy Duty Work

Standard Wheel

Threaded Nut Type

Shaft Welded Type

Unit Per Pc.

CODE	Type	Cup (Wheel) O.D. mm x Arbor (Inch)	Thickness
51 07 61	Standard Cup	75 x 5/8	25 mm
62		100 x 5/8	30 "
63		150 x 7/8	40 "
51 07 66	Knot Type Cup	75 x 5/8	25 mm
67		100 x 5/8	30 "
68		150 x 7/8	40 "
51 07 71	Standard Wheel	75 x 3/8	15 mm
72		100 x 3/8	17 "
73		125 x 1/2	17 "
74		150 x 3/4	25 "
75		200 x 3/4	25 "
76		250 x 1	25 "
77		300 x 1	25 "
51 07 85	Threaded Nut Type	75 x M10 thread	–
51 07 86	Shaft Welded Type	50 x 6mm arbor	Wheel shape
87			Cup shape

Recommended R.P.M. of Wire Cup Brushes

Nominal Diam.	Type of Brush					
	Cup		Wheel		Shaft Welded Wheel	
	Recom.	Max	Recom.	Max	Recom.	Max
30 mm					8,000	12,000
40 mm					8,000	12,000
50 mm			8,000	12,000	7,200	10,000
65 mm			7,200	10,000		
75 mm	6,000	9,000	7,200	10,000		
100 mm	5,500	9,000	6,000	9,000		
150 mm	5,000	7,000	4,500	6,000		
200 mm			3,600	4,500		
250 mm			2,400	3,600		
300 mm			1,800	3,000		

Note: Recom. denotes Recommended R.P.M.
Max. denotes Maximum R.P.M.

Long Handled Brooms

Sturdy corn broom has a long handle for use with dust pan.

Corn Broom 1,500 mm

For heavy sweeping jobs. Handle is made of bamboo.

China Broom 1,300 mm

Bamboo Broom 1,800 mm
Tough, durable brooms made of bamboo twigs.
Attached with bamboo handle.

51 08 01	Corn broom long handled	Pc.
02	China broom long handled	"
03	Bamboo broom long handled	"

Short Handled Brooms

Corn Broom 730 mm

Coir Broom 750 mm

Unit Per Pc.

CODE	Description
51 08 06	Broom Corn Short Handled
07	Broom Coir Short Handled

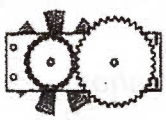
Corn Whisks

Used for sweeping work-benches and dusting off light dirt or rust from machinery and other difficult to reach spots.

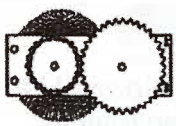
51 08 11	Broom corn whisk hand	Pc.

Manual Floor Sweepers

Motorless push sweeper for cleaning small stones, sands, wood chips up from ground or deck surface. Available two patterns of sweeping brush : Flap brush for sweeping small stones, sands, wood chips, and so on. Round brush for sweeping fine dust, particles. Sweeping capacity is approx. 1,650 m^2/hour.



Flap Brush (ST)



Round Brush (SR)

Unit Per Pc.

CODE	Type of Brush	Size W x H mm	Weight kgs
51 08 36	Flap (ST)	650 x 860	22
39	Round (SR)	650 x 860	24

Hand Carpet Cleaners

Manually operated roller brush. Removes dust and other small particles easily from the carpet surface by a simple rolling action.

51 08 37	Carpet Cleaner Manual	Pc.

Duster Brushes

Dusting for delicate objects or narrow corners with static electricity. Made of fine soft polypropylene strings head. Available extensible handle type for inaccessible position by hand reach.

Unit Per Pc.

CODE	Overall Length mm	CODE	Overall Length mm
Fixed Handle		Extensible Handle	
51 08 41	270	51 08 43	1,450 - 2,000
42	440		

Handy Dust Mops

Acryl strings pick up and hold large amount of dust. Strings can be washed and reusable many times. Approx. overall length is 330 mm.

51 08 45	Handy dust mop, Acryl, with handle Overall Length 330 mm	Pc.

Kitchen Brushes

Dishwashing Brush

White bristle hair for dishwashing, general galley, and pantry use. Overall length is 270 mm.

17 41 01	Brush dishwashing	Pc.

Tumbler Brush

For cleaning glasses, cups, or other difficult to clean tableware. Made of a sponge brush with a plastic handle. A white bristle tumbler brush is also available.

17 41 03	Sponge head tumbler brush	Pc.
04	White hair tumbler brush	"

Bottle Brush

Designed for cleaning bottles, etc. where the brush has to be able to fit through narrow spaces.

Unit Per Pc.

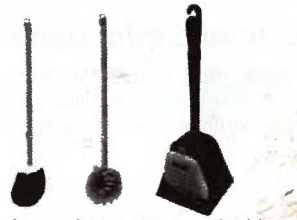
CODE	Brush Size	Overall Length
17 41 07	50 x 100 mm	340 mm
08	75 x 140 mm	450 mm

Percolator Brush

A handy brush to clean the inside of percolator stems. Black hair, furnished with twisted wire handle and ring on the handle end.

17 41 11	Brush percolator	Pc.

Toilet Brush



Sanitary bowl brushes shaped to clean easily under the toilet rim.

Coir Nylon Nylon w/Holder

17 42 51	Toilet brush, coir	Pc.
52	" nylon	"
53	" nylon with holder	Set

Hand Snaps

Made of soft white yarn, and used for cleaning or wiping as duster.

17 42 65	Hand snap	Pc.

Yacht Mops

Made of soft white yarn and fastened to the handle end. Length overall is 1,580 mm.

17 42 71	Yacht mop complete	Pc.
72	Replaceable head for yacht mop	"

Spring Clamp Mops

Quick-way type spring clamp eliminates cutting or untangling. Merely slide off the old mop head and slide on the new one, takes just seconds.

17 42 75	Mop complete with spring clamp handle	Pc.
76	Spring clamp mop handle only	"
77	Spring clamp mop head only	"

Wringer Mop Buckets

A handy foot pedal device to wring out the mop without bending over. The size is 330 x 340 x 280 mm made of hard plastic with a steel wringer frame.

17 42 80	Wringer mop bucket	Pc.

Floor Wipers

Large mop to sweep dust or wipe up water from floors. Furnished with long handle.

Unit Per Pc.

CODE	17 42 86	17 42 87	17 42 88	17 42 89
Mop Width	240 mm	400 mm	540 mm	860 mm

Rubber Squeegees

Designed for squeezing water off windows, glasses, cabin floors, etc. Available in 3 different blade widths. All types furnished with a 1,200 mm plastic handle.

Refill Blades

Unit Per Pc.

CODE	17 42 91	17 42 92	17 42 93
Blade Width	330 mm	400 mm	480 mm

Refill Blades for Squeegee

Unit Per Pc.

CODE	17 42 90	17 42 94	17 42 95
For Blade Width	330 mm	400 mm	480 mm

Sponge Mops
with Spring Handle

Designed for cleaning galleys and accommodations. To rinse the mop, simply wet the sponge and press the spring lever handle. Sponge width is 180 mm.

17 42 96	Sponge mop with spring handle	Pc.
97	Spare sponge for sponge mop	"

"Vikan" Brushes

"Vikan" brushes are sturdy, long lasting, and suitable for most deck or interior floor sweeping jobs. The products most suitable for ships use are listed below.

These models are all furnished without handles. Interchangeable aluminium handles are sold separately.

3624

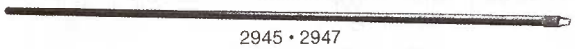
3644

3660

3177

3150

2115 • 2120



2945 • 2947

Unit Per Pc.

CODE	Model	Description	Material	Block Size
Floor Scrubber				
51 08 81	3624	-	Wood w/Bassine & hair fiber	207×65mm
82	3644	w/screw thread for handle	"	"
83	3660	w/screw thread for handle	Plastic w/P.P. hair	270×45mm
Sweeping Broom				
51 08 86	3177	-	Wood w/synthetic hair	Block width 400 mm
88	3150	W/screw thread for handle	Plastic w/hair mix	280×45 mm
Street Broom				
51 08 89	2115	-	Wood w/Piasava	305×75 mm
90	2120	-	"	475×75 mm
Handle				
51 08 91	2945	22×1,300 mm	Aluminium	
92	2947	22×1,500 mm	"	

(to be continued)

Chamois Leather

Soft chamois leather for cleaning and absorbing water, oil, dirt, etc. Size approx. 400 x 400 mm wrapped in polyethylene bag.

51 10 02	Chamois leather	Pc.

Yellow Dusters

For cleaning and polishing furniture, floors, panelling, and instruments. Made of a mixture of cotton and rayon. Washes clean with water. Size is approximately 280 x 370 mm.

51 10 04	Yellow duster	Pc.

Floor Cloths

Made of cotton. Suitable for cleaning or wiping up water on floors, windows, etc.

51 10 06	Floor cloth cotton	Pc.

Bath Mats

For laying at the entrance of a shower or a bathroom. Made with a rubber, anti-slip backing. Size is approximately 700 x 400 mm.

51 10 08	Mat, bath, 700 × 400 mm	Sht

Bath & Shower Safety Mats

Mats with small rubber suction cups on the bottom allowing the mat to grip to the floor of a shower or bath, assuring safe footing. These mats will not slip even on soapy or slippery surfaces.

51 10 10	Bath and shower mat, rubber, safe footing, size 355 × 558 mm	Sht

Fibre & Rubber Jointed Door Mats

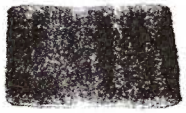
Made from synthetic fibres on a non-slip rubber backing. Placed at the entrances to accommodation areas from the deck or engine room, in lifts and between the galley and saloon. It absorbs and retains oil, moisture and dry dirt

which would be tracked onto polished floors and expensive carpets. Can be washed by either machine or hand and in normal use, Available in black/white and black/brown fleck.

Unit Per Sht

CODE	Size cm	CODE	Size cm
51 10 15	75 × 85	**51 10 16**	75 × 150

Coir Door Mats



Made from coir coco. Removes soil from shoes like a brush.

Unit Per Sht

CODE	Size cm	CODE	Size cm
51 10 21	36 × 60	**51 10 24**	90 × 120
22	45 × 75	**25**	90 × 150
23	60 × 90	**26**	90 × 180

Combination Door Mats

Galvanized steel. meshed mat made with a combination of wire, coir, and polypropylene.

Unit Per Sht

CODE	Size cm	CODE	Size cm
51 10 31	36 × 60	**51 10 33**	60 × 90
32	45 × 75		

Vinyl Mats

Coloured, perforated mesh made of E.V.A. (Ethylene-vinyl acetate copolymer).

Unit Per Sht

CODE	Size cm	CODE	Size cm
51 10 36	45 × 60	**51 10 38**	60 × 90
37	45 × 75		

Lawn Step Mats

Made of nylon pile filament (Treated anti-electrostatics) and backed with non-slip P.V.C. Has a soft texture and is water resistant.

Unit Per Sht

CODE	Size cm	CODE	Size cm
51 10 41	36 × 60	**51 10 44**	90 × 120
42	45 × 75	**45**	90 × 150
43	60 × 90	**46**	90 × 180

Vinyl (E.V.A.) Jointed Door Mats

Lawn Surface

A lawn type surface mat, approximately 15 mm thick. Made of E.V.A. (Ethylene vinyl acetate copolymer). 300 x 300 mm sheets of mat can be firmly joined together using a connector and special rimming. The standard sizes are listed below. Sizes out of standard must be made to order.

Unit Per Sht.

CODE	Size cm	CODE	Size cm
51 10 51	30 × 60	**51 10 53**	90 × 120
56	45 × 60	**54**	90 × 150
52	60 × 90	**55**	90 × 180

Vinyl (P.V.C.) Jointed Door Mats

Corrugated Surface

Made of P.V.C., and vinyl, corrugated together by steel wire.

Unit Per Sht

CODE	Size cm	CODE	Size cm
51 10 61	36 × 60	**51 10 63**	60 × 90
62	45 × 75		

Rubber Jointed Door Mats

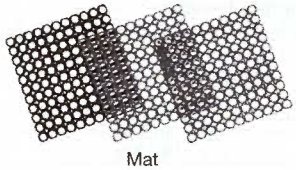
Made of synthetic rubber matting with sheets that can be connected together. The sheet size is 36 × 60 cm. This mat is not as flexible as the mats above but the corners of the mat will not curl or turn up.

Unit Per Sht.

CODE	Size cm	CODE	Size cm
51 10 66	36 × 60	**51 10 67**	45 × 75
69	45 × 60	**68**	60 × 90

Deck Rubber Mats

Made of rubber and composed of octagonal corrugated pads which are specially designed to cushion ones feet while working. These mats also drain water which may collect on the floor of the galley or deck. Reduces fatigue and provides safe footing under wet conditions. Standard size of one sheet is 1 mtr/square, but several sheets can be joined together using a connector piece. Usually provided in black, but also available in green or red colour upon request.



Mat

Joint

51 10 71	Mat deck rubber 1 mtr/sq × 16 mm Thick	Sht
72	Connector for deck rubber mat	Pc.

Deck Protection Mats

Deckmate® Cargo Landing Mats

Scotgrip® Deckmate® Cargo Landing Mats are heavy duty, high-traction, anti-slip polyurethane rubber mats designed to give deck protection from heavy loads. The mats are easily positioned as designed load landing areas. Manufactured to standard size or custom made for individual locations.

The unique Scotgrip® anti-slip safety surface is fully integrated with this substrate and is designed to give a long and effective working life. Standard thickness is 20 mm (approx. 3/4") , and can be multi-coloured with safety messaging borders and diagonals.

Manufactured under BS EN ISO 9001:2008 quality controlled conditions.

Key Product Specifications		
Tensile Strength	19 Mpa	
Tear Strength	61 kN/m	
Hardness	90 Shore A rating	
Weight	20 kg/m²	4.1 lb/ft²

Unit Per Sht

CODE	Model	Dimensions	
		mm	Inch
51 11 10	SCLM1	3,000 × 3,000mm	9'10" × 9'10"
11	SCLM2	4,500 × 3,000mm	14' 9" × 9'10"
12	SCLM3	6,000 × 3,000mm	19' 8" × 9'10"
13	SCLM4	7,500 × 3,000mm	24' 7" × 9'10"

Name of Mfr. : Scotgrip (UK) Limited.

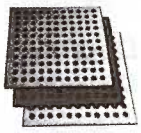
Deckmate® Dunnage Mats

Scotgrip® Deckmate® Dunnage Mats are heavy duty polyurethane rubber mats used to protect decks from heavy loads. Tough and resilient to match the offshore environment, provide excellent protection to the deck, chemical resistant and are designed to give a long lifespan. Manufactured in standard or lightweight versions, both mat types are supplied in various sizes and colours.

Key Product Specifications	
Tensile Strength	19 Mpa
Tear Strength	61 kN/m
Hardness	90 Shore A rating

Square Mats

Round Mats



Lightweight Mats

Unit Per Sht

CODE	Type	Thickness	Sizes (mm)	Weight	
				Kgs	Lbs
51 11 14	Square	12 mm	400 × 400 mm	2.10	4.63
15		15 mm		2.60	5.73
16		20 mm		3.50	7.72
17		12 mm	500 × 500 mm	3.30	7.28
18		15 mm		4.10	9.04
19		20 mm		5.40	11.91
20		12 mm	600 × 600 mm	4.70	10.36
21		15 mm		5.70	12.57
22		20 mm		7.50	16.54
51 11 23	Round	12 mm	400 × 400 mm	1.60	3.53
24		15 mm		2.00	4.41
25		20 mm		2.60	5.73
26		12 mm	500 × 500 mm	2.50	5.51
27		15 mm		3.10	6.83
28		20 mm		4.10	9.04
29		12 mm	600 × 600 mm	3.60	7.94
30		15 mm		4.40	9.70
31		20 mm		5.90	13.01
51 11 32	Light-weight	12 mm	400 × 400 mm	1.60	3.53
33		15 mm		2.00	4.41
34		20 mm		2.60	5.73
35		12 mm	500 × 500 mm	2.40	5.29
36		15 mm		3.00	6.61
37		20 mm		4.00	8.82
38		12 mm	600 × 600 mm	3.50	7.72
39		15 mm		4.40	9.70
40		20 mm		5.80	12.79

(to be continued)

Name of Mfr. : Scotgrip (UK) Limited.

Vinyl Lawn Mat Units

Made of vinyl (Ethylene vinylacetate copolymer). A lawn style mat about 25 mm thick treated to remain free of electro static current. The standard size for one mat is 300 mm/sq. but several sheets can be joined together using the built in connector pieces.

51 10 76	Vinyl lawn mat unit, 300 × 300 mm with edge connector	Pc.

Corrugated Plastic Matting

This green, corrugated matting is lightweight and easy to install. Made of strong, oil resistant material. Furnished in 910 mm wide rolls of 20 mtr length with a thickness of 2 mm.

51 10 78	Matting plastic corrugated 2mm × 910 mm × 20 mtr	Rol

Corrugated Rubber Matting

Rubber made, non-slip corrugated matting. 1,000 mm wide and rolled in 20 mtr length sections.

Unit Per Rol.

CODE	Thick × W × L mm × mm × mtr	CODE	Thick × W × L mm × mm × mtr
51 10 85	3 × 1,000 × 10	**51 10 93**	5 × 1,000 × 5
81	3 × 1,000 × 20	**83**	5 × 1,000 × 20
51 10 90	4 × 1,000 × 5	**51 10 94**	6 × 1,000 × 5
82	4 × 1,000 × 20	**95**	6 × 1,000 × 10
		84	6 × 1,000 × 20

Corrugated Rubber Matting for Electricity

New SOLAS regulation requests that "where necessary, nonconducting mats or gratings shall be provided at the front and rear of the switchboard" in Chapter II Part D "Electrical Installations" of SOLAS consolidated edition 2011.

Unit Per Lgh

CODE	51 10 98	51 10 99
Thickness x Width	3 mm×1,000 mm	4.5 mm×1,000 mm
Length per Coil	10 mtr	
Colour	Grey	
Proof Voltage	20,000 volt	50,000 volt
Standard	DIN EN, 60243-1 VDE 0303-21	
Approval	IEC 61111:2009, Class 2	IEC 61111:2009, Class 4

Name of Mfr.: Alligator

Palm Matting

Made of palm and used to lay along corridors. Supplied 45 mtr in a roll in widths of 45, 60, 75, and 90 cm.

Unit Per Rol.

CODE	Size Width x Length	CODE	Size cm Width x Length
51 10 86	45 cm x 45 mtr	51 10 88	75 cm x 45 mtr
87	60 cm x 45 mtr	89	90 cm x 45 mtr

Sisal Matting

Conventional type matting woven from sisal. Mostly for use in corridors or to protect carpeted areas where there is a lot of traffic. Supplied 50 mtr in a roll in widths of 75 and 90 cm. Light brown colour with a dark brown trim.

Unit Per Rol

CODE	Size Width x Length	CODE	Size cm Width x Length
51 10 91	75 cm x 50 mtr	51 10 92	90 cm x 50 mtr

Lawn Step Matting

Made of nylon pile filament and treated against electro static current. Matting is backed with P.V.C., is waterproof and acts as a cushion with a soft surface. Supplied 20 mtr per roll with a width of 90 cm.

51 10 96	Matting lawn step 90 cm x 20 cm	Rol

3M Nomad Matting - Extra Duty

Resilient vinyl loop construction scrapes dirt, sand or grime from boots or shoes, also hold and hides them.

Open loop construction allows dirt and moisture to pass through for easy cleanup.

Unit Per Sht.

CODE	Size	CODE	Size cm
51 11 51	900 × 600 mm	51 11 56	900mm × 6 mtr
52	900 × 750 mm	57	1,200mm × 6 mtr
53	900 × 1,200 mm		
54	900 × 1,500 mm		

3M Oil Trap Floor Mats

Made from polypropylene non woven. Traps and holds oil and moisture from sole of boots or shoes.

Anti-slip sheet are provided for oil trap floor mat to prevent the mat slipping. Supplied in one mat base with exchangeable floor mats.

Oil Trap Floor Mat with Mat Base

Unit Per Set

CODE	Size mm	N. of Mats in Set
51 11 61	912 × 601 mm	10 mats
62	912 × 1,501 mm	5 mats

Mat Base Only

Unit Per Sht.

CODE	Size	CODE	Size
51 11 65	964 × 650 mm	51 11 66	965 × 1,541 mm

Oil Trap Floor Mat Only

Unit Per Set

CODE	Size mm	No. Per Set	CODE	Size mm	Unit
51 11 67	912 × 601	10's	51 11 69	912 × 90 mtr	Rol
51 11 68	912 × 1,501	5's	51 11 70	912 × 30 mtr	Rol

Plastic Tiles (P-Tile)

An excellent floor tile made of semi-hard vinyl chloride resin. Easy to maintain and has a long product life.

Many sizes and colours are available according to manufacturer's specifications. The standard size is 2 mm thick, 304.8 mm (12") square. 3 mm thick, 303 mm square tiles are also available upon request.

51 11 01	Tile, plastic, 2 × 304.8 × 304.8 mm	Pc.

Greek Alphabet

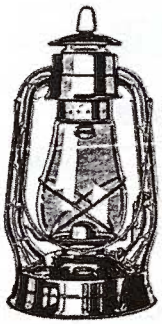
Αα	alpha	a	Νν	nu	n
Ββ	beta	b	Ξξ	xi	x
Γγ	gamma	g,n	Οο	omicron	o
Δδ	delta	d	Ππ	pi	p
Εε	epsilon	e	Ρρ	rho	r,rh
Ζζ	zeta	z	Σσ	sigma	s
Ηη	eta	e	Ττ	tau	t
Θθ	theta	th	Υυ	upsilon	y,u
Ιι	iota	i	Φφ	phi	ph
Κκ	kappa	k	Χχ	chi	ch
Λλ	lambdal		Ψψ	pasi	ps
Μμ	mu	m	Ωω	omega	o

Log Registers

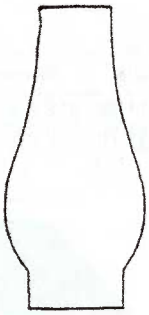
Log Rotators

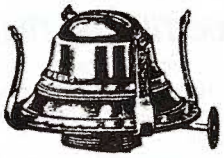
Wheel Governors

Hurricane Lamp



Kerosene Lamp

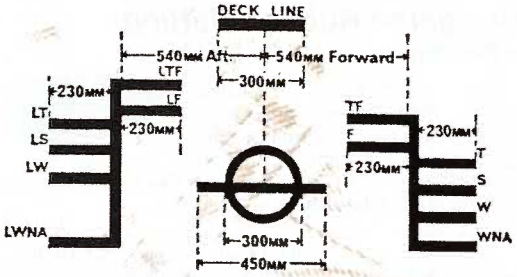




Chimney

Burner

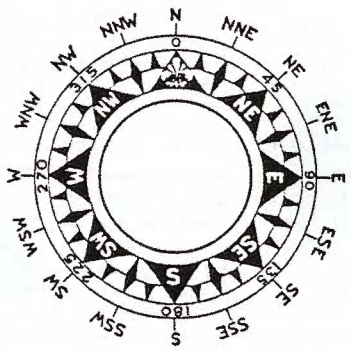
MARKING OF LOAD LINES



Width of Lines 25 mm.

T.F. Tropical Fresh Water Load Line.
F. Fresh Water Load Line.
T. Tropical Load Line.
S. Summer Load Line.
W. Winter Load Line.
W.N.A. Winter North Atlantic Load Line.

COMPASS CARD

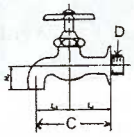


The circular card attached to the needles of a mariner's compass on which are marked the 32 points of the compass and the 360° of the circle.

Radio Frequencies		
Class	Abbreviation	Range
Extremely Low Frequency	ELF	30 to 300 hertz
Voice Frequency	VF	300 to 3000 hertz
Very Low Frequency	VLF	3 to 30 kilohertz
Low Frequency	LF	30 to 300 kilohertz
Medium Frequency	MF	300 to 3000 kilohertz
High Frequency	HF	3 to 30 megahertz
Very High Frequency	VHF	30 to 300 megahertz
Ultrahigh Frequency	UHF	300 to 3000 megahertz
Superhigh Frequency	SHF	3 to 30 gigahertz
Extremely High Frequency	EHF	30 to 300 gigahertz

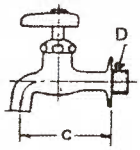
53

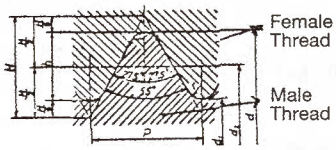
LAVATORY EQUIPMENT

Wall Faucets  P. 53-1 ~ 4	Hand Basins P. 53-4 ~ 5
Water Closets P. 53-5	Toilet Seats & Flush Valves P. 53-5 ~ 8
Sinks P. 53-8	Shower Room Fittings P. 53-8 ~ 10
Trays/Shelves P. 53-10	Mirrors/Medicine Cabinets P. 53-10 ~ 11
Bathroom Items P. 53-11	

Faucet Fitting Threads

The Faucet Fitting Thread marked "D" conforms to Japanese Standard Faucet Thread JIS-B2061. The details of which are as follows:





Threads Details

Nominal Size		Thread per 25.4 mm	Pitch	Standard Size mm		
				d	d2	d1
13	1/2	14	1.8143	20.955	19.793	18.631
20	3/4	14	1.8143	26.441	25.279	24.117
25	1	11	2.3091	33.249	31.770	30.291

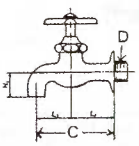
Above threads are equal to the Parallel Pipe Threads (PF) where pressure tight joints are not made on the threads.

The equivalent Standards of the threads are listed below.

Standards		Nominal Size		
JAPAN	JIS-B2061	13	20	25
		1/2	3/4	1
	JIS-B0202	G1/2	G3/4	G1
		PF1/2	PF3/4	PF1
UK	BS2779	G1/2	G3/4	G1
ISO	ISO228/1	G1/2	G3/4	G1

Faucets are made of bronze casting and are chrome plated. The maximum working pressure is 7.5 kgf/cm² [0.74 MPa] for water.

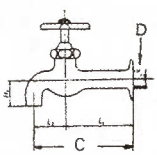
Wall Faucets



Unit Per Pc.

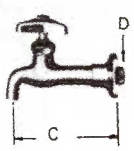
CODE	Thds "D"	Lgth "C" mm	TOTO No.
53 01 01	13 (1/2)	80 mm	T23AUN13
02	20 (3/4)	130 mm	T23BU20

Long Shank Wall Faucets



53 01 05

w/Adjustable Flange



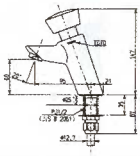
53 01 09-10

Unit Per Pc.

CODE	Thds "D"	Lgth "C" mm	Remark	TOTO No.
53 01 05	13 (1/2)	110	-	T23BNR13
53 01 09	13 (1/2)	110	w/Adjustable	T23BEN13
10	20 (3/4)	107	flange	T23AE20

Self Closing Wall Faucets

Faucet valve closes automatically when handle is released. Available 1/2" standard pipe thread only.

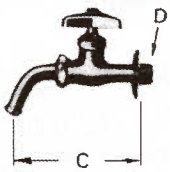


Unit Per Pc.

CODE	Size	TOTO No.
53 01 16	1/2"	TL19

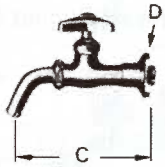
Hose End Wall Faucets

w/Rotary Spout



53 01 24–25

w/Adjustable Flange



53 01 26

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	Remark	TOTO No.
53 01 24	13 (1/2)	120	w/Rotary spout	T200SUN13
25	20 (3/4)	140	"	T200SU20
26	13 (1/2)	131	w/Adjustable flange	T200ESNR13

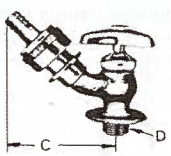
Wall Faucets
w/Snap on Hose Coupling

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	TOTO No.
53 01 36	13 (1/2)	90 mm	T28AUNH13
37	20 (3/4)	108 mm	T28AUH20

Sill Cocks
with Hose Coupling

w/Snap on Hose Coupling



53 01 43–44

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	Remark	TOTO No.
53 01 43	13 (1/2)	98 mm	w/Snap on	T28UNH13
44	20 (3/4)	106 mm	hose coupling	T28UH20

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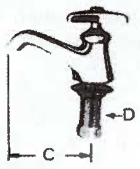
Lavatory Faucets



53 01 51

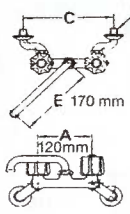
53 01 52 w/Rotary Spout

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	Remark	TOTO No.
53 01 51	13 (1/2)	75 mm	-	T205UNRC
52	13 (1/2)	75 mm	w/Rotary spout	T210SNRC

Combination Wall Faucets
w/Overhead Swivel Spout

53 05 56 w/Swivel Spout

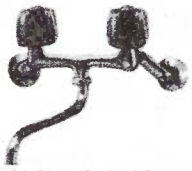


	Dimension
A	120 mm
C	200 +15 -110 mm
E	170 mm
D	13 (1/2)

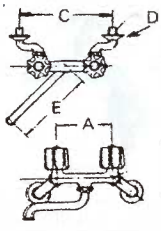
Unit Per Pc.

CODE	Thds "D"	Remark	TOTO No.
53 01 56	13 (1/2)	w/Swivel spout	T20A

Combination Wall Faucets
w/Underside Swivel Spout



53 01 61 w/Swivel Spout



	Dimension
A	120 mm
C	200 +15 -110 mm
E	170 mm
D	13 (1/2)

Unit Per Pc.

CODE	Thds "D"	Remark	TOTO No.
53 01 61	13 (1/2)	w/Swivel spout	T20B

Mixing Lavatory Faucets
for Hand Basin

Single handle or double handle mixing faucets for hand basin. Chrome plated die cast body and double handle faucets mounted on 4" (102 mm) centers

TLS04302J

TLS21U

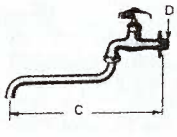
TL306R4GUR

Unit Per Pc.

CODE	Center to Center	Fitting for Water Supply	For Hand Basin	TOTO No.
Single Handle				
53 01 64 65	-	1/2	L210C/ L250C	TLS04302J TLS21U
Double Handle				
53 01 68	102 mm	1/2	L250C	TL306R4GUR

Wall Faucets
w/Underside Swivel Spout

w/Aerator



53 01 72

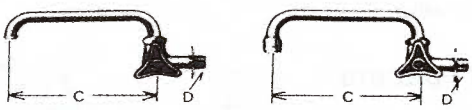
53 01 73

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	Remark	TOTO No.
53 01 72	20 (3/4)	270 mm	-	T30AR20
73	13 (1/2)	250 mm	w/Aerator	T130AUN13

Right Handle Wall Faucets
w/Overhead Swivel Spout

w/Aerator



53 01 77

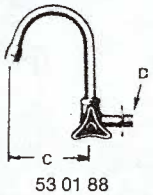
53 01 78

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	Remark	TOTO No.
53 01 77	20 (3/4)	170 mm	-	T31S20
53 01 78	13 (1/2)	170 mm	w/Aerator	T131SUN13

Right Handle Wall Faucets
w/Goose Neck Swivel Spout

w/Aerator



53 01 88

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	Remark	TOTO No.
53 01 88	13 (1/2)	110 mm	w/Aerator	T131AUN13

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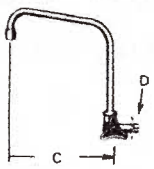
Right Handle Wall Faucets
w/High Swivel Spout



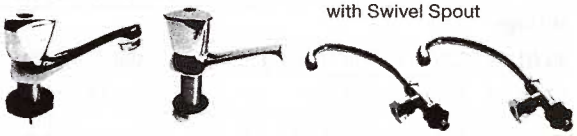
53 01 92

Unit Per Pc.

CODE	Thds "D"	Lgth "C"	Remark	TOTO No.
53 01 92	13 (1/2)	205 mm	w/Aerator	T131BUN13

Lavatory Faucets
Waterline Series

Material: Chromed



53 11 01 53 11 02 53 11 03 53 11 04

Unit Per Pc.

CODE	For	with Swivel Spout	Size	Alligator No.
53 11 01	Cold	-	1/2"	SA56035
02	Hot			SA56036
53 11 03	Cold	with Swivel Spout	1/2" - 200 mm	SA56060
04	Hot		1/2" - 145 mm	SA56065

Name of Mfr.: Alligator

Sink Faucets
Waterline Series

Material: Chromed

Single Lever | with Overhead Swivel Spout | with Underside Swivel Spout

Unit Per Pc.

CODE	Type	Size	Alligator No.
53 11 06	Single lever	130 - 170 mm	SA557295
53 11 11	w/overhead swivel spout	128 - 178 mm	SA558031
12	w/underside swivel spout		SA558050

Name of Mfr.: Alligator

Wall Faucets
Waterline Series

Material: Chromed

with Hose Coupling | with Upper Swivel Spout | with Under Swivel Spout

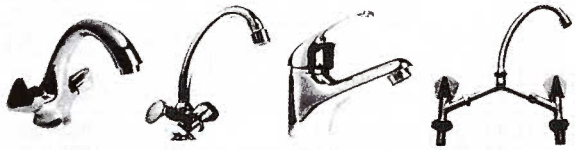
Unit Per Pc.

CODE	Type	Size	Alligator No.
53 11 16	With hose coupling	1/2"	SA83115
53 11 17	U upper swivel spout	1/2" - 200 mm	SA83330
18	S under swivel spout		SA83360

Name of Mfr.: Alligator

Washbasin Faucets
Waterline Series

Material: Chromed


Fixed Spout | Swivel Spout | Single Lever | Swivel Spout

Unit Per Pc.

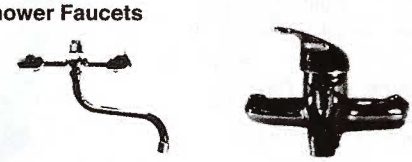
CODE	Type	Size	Alligator No.
53 11 21	1 hole fixed spout	125 mm	SA555019
22	1 hole with swivel spout	140 mm	SA555020
53 11 24	Single lever	-	SA557950
53 11 26	With swivel spout 145 mm	160 - 250 mm	SA600019

Name of Mfr.: Alligator

Bath/Shower Faucets
Waterline Series

Material: Chromed

Bath/Shower Faucets


w/Swivel Spout | Single Lever

Shower Faucets

– | Single Lever | Thermostatic

Unit Per Pc.

CODE	Type	Size	Alligator No.
Bath / Shower Faucets			
53 11 31	w/S swivel spout, reversible	128–178 mm, 1/2" 130–170 mm, 1/2"	SA545025
32	Single lever, reversible		SA557040
Shower Faucets			
53 11 34	-	128–178 mm, 1/2"	SA545026
35	Single lever	130–170 mm, 1/2"	SA557210
36	Thermostatic	130–170 mm, 1/2"	SA847005

Name of Mfr.: Alligator

TOTO's faucets and sanitary earthen-ware are originally designed and produced for the use of residencies / facilities on land. Therefore, when they are used on board ships, they are not covered by TOTO's guarantee.

Kitchen Faucets

Waterline Series

Material: Chromed

w/Swivel Spout | Fixed Spout | Single Lever | Single Lever incl. Shower

Unit Per Pc.

CODE	Type	Size	Alligator No.
53 11 41	1 hole w/swivel spout	200 mm	SA555021
42	1 hole fixed spout (21067)	185 mm	SA555022
53 11 44	Single lever	200 mm	SA557290
45	Single lever incl. shower	250 mm	SA557292

Name of Mfr.: Alligator

Bib Taps

Waterline Series

53 11 51 (30025 Cold) | 53 11 52 (30026 Hot) | 53 11 53 (30053 Cold)

Unit Per Pc.

CODE	Type	Size	AlligatorNo.
53 11 51	Cold	1/2"	SA83430 (30025)
52	Hot		SA83431 (30026)
53	Cold		SA83435 (30053)

Name of Mfr.: Alligator

Washers for Tap

A rubber washer for tap.

Unit Per Pc.

CODE	Size mm	CODE	Size mm
53 11 54	15 × 4 × 4 (3/8)	**53 11 56**	23 × 4 × 4 (3/4)
55	17 × 4 × 4 (1/2)		

Assortment

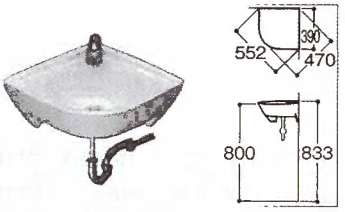
15 sizes, containing 390 of the most common used gaskets for sanitary use in an assortment set.

53 11 57	Washer set for tap, 15 sizes, 390 pcs	Set

Gummi-ring			Fiber-ring		
Nominal Size	Actual Size mm	Q'ty	Nominal Size	Actual Size mm	Q'ty
M22x1	15 × 21 × 2.0	30	3/8"	8 × 14 × 1.5	25
3/8"	8 × 14 × 2.0	25	1/2"	10 × 18 × 1.5	50
1/2"	12 × 18 × 3.0	50	3/4"	15 × 24 × 2.5	30
3/4"	15 × 24 × 3.0	30	11/16"	17 × 21 × 1.5	30
1"	23 × 30 × 2.0	20	13/16"	21 × 24 × 1.5	30
5/4"	30 × 39 × 2.0	15	1"	23 × 30 × 2.0	20
1-1/2"	35 × 44 × 2.0	10	5/4"	30 × 39 × 2.0	15
			1-1/2"	35 × 44 × 2.0	10

Wall Hung Corner Hand Basins

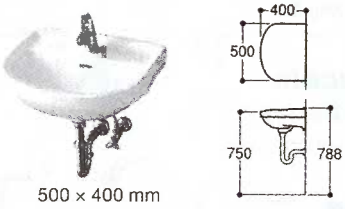
Porcelain made wall hung type for corner installation. Fittings are furnished if required.



CODE	Description	TOTO No.	Unit
53 02 11	Wall hung corner hand basin 552 x 470 mm, 4.5 ltr	L30D	Pc.
Fittings			
53 01 51	Lavatory faucet 1/2"	T205UNRC	Pc.
53 02 33	Mounting bracket	TL220D	Set
53 03 41	Water supply w/stop 1/2" distance end to end 706 mm	TL4D1FU	Set
53 03 47	S-trap 1-1/4" w/plug & chain	T22BS	Set

Wall Hung Hand Basins

Small Size

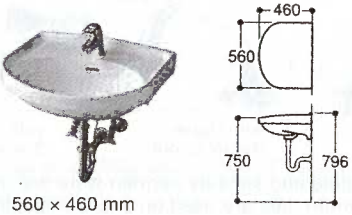


500 × 400 mm

CODE	Description	TOTO No.	Unit
53 02 25	Wall hung hand basin small size 500 x 400 mm, 4.0 ltr	L210C	Pc.
Fittings			
53 01 51	Lavatory faucet 1/2"	T205DUN	Pc.
53 02 34	Mounting bracket	TL250D	Set
53 03 42	S-trap 1-1/4" w/plug & chain	T6BMS	Set

Wall Hung Hand Basins

Large Size



560 × 460 mm

CODE	Description	TOTO No.	Unit
53 02 42	Wall hung hand basin large size 560 x 460 mm, 6.5 ltr	L250C	Pc.
Fittings			
53 01 51	Lavatory faucet 1/2"	T205DUN	Pc.
53 02 34	Mounting bracket	TL250D	Set
53 03 42	S-trap 1-1/4" pop-up type	T6BMS	Set

Washbasins
Waterline Series

410 x 300 mm

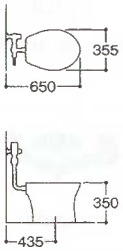
540 x 410 mm

Unit Per Pc.

CODE	Size mm	Tap Hole	Alligator No.
53 13 01	410 x 300	1	SA885360
02	540 x 410		SA890100

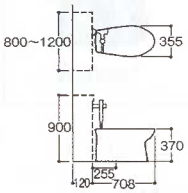
Name of Mfr.: Alligator

Wash-down Water Closets
CS140



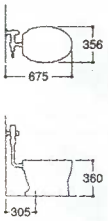
CODE	Description	TOTO No.	Unit
53 03 01	Wash down water closet	CS140	Set
Fittings			
53 03 59	Flush valve (for fresh water)	TV550X	Pc.
49	Plumbing set for flush valve	TSF75L	Set
45	Inlet spud 32 mm	T82CR32	Pc.
34	Seat closed front & cover	TC290	"
44	Floor flange for 75 mm pipe	T53-WR75	"

Siphon-Jet Water Closets
C480N



CODE	Description	TOTO No.	Unit
53 03 06	Siphon-jet water closet	C480N	Set
Fittings			
53 03 59	Flush valve (for fresh water)	TV550X	Pc.
50	Plumbing set for flush valve	TSF100A	Set
46	Inlet spud 32 mm	T52SR32	Pc.
35	Seat closed front & cover	TC291	"
44	Floor flange for 75 mm pipe	T53-WR75	"

Siphonic Wash-down Water Closets
C21N



CODE	Description	TOTO No.	Unit
53 03 11	Siphonic wash down water closet	C21N	Set
Fittings			
53 03 59	Flush valve	TV550X	Set
49	Plumbing set for flush valve	TSF75L	"
46	Inlet spud 32 mm	T52SR32	Pc.
35	Seat closed front & cover	TC291	"
44	Floor flange for 75 mm pipe	T53-WR75	"
13	Screws to floor 63 mm, 2's	T53DN	Set

Water Closets
Waterline Series

P-Trap
(Wall Connection)

S-Trap
(Floor Connection)

AO
(Back Outlet)

Combination BO
(Back Outlet)

Combination P-Trap

Unit Per Pc.

CODE	Type	Feature	Alligator No.
53 15 01	-	P-trap	SA076005
02	-	S-trap	SA076006
53 15 03	-	AO	SA076008
04	Combination	BO	SA076009
05	Combination	P-trap	SA076010

Name of Mfr.: Alligator

Toilet Seats

Made of highly impact resistant plastic which will not crack. Easy cleaning smooth shape. Please refrain from applying thinners or benzine for cleaning toilet seats.

Please specify the model type and number of the seat required from the table below when ordering.

Unit Per Pc.

CODE	Model	Description	Applicable Model No.
53 03 33	TC1R	Open Front w/o cover	CS140

(to be continued)

Unit Per Pc.

CODE	Model	Description	Applicable Model No.
53 03 34	TC290	Closed Front w/cover	CS140
53 03 35	TC291	Closed Front w/cover	C21N C480N

Toilet Seats
Waterline Series

Unit Per Pc.

CODE	Type	Feature	Alligator No.
53 15 11	Closed front	Universal	SA120000

Name of Mfr.: Alligator

Urinal Bowls
Waterline Series

Unit Per Pc.

CODE	Feature	Alligator No.
53 15 21	Europa 55	SA86020

Name of Mfr.: Alligator

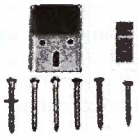
Cisterns
Waterline Series

Unit Per Pc.

CODE	Type	Feature	Content	Alligator No.
53 15 31	Low level	Universal	6 ltr / 3 ltr	SA10030

Name of Mfr.: Alligator

Lavatory & Water Closet Fittings

CODE	Model	Description Size	Unit	Applicable Model No.
53 02 33	 TL220D	Mounting Bracket	Set	L10D
53 02 34	TL250D	Mounting Bracket	Set	L210C L250C
53 03 13	T53DN	Screws to floor 63mm, 2's	Set	C21N
53 03 41	TL4D1FU	Water Supply w/Stop 1/2" (Distance of end to end: 706 mm)	Set	L10D
53 03 42	T6BMS	S-trap 1-1/4" (Distance of end to end: 613 mm)	Set	L210C L250C
53 03 47	T22BS (Same as above)	S-trap 1-1/4" w/plug & chain	Set	L10D
53 03 44	T53WR7	Floor flange for 75 mm pipe	Pc.	CS140 C21N C480N
53 03 45	T82CR32	Inlet spud 32 mm	Pc.	CS140
53 03 46	T52SR32	Inlet spud 32 mm	Pc.	C21N C480N

Flexible Hoses
Joining Faucet and Water Pipe

A flexible hose to connect faucets to the water pipes, they are below the washbasin.

(to be continued)

Unit Per Lgh.

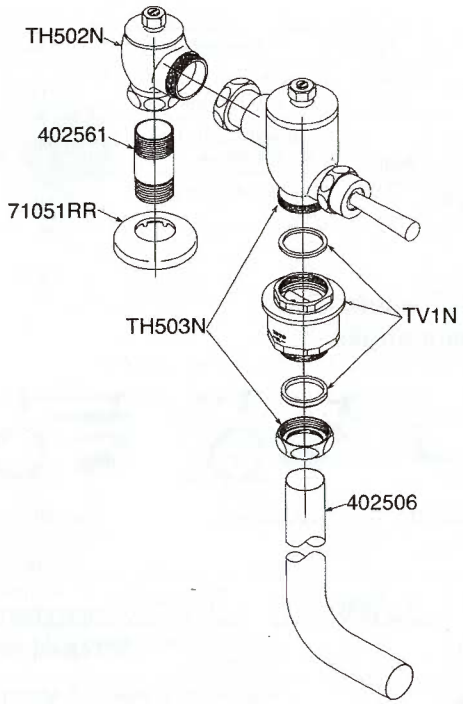
CODE	Size	Length mm	Alligator No.
53 18 26	10 x 10mm clip	300	SA036001
27	10 x 12mm clip		SA036002
28	10 x 15mm clip		SA036003
53 18 29	12 x 12mm clip	300	SA036004
30	12 x 15mm clip		SA036005
53 18 31	15 x 15mm clip	300	SA036006
35 18 32	M10 male x 1/2 BSP female	300	SA036007
35 18 33	1/2" BSP female x female	300	SA036008
34	1/2" BSP female x male	300	SA036009
35	1/2" BSP female x female	600	SA036010
35 18 36	1/2" x 1/2"	1,000	SA036011

Name of Mfr.: Alligator

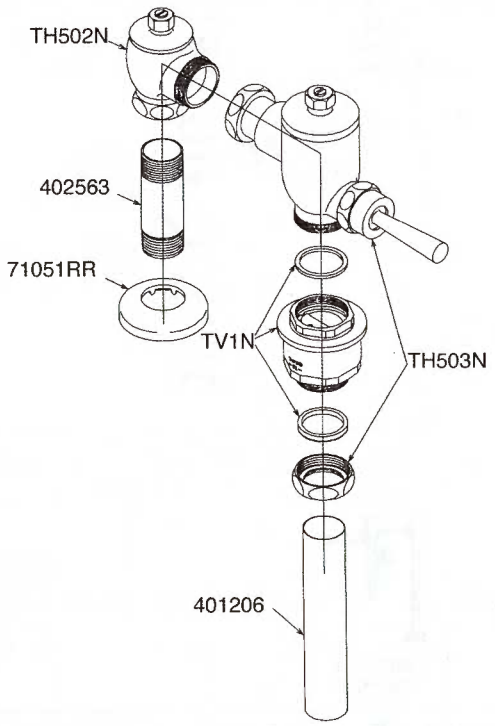
Flush Valves

TOTO Flush Valve Parts List

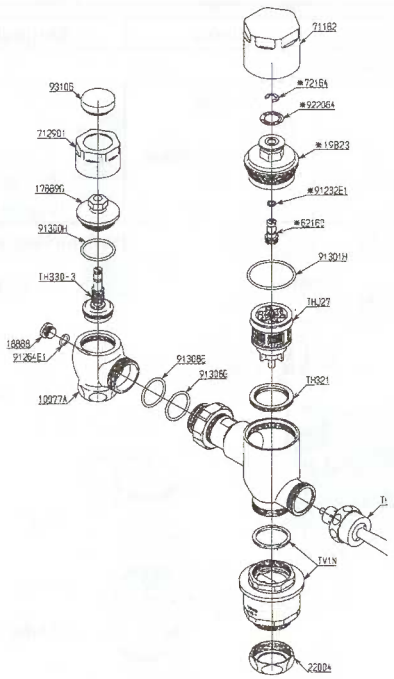
Part No.	Name	Material
TV550R & TSF75LR		
TH502N	Stop valve	-
TH503N	Body	-
TV1N	Vacuum breaker	-
4025013 A	Drain pipe	Brass
402561 A	Supply pipe	Copper
71051RR TP	Cover	Stainless steel



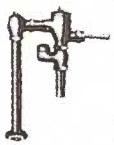
Part No.	Name	Material
TV550R & TSR100AR		
TH502N	Stop valve	-
TH503N	Body	-
TV1N	Vacuum breaker	-
401206 BA	Drain pipe	Brass
402563 A	Supply pipe	Copper
71051RR TP	Cover	Stainless steel



Part No.	Name	Material
TV550R		
TH321	Seat packing	-
TH330-3	Spindle	-
THJ27	Spindle valve	-
THYD9	Handle	-
TV 1N	Vacuum breaker	-
10077A	Stop valve body	Brass
17889GR	Spindle guide	"
18888 BV	Dam cover	"
19B23	Cover	"
22004 A	Cap nut 40	"
62160	Adjusting screw	Brass
71182 A	Cover	"
712901 A	Cover	"
72164	Retaining ring	Stainless steel
91232E1	O ring	Synthetic rubber
91264E1	O ring	Synthetic rubber
91300H	O ring	"
91301H	O ring	"
91308E	O ring	"
922064	Index	Synthetic resin
93106	Cushion	Synthetic resin



Unit Per Pc.

CODE	Model	Inlet Pipe Thread	Outlet Pipe OD mm	Applicable Model	Remark
53 03 55	 TV550R & TSF75LR	PT1	32	C21N	Wall supply elbow outlet w/vacuum breaker
53 03 56	TV550R & TSR100AR	PT1	32	C480N	Wall supply straight outlet w/vacuum breaker
53 03 59	TV550R	PT1	32	CS140 C480N C21N	
53 03 49	TSF75LR	Plumbing set for flush valve		CS140 C21N	
53 03 50	TSF100AR	Plumbing set for flush valve		C480N	

Note: Special metal alloy and other corrosion resistant materials are used for the vital moving parts. Recommended for marine use and other special installations where the flush water is of poor quality.

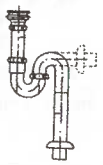
Laundry Sinks

53 03 62

Unit Per Set

CODE	Dimensions mm W × D × H	Exhaust Pipe Diam.	TOTO No.
53 03 62	510 × 500 × 405	38 mm	SK507

Wastes w/S-Trap



Designed for above Laundry sink.
38 mm pipe diameter and the distance from end to end is 719 mm.

53 03 66	Waste w/S-trap, 38 mm diam.	Pc.

Shower Heads

Wall mounted or hand held types are available. Fitting thread PF 1/2.

53 03 75

53 03 78

53 03 79

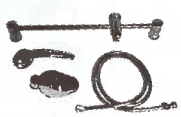
Unit Per Pc.

CODE	Type	Description	TOTO No.
53 03 75	Hand held	Plastic head with 1.2 mtr rubber hose	TBH19E1R
78	Wall mounted	Ball joint with flow control valve	TB18DR
79		Ball joint with wide face	TB18RR

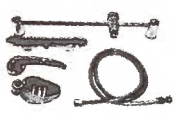
Hand Shower Sets

Waterline Series

SA020900



SA020901



SA020902

Unit Per Pc.

CODE	Type	Content	Alligator No.
53 18 01	-	Hand shower, Hose – size 1/2"	SA020900
53 18 02 03	- w/Thermostatic faucet	Rail, Hand shower 1/2", Hose 1/2" and Soap tray	SA020901 SA020902

Name of Mfr.: Alligator

Hand Showers
Waterline Series

Material: Chromed

SA17030

SA17050

Unit Per Pc.

CODE	Size	Alligator No.
53 18 11	1/2"	SA17030
12	Adjustable 1/2"	SA17050

Name of Mfr.: Alligator

Shower Hoses
Waterline Series

White

Chrome

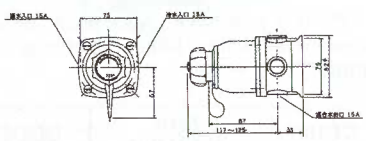
Unit Per Pc.

CODE	Colour	Material	Size	Length	Alligator No.
53 18 21	White	PVC	1/2"	150 cm	SA210150
53 18 22	Chrome	PVC	1/2"	125 cm	SA210200
23		"		150 cm	SA210300
24		"		200 cm	SA210400
25		Metal		150 cm	SA210900

Name of Mfr.: Alligator

Thermostatic Mixing Valves
Model Rada 722M

Thermostatic mixing valves for use with hot and cold fresh water, fitted on shower baths on board ships as anti-scalding mixing valves.



53 03 91	Thermostatic mixing valve Rada 722M	Set

Model	Rada 722M
Type	Exposed type with Inlet & Outlet Union Elbow
Feature	The temperature of the shower water can be varied by the person using the shower over a range of temperatures between a cold water temperature and a temperature of 35°C to 40°C.
Working Pressure	Minimum 0.3 kgf/cm² - Maximum 8.5 kgf/cm²

Name of Mfr.: Kohler Mira Ltd.

Emergency Drench Showers/ Eye Washes

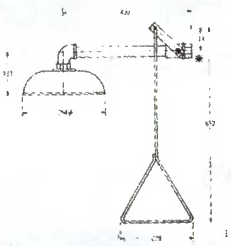
Designed for washing off accidentally splashed acid or chemicals over human's body by clean water. Available three types of systems ; Drench shower for the whole body, Eye wash for the eyes and Combination for both units. Pipe and fittings are galvanized steel pipe protected with yellow coating. Please specify the details of the connection to ships water supply.

Drench Shower:

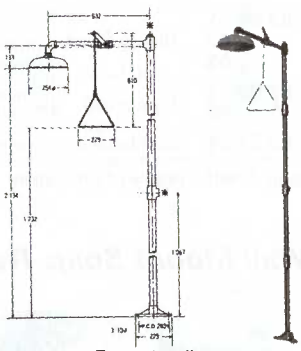
Shower head is 10" diameter and made from yellow impact-resistant plastic. It supplies torrential shower as soon as the pull-rod with triangular handle is operated. Water flow : 20 GPM at 30 PSI. Pipe and fittings are 1" for vertical and horizontal type and 1-1/4" for Free-standing type. 1" IPS female vertical or horizontal water supply and 1-1/4" IPS female of water supply for Free-standing type. Free-standing type is designed for locations where wall-mounted are impractical, and 8' ceiling height is standard. Other ceiling height requirements must be specified and special ordered.

Horizontal Supply

Vertical Supply



Horizontal Supply

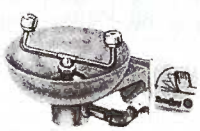


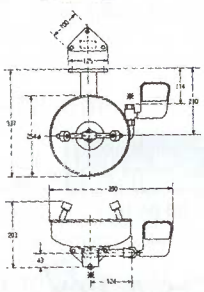
Free-standing

Eye Wash:

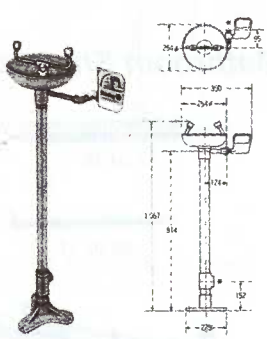
Eye wash bowl is 10" diameter and made from yellow impact-resistant plastic. It supplies gentle stream water by operating high visible yellow PVC push handle. Water flow: 4 GPM at 30 PSI. The wall bracket provided is heavy-gauge aluminium with three clearance holes for wall mounting.

Stand type is designed for locations where wall mounted are impractical.





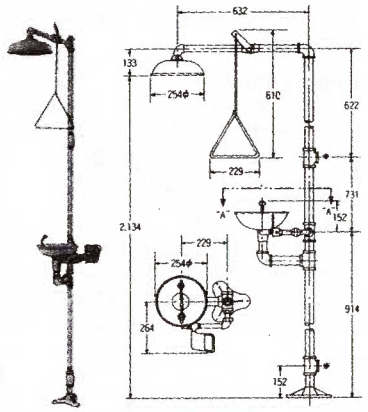
Wall Mounted Type



Stand Type

Combination:

Combined of Drench shower and Eye wash in free-standing unit designed for locations where wall-mounted are impractical. Shower head and eye wash bowl has same 10" diameter yellow impact-resistant plastic. Water flow is 20 GPM at 30 PSI for shower head and 4 GPM at 30 PSI for eye wash. Pipe and fittings are 1-1/4" galvanized steel pipe protected yellow coating. 1-1/4" water supply and 8' ceiling height is standard. Other ceiling height requirements must be specified and special ordered.



Free Standing

Unit Per Set

CODE	Name	Type	Water Supply	Pipe & Fittings
53 06 01	Drench shower	Horizontal supply	1" IPS female	1"
02		Vertical supply	"	"
03		Free-standing	1-1/4" IPS female	1-1/4"
53 06 11	Eye wash	Wall mounting	1/2" IPS female	1/2"
12		Stand	1/2" IPS female	1-1/4"
53 06 21	Combination	Free-standing	1-1/4" IPS female	1-1/4"

Name of Mfr.: Bradley Corporation

Wall Mount Soap Trays

53 04 11

53 04 12

53 04 13

Unit Per Pc.

CODE	Type	Material	Size mm		
			W	L	D
53 04 11	Wall Mount	Porcelain	86	128	56
12		Chrome Plated	74	99	13
13		S.Steel	80	125	23

Bathroom Shelves

53 04 16

53 04 17

53 04 18

53 04 19

53 04 20

Unit Per Pc.

CODE	Model	Material	Size mm		
			W	L	D
53 04 16	Shelf	Porcelain	140	454	65
53 04 17		"	120	300	50
53 04 18	Recessed	"	97	389	16
53 04 19	With Guard Bar	Chrome plated brass frame with glass plate	100	410	80
53 04 20		Chrome plate brass frame with plastic plate	125	456	94

Towel Bars

Made of chrome plated brass bar.

53 04 25

53 04 26

53 04 27

53 04 28

Unit Per Pc.

CODE	Lgth mm	Remark
53 04 25	457	Round Single Bar
26	610	" Double Bar
27	450	" Single Bar
28	450	Hex. " "

Mirrors

Plain 5 mm thick glass plate, regular mirror, provides excellent reflection. Mounting fittings are furnished with the mirror.

Unit Per Pc.

CODE	Size W x H mm	CODE	Size W x H mm
53 04 51	303 x 363	**53 04 57**	303 x 760
52	303 x 455	**58**	506 x 760
53	363 x 455	**59**	608 x 760
54	363 x 608	**60**	608 x 811
55	455 x 608	**61**	201 x 912
53 04 56	201 x 760	**53 04 62**	303 x 912

Mirrors
Waterline Series

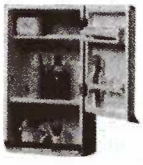
Unit Per Pc.

CODE	Size	Alligator No.
53 19 01	W 40 cm x L 50 cm	SA020749
02	W 40 cm x L 57 cm	SA020750

Name of Mfr.: Alligator

Medicine Cabinets

Medicine Cabinet for lavatory and powder rooms. Ideal for storage of various toiletries.



53 04 66 53 04 67 53 04 68

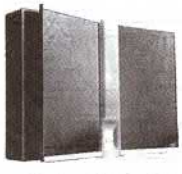
Unit Per Set

CODE	Cabinet Size mm	Mirror Size mm
53 04 66	265 x 485 x 135	254 x 355
67	305 x 510 x 145	304 x 353
68	415 x 715 x 160	407 x 458

Remarks: Model 53 04 68 has 100/110V AC plugs and electrical outlets and 10 W FL Lamp for illumination.

Medicine Cabinets
Waterline Series

Material: PVC



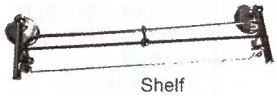
Size: 35×45×15 cm Size: 65×49×11 cm

Unit Per Pc.

CODE	Size	Material	Remark	Alligator No.
53 19 11	35×45×15 cm	PVC	-	SA020756
12	65×49×11 cm	"	220V plug & lamp	SA020754

Name of Mfr.: Alligator

Accessories for Bathroom
Waterline Series



Shelf

Towel Rail

Hook

Soap Tray

Unit Per Pc.

CODE	Name	Size	Alligator No.
53 19 21	Shelf	Length: 50 cm	SA020500
53 19 26	Towel rail	Length: 60 cm	SA020700
53 19 31	Hook for towel or coat double	-	SA020710
53 19 41	Soap tray, thread model	-	SA020800

Name of Mfr.: Alligator

Bathroom Equipment

Plastic made equipment generally used in Japanese style bathroom.

Wash Basin Basin w/Handle Stool Stirring Bar

Unit Per Pc.

CODE	Description	Size	Capacity
53 05 01	Wash basin	Diam 270 mm	3.0 ltr
02	"	Diam 320 mm	4.3 ltr
53 05 03	Basin with handle	Diam 140 mm	1.8 ltr
53 05 04	Soap case		
53 05 06	Bathroom stool	H : 150 mm	
53 05 08	Stirring bar	L : 560 mm	

Shower Curtains

Shower bath curtain in coloured, durable, waterproof vinyl with metal grommets. Standard size is 1,000 x 1,900 mm or 1,800 x 2,000 mm with 8 - 12 grommets. When ordering, please specify the size and colour required.

How to order : 15 - 07 - 14

Curtain, shower, vinyl, size x colour (Pc.)

Adjustable Rails

Chromed Adjustable Rails is also available, Standard size is 22mm dia with range 1,100mm to 2,000mm length.

How to order : 15 - 07 - 17

Adjustable rails, chrome, dia and length (Pc.)

TOTO Items List

CODE	Descriptions		TOTO Model
53 01 01	Wall faucet	13 (1/2)	T23AUN13
02	Same	20 (3/4)	T23BU20
53 01 05	Long shank wall faucet	13 (1/2)	T23BNR13
09	Long shank wall faucet w/Adjustable Flange	13 (1/2)	T23BEN13
10	Same	20 (3/4)	T23AE20
53 01 16	Self closing wall faucet	13 (1/2)	TL19
53 01 24	Hose end wall faucet w/Rotary spout	13 (1/2)	T200SUN13
25	Same	20 (3/4)	T200SU20
26	Hose end wall faucet w/Adjustable flange	13 (1/2)	T200ESNR13
53 01 36	Wall faucet w/Snap on hose coupling	13 (1/2)	T28AUNH13
37	Same	20 (3/4)	T28AUH20
53 01 43	Sill cock w/Hose coupling w/Snap on hose coupling	13 (1/2)	T28UNH13
44	Same	20 (3/4)	T28UH20
53 01 51	Lavatory faucet	13 (1/2)	T205UNRC
52	Lavatory faucet w/Rotary spout	13 (1/2)	T210SNRC
53 01 56	Combination wall faucet w/Overhead swivel spout	13 (1/2)	T20A
53 01 61	Combination wall faucets w/Underside swivel spout	13 (1/2)	T20B
53 01 64	Mixing lavatory faucet for hand basin, single handle	13 (1/2)	TLS04302J
65	Same	13 (1/2)	TLS21U
68	Mixing lavatory faucet for hand basin, double handle	13 (12)	TL306R4GUR
53 01 72	Wall faucet w/Underside swivel spout	20 (3/4)	T30AR20
73	Wall faucet w/Underside swivel spout w/Aerator	13 (1/2)	T130AUN13
53 01 77	Right handle wall faucet w/Overhead swivel spout	20 (3/4)	T31S20
78	Same, w/Aerator	13 (1/2)	T131SUN13
53 01 88	Right handle wall faucet w/Goose neck swivel spout w/Aerator	13 (1/2)	T131AUN13
53 01 92	Right handle wall faucet w/High swivel spout w/Aerator	13 (1/2)	T131BUN13
53 02 11	Wall hung corner hand basin		L30D
53 02 25	Wall hung hand basin, small size		L210C
53 02 42	Wall hung hand basin, Large size		L250C
53 03 01	Wash-down water closet		CS140
53 03 06	Siphon-jet water closet		C480N
53 03 11	Siphonic wash-down water closet		C21N
53 03 33	Toilet seat, Open front without cover		TC1R
34	Toilet seat, Closed front w/Cover		TC290
35	Same		TC291
53 02 33	Mounting bracket		TL220D
34	Same		TL250D
53 03 13	Screws to floor 63 mm 2's		T53DN
41	Water supply w/Stop, 1/2"		TL4D1FU
42	S-trap, 1-1/4"		T6BMS
47	Same		T22BS
44	Floor flange for 75 mm pipe		T53WR75
45	Inlet spud, 32 mm		T82CR32
46	Same, 32 mm		T52SR32
53 03 55	Flush valve		TV550R+TSF75LR
56	Same		TV550R+TSR100AR
59	Same		TV550R
49	Plumbing set for flush valve		TSF75LR
50	Same		TSF100AR
53 03 62	Same		SK507
53 03 75	Shower head		TBH19E1R
78	Same		TB18DR
79	Same		TB18RR

55

CLEANING MATERIAL & CHEMICALS

Laundry Soap and Detergent P. 55-1 ~ 2	Galley Cleaning Detergent P. 55-2 ~ 4	Hand Cleaning Soap and Detergent P. 55-4 ~ 5
Misc. Cleaner and Polish Goods P. 55-5 ~ 6	Floor Maintenance Products P. 55-6 ~ 9	Sanitary Items P. 55-9 ~ 10
Distilled Water P. 55-10	Common Chemicals P. 55-10 ~ 16	Marine Maintenance Chemicals P. 55-16 ~ 27

Solid Soap

High grade yellow laundry soap, solid cakes or bars.

Unit Per Pc.

CODE	grm Per Pc.	Case Contains	CODE	grm Per Pc.	Case Contains
	Cake			Bar	
55 01 01	225	60	55 01 02	600	30

Laundry Soap Powder

Throughly cleans all washable fabrics, cotton and tetoron. Furnished in 500 grm & 1 kgs packets, 10 kgs in cartons, and 20 kgs in woven bag.

CODE	Weight	Packaging	Unit
55 01 07	500 grm	24/Case	Pkt
03	1 kgs	-	Pkt
08	10 kgs	-	C/T
04	20 kgs	-	Bag

Laundry Soap Powder with Enzyme

Higher performance laundry soap powder with stain removal efficiency by enzyme power. Also effective with cold water washing.

Unit Per Pkt.

CODE	Weight	CODE	Weight
55 01 10	1.0 kgs	55 01 11	1.2 kgs

Laundry Starch Spray

Starch for laundry in aerosol type or emulsion type.

Aerosol

Emulsion

Unit Per Tin — Unit Per Btl.

CODE	Type	Content	CODE	Type	Content
55 01 15	Aerosol	330 ml	55 01 16	Emulsion	600 ml

Laundry Starch Powder

For use with water to stiffen clothes, curtains, etc. Packed 1 kg and 150 grm in a polythene bag.

CODE	Size	Packaging	Unit
55 01 17	150 grm	80/Case	Bag
18	1 kgs	15/Case	"

Bleaching Water for Laundry

A liquid chlorine bleach containing deodorizer which is added to the water when washing clothes.

Unit Per Btl.

CODE	Content	CODE	Content
55 01 20	600 ml	55 01 21	1,500 ml
22	1 kgs		

Laundry Softener

Fabric softener that reduces static cling and makes clothes easier to iron.

55 01 24	Laundry softener, 1.65 ltr	Btl
25	" 2.5 ltr	"

Soft Soap

A semi-liquid soap for general cleaning. Made from vegetable oil mixed with soap and can be used when mixed with water for cleaning painted surfaces, woodworking and for general deck cleaning. Furnished in 18 kg cans.

55 01 28	Soap, soft, 18 kgs	Can

General Cleaning Detergent

For general cleaning and manual dish-washing as well as for cleaning painted or varnished surfaces, floors, windows, mirrors, bath tubs, basins, and tiles.

Unit Per Bag

CODE	Type	Content	CODE	Type	Content
55 01 30	ALVA	20 kgs	55 01 36	Local brand	20 kgs

Heavy Duty Detergent

For general cleaning and manual washing as with the above detergent but for heavy duty use.

Unit Per Bag

CODE	Description	Content	CODE	Description	Content
55 01 33	ALVA KRAFT	25 kgs	55 01 37	Local brand	25 kgs

Laundry Machine Detergent

Made of synthetic powder with a bleaching agent for all kind of fabric. For machine use only.

55 01 34	Laundry machine detergent, 20 kgs	Bag

Liquid Soap

A liquid detergent for washing tableware and kitchen utensils. Formulated to cut greasy stains in a wide range of conditions including hard water. Soft and mild on the hands.

CODE	Name	Size	Packaging	Unit
55 01 41	Soap Liquid for Galley	800 cc btl	12/case	Btl
42	Soap Liquid for Galley	18 kgs can		Can
43	Soal Liquid Teepol	18 kgs can		Can

Disinfectant Liquid Soap

A neutral type condensed liquid detergent with disinfectant effect especially for washing knives, cutting boards, including galley equipment, such as slicers, meat choppers, etc. Will eliminate extra times because of the unique pre-mixed components for washing and disinfecting.

Unit Per Btl.

CODE	Contents	CODE	Contents
55 01 45	2 kgs	**55 01 47**	20 kgs
46	10 kgs		

Bleaching Water for Kitchen

A liquid chlorine bleach for sanitizing cutting boards or kitchen cloths.

Unit Per Btl.

CODE	Content	CODE	Content
55 01 48	600 ml	**55 01 49**	1,500 ml

Cleanser

For cleaning and polishing pots, kettles, sinks, bath tubs, earthenware porcelain, aluminium, and stainless steel.

Can be used for floors, woodworks or wherever dirt and grease collects.

CODE	Name	Size	Package	Unit
55 01 51	Galley powder	400 grm/tin	24/ctn	Tin
55 01 53	Vim	500 grm/tin	20/ctn	C/T
54			12/ctn	"

Scouring Cream

Contains soft abrasives suitable for scouring kitchen tables, cooking pans or stainless steel fittings in the bathroom as well as tiles, enamels, etc.

55 01 56	Scouring cream, 400 grm	Btl
57	" , 2.8 kgs	"
58	" , 5.6 kgs	"

All Purpose Liquid Cleaner with Ammonia

Tough institutional cleaner which works on all washable surfaces including linoleum, tile, walls, woodwork, venetian blinds, porcelain and appliances. Contains a dirt and grease removal agent called "ammonial".

Dilute at a ratio of 1/4 cup of cleaner to a gallon of water and you get a powerful cleaning solution that doesn't need to be rinsed or wiped dry.

For windows or mirrors, use 1 teaspoon of cleaner per gallon of water and wipe dry. For spots, stubborn stains or tough jobs, use at full strength and rinse afterwards. Mild on the hands and non-flammable.

Warning!

Do not use in combination with chlorine.

Unit Per C/T

CODE	Content	Packaging
55 01 61	28 oz	12 btl/case
63	750 ml	16 btl/case
60	2 ltr	6 btl/case

Toilet Cleanser

A neutral ingredient cleanser for removing dirt spots and scales over the toilet bowl.

Unit Per Btl.

CODE	Q'ty	CODE	Q'ty
55 02 35	500 ml	**55 02 36**	800 ml

Heavy Duty Kitchen Liquid Cleaners

An all purpose liquid cleaner with grease-cutting formula for cleaning greasy kitchen dirt. Use diluted or at full strength.

Concentrated Spray

Unit Per Btl.

Concentrated		Spray	
CODE	Q'ty	CODE	Q'ty
55 01 65	500 ml	**55 01 73**	400 ml
70	800 ml	**74**	Refill (400 ml)

Grease Remover for Kitchen Plates

Specially formulated for the cleaning of kitchen griddles and ovens. Highly alkaline product specially formulated for the cleaning of metal surfaces, which makes it specially suitable for use on kitchen griddles. It contains tensioactives and special components which help the product soak the griddle.

55 01 79	Grease remover for kitchen plate surface, 5 ltr	Btl

General Purpose Liquid Cleaners

A concentrated general purpose cleaner for use on all surfaces not harmed by water. Cleans floors, porcelain, leather, plastic, stainless steel, aluminium surfaces, and appliances. Dilute before using for concentrated type.

Concentrated Spray

Unit Per Btl.

Concentrated		Spray	
CODE	Q'ty	CODE	Q'ty
55 01 68	500 ml	**55 01 75**	400 ml
69	2,000 ml	**76**	Refill (350 ml)

Biodegradable Multi-Purpose Cleaner "Rydlyme Marine® Boat Cleaner"

A powerful, multi-purpose, multi-surface detailing cleaner. RYDLYME Marine® Boat Cleaner is biodegradable and scientifically formulated to clean and eliminate oil, grease, grime, dirt and many other pollutants from all types of surfaces. This ready-to-use, non-toxic formula contains no bleach or ammonia. Just spray it on, let it penetrate the deposit for 20-30 seconds and rinse off and/or wipe clean with a damp cloth. For larger or tougher jobs that may require brushes, pressure washer or other equipment. Please shake bottle before use.

CODE	Contents	CODE	Contents
55 01 86	6 x 710 ml / case	**55 01 88**	18 ltr / pail
87	4 x 3.8 ltr / case	**89**	208 ltr / drum

Name of Mfr. : Apex Engineering Products Corporation

Bathroom Cleaning Liquid

Heavy duty cleaner for cleaning bath tubs and wall surfaces in bathroom.

Concentrated Spray

Unit Per Btl.

Concentrated		Spray	
CODE	Q'ty	CODE	Q'ty
55 01 71	500 ml	**55 01 77**	400 ml
72	4.5 ltr	**78**	Refill (350 ml)

Mold Cleaner

For destroying and preventing mold germination over the surface in saturated area, especially in kitchens and bathrooms. Please wash your hands and eyes after spraying to avoid irritating to the skin or eyes.

Unit Per Btl.

CODE	Q'ty	CODE	Q'ty
55 02 31	400 grm	**55 02 33**	1,000 grm
32	Refill (400 grm)	**34**	Refill (1,000 grm)

Dish Washing Machine Detergent

A strong alkaline detergent in powder or liquid for use with any type of dish-washing machine. Creates very little foam. Please pay attention of mixing density with water according to the instruction of usage from each manufacturer.

Caution!

Don't use the detergent in close proximity to the eyes or other sensitive areas.

Unit Per C/T Unit Per Btl.

Powder		Liquid	
CODE	Contents	CODE	Contents
55 01 80	15 kgs	**55 01 82**	25 kgs
81	20 kgs		

Dish Washing Machine Rinse Additives

A translucent brownish liquid made of sugar, ester, and glyceride, etc. and used as a rinse additive to dry machine washed dishes.

55 01 85	Dish washing machine rinse additive, 10 kgs	Can

Machine Warewashing Detergent

A wide variety of detergents for cleaning tableware and kitchen utensils are available.

The most common detergents are listed below.

CODE	Item	Content	Purpose	Unit
For Conventional Dispensers				
55 02 01	Impact	1 kg x 25's per C/T	One-pass, volume washing with heavy soil loads in hard water. For tableware including plastic-ware.	C/T
55 02 03	Soilite	1 kg x 25's per C/T	For use in soft water (to 7 gpg) where coffee stains, milk solids and animal fats are a problem.	"
55 02 05	Acclaim	1 kg x 25's per C/T	For use in soft (or mechanically softened) to medium-hard water.	"
Tableware Presoak Detergent				
55 02 11	Assure	1 kg x 10's per C/T	Presoak for stainless and silver flatware. Detarnishes silverware.	"
Final Rinse Additives				
55 02 13	New Rinse-dry	4 ltr/Btl	For speed drying and eliminating spotting and streaking after machine washing. For automatic injection into rinse.	Btl
Manual Washing Powder				
55 02 15	Tetrox	20 kgs Drum	For manually washing tableware, glassware, pots and pans.	Drm
Specialty Product				
55 02 18	Lime-A-Way	10 kgs Drum	Removal of lime film, iron stains and scale; for use on dish-machine interiors, stainless and aluminium surfaces hospital glassware, toilet bowls and urinals animal cages.	Drm
55 02 19	Dip-it	20 kgs Drum	For cleaning plastic ware, china or metal surfaces, stained with coffee or food stains.	"
55 02 20	Grease-Cutter	4 ltr/Btl	Removes grease from ovens, stove hoods, grills, broilers, deep fat fryers.	Btl

Name of Mfr.: Ecolab Co., Ltd.

Toilet Soap

For washing face, body and hands.

CODE	Description	Size	Packaging	Unit
55 02 51	Private Brand	71 grm/pc.	200/Case	Pc.
55 02 52	Lux	3 oz/pc.	72/Case	Pc.
53		75 grm/pc.	72/Case	C/T
48		90 grm/pc.	2's/Pkt	Pkt
49		100 grm/pc.	3's/Pkt	Pkt
55 02 54	Lifebuoy	100 grm/pc.	24/Case	Pc.
55		100 grm/pc.	24/Case	C/T
55 02 56	Camay	85 grm/pc.	72/Case	Pc.

Pumice Soap (Lava Soap)

Used to remove grease and oil from the hands. Useful for mechanics, painters and those doing work with difficult to remove greases or dirt. Supplied 144 bars in a case.

55 02 60	Soap, pumice, 95 grm	Pc.

Disinfectant & Antiseptic Hand Liquid

A condensed liquid detergent with disinfectant effect especially for hands washing. Normally stored in wall-mounted dripping tank. A few drops will foam and make clean hands by scrubbing with water. Will eliminate extra times because of the unique pre-mixed components for washing and disinfecting.

Unit Per Btl.

CODE	Contents	CODE	Cotents
55 02 62	500 grms	**55 02 64**	5 kgs
63	3 kgs		

Wall Mount Containers

for Disinfectant & Antiseptic Hand Liquid

Wall mount type plastic container for storing disinfectant & antiseptic liquid in wash room or lavatory. Can be furnished with glue on the wall.

55 02 65	Wall mount container, plastic, for disinfectant & antiseptic liquid	Pc.

Rapid Hand Cleaner

British made antiseptic rapid hand cleaner, conforms to British P.A.S.16. Removes oil, grease, paint, tar, oil based inks, creosote, resins, waxes, and rubber compounds.

Warning!

Do not use the cleaner in close proximity to the eyes or other sensitive areas.

55 02 66	Hand cleaner rapid	1 ltr	Tin
67	Hand cleaner rapid	1 ltr x 6 tins	C/T
68	Hand cleaner rapid	4.5 ltr	Tin
69	Dispenser for above	4.5 ltr tin	Set

Waterless Hand Cleaner

Dissolves grease, paint, ink, grime, dirt, tar and difficult to clean substances. Smooth, gelatin, waterless hand cleaner for engineers.

55 02 71	Hand cleaner, waterless, "YUNISOL-T", 1 kg	Tin

Vaseline

(Soft Paraffin)

Moistens dry skin and protects it from chapping. Applied to the hands after working with paint, paint thinner, or any other substance which dries out the hands or causes chapping. Supplied in 500 grm jars.

55 02 76	Vaseline, 500 grm	Jar

Barrier Cream

Used for the same purpose as vaseline but this cream is applied before work and washed off afterwards.

55 02 78	Barrier cream 300 grm	Jar

Hand Cleaning Wipes

Tough extra large wipe combined with powerful liquid heavy duty hand cleanser, containing moisture to leave skin feeling conditioned after use. Can be used in and around the workshop or away from the workplace - no water required.

The wipes act quickly and effectively leaving no residue and a pleasant after smell on the skin.

**** Red Box (for workshop wipes)***

Suitable for removing oil, grease and grime. Liquid is a blend of cosmetic quality non-ionic and anionic cleaners, refined aliphatic dibasic esters, moisturisers, preservatives and water.

**** Black Box (for paintshop wipes)***

Suitable for removing synthetic, 2 pack and cellulose paints (base coats and lacquers), body fillers, adhesives and sealants, plus most other refinishing soilings.

**** Tough Wipes***
(Anti-bacterial protection)

The textured surface acts like a scrub to remove ingrained grime, whilst the active ingredients lift off a wide variety of soiling easily. The smooth side locks in dirt and prevents re-transfer. Tough Wipes also include anti-pathogen agents to combat Weils Disease, common germs and viruses, as well as 'super-bugs'. Removes: grease, oil, silicone, paints, sealants, inks, adhesives.

Unit Per Can/Pkt.

CODE	Name	For	No. of Sht	Weight kgs
55 02 81	Red box	Workshop wipes	150/Can	1.5
82	Black box	Paintshop wipes	150/Can	1.5
55 02 83	Tough wipe	Anti-bacterial	30/Pkt	0.35
84	Tough wipe 100	protection	100/Pkt	1.2

Name of Mfr.: "Red Box" and "Black Box" : Deb Limited.
"Tough Wipes" : CRC Industries

Hand Cleanser

Loctite SF7850 / SF7855 (Loctite Orange)

Product No.35228

Thicker consistency to scoop straight from container. Biodegradable, waterless, and petroleum-solvent-free; cleans with fresh-scented,natural citrus power. Contains aloe, lanolin, jojoba, and other premium skin conditioners.

SF7850 – General purpose cleaner, removes ground-in dirt, grease grime and oil.

SF7855 – For removal of ink, paint, resin or adhesives.

55 15 24	Hand Cleanser SF7850, 400 ml	Btl
25	Hand Cleanser SF7850, 3 ltr	Btl
26	Hand Cleanser SF7855, 400 ml	Btl

Hand Cleaner "Scrubs"

Revolutionary heavy-duty hand cleaner towel that loosens, dissolves and absorbs dirt, greases, oil paint adhesives, tar, silicone and more from hands.

55 02 87	SCRUBS 72, 72 towels/bucket	Bkt
88	SCRUBS 36, 36 towels/bucket	"
89	SCRUBS Multi, 24 towels/pack	Pack

Name of Mfr.: ITW Devcon

Hand Soap in Pump Dispenser

A medicated soap in pump dispenser. Simply press the bottle head with one hand, and rub over hands or face after received soap spouted from the nozzle. Available two types of soap spouted, jell or foam.

Unit Per Btl.

Jell		Foam	
CODE	Q'ty	CODE	Q'ty
55 02 91	250 ml	**55 02 93**	250 ml
92	Refill (200 ml)	**94**	Refill (200 ml)

Oven Cleaner

Aerosol type cleaner which cleans ovens fast without scouring and scrubbing. Penetrates baked on grease and grime and leaves a clean surface. Furnished in 226 grm cans.

55 03 01	Cleaner oven 226 grm	Tin

Toilet Bowl Cleanser

Removes stains where toilet germs lurk. Keeps toilets glistening clean without scrubbing. Works chemically and cleans even hidden traps. Use at least twice a week to remove film stains, incrustations and toilet odors.

Duck Neck

Unit Per Btl.

CODE	Description	Content	CODE	Description	Content
55 03 07	Harpic	500 grm	**55 03 10**	Duck neck	700 ml

Aerosol Glass Cleaner

A general purpose aerosol cleaner for glass, mirrors, car windows, plastic products, enamelware, earthenware, tile, marble, furniture and automobiles. Spray and wipe clean with a cloth to get a lustered surface.

Caution!

Do not use near foodstuffs or on tableware. Harmful if ingested.

Unit Per Tin

CODE	Contents	CODE	Contents
55 03 12	280 ml	**55 03 11**	310 ml
14	300 ml	**13**	480 ml

Deodorizers

For absorbing disagreeable odors in the refrigerator or other places that require deodorizing. Made from quality activator carbon. Furnished in small and large sizes.

55 03 21	Deodorizer, regular	60 grm	Pc.
22	"	120 grm	"

Air Freshener

One spray makes a room fresh.

Unit Per Tin

CODE	Description	Size	Packaging
55 03 31	Air Freshener	220 ml tin	15/case
32		420 "	12/case

Concentrate air freshener with long duration. Its natural perfume provides a cool, clean and nice environment. It deodorizes and perfumes all kind of environments.

55 03 33	Air freshener, 5 ltr	Btl

Liquid Air Freshener

*** For Linen and Cloths**

Designed for neutralizing and deodorizing the unpleasant odors in clothing and linens. Made of blended organic components.

*** For Shoes**

Specially designed for deodorizing against unpleasant odors generated from the inside of the shoes.

*** For Toilet**

Specially designed for removing and preventing from ammonia odors generated in toilet.

55 03 37	Liquid Air freshener for Linen & Cloths, 400 ml	Btl
38	Liquid Air freshener for Shoes, 400 ml	Btl
39	Liquid Air freshener for Toilet, 400 ml	Btl

Deodorizing Coagulant Powder

Sprinkle this powder and cover the vomits or excrement. Quickly absorbs, congeals, and deodorizes vomits.

55 03 34	Deodorizing coagulant powder 10 kg	Pkt

Disinfecting Deodorant

For disinfecting the bacteria and degrading disagreeable odors in the room, locker, refrigerator or any places. Tear open the outer package, remove inner package and place or hang in area to be deodorized.

Effective space for 1 unit is aprox. 20m², lasting 2-3 month. Available from 50 pkt/Case.

55 03 35	Disinfecting deodorant, 50'pkt	C/S

Toilet Odor Balls

For removing disagreeable odors in toilets. Just put into the urine pot. Supplied 60 balls per carton.

55 03 36	Toilet odor ball	Pc.

Drain Pipe Cleaner

A plumbing detergent designed to dissolve clogs in pipes. Dissolves everything except glass or metal without damaging the piping.

Caution!

Harmful. Do not use with bare hands or expose to the skin. Do not use on dishes or aluminium.

Unit Per Btl.

CODE	Size	CODE	Size
55 03 40	250 grm	**55 03 42**	1 kgs
41	500 grm	**43**	5 kgs

Liquid Metal Polish

For polishing almost all metals, such as brass, copper, nickel, chrome, stainless steel, aluminium and even for machinery and golf clubs.

55 03 51	Metal polish, liquid, 300 grm	Tin
52	" 360 grm	"

Stainless Steel Cleaner and Polish

Cleans and polishes in just one operation. Resists finger-printing and masks surface blemishes on stainless steel, chrome, architectural aluminium and laminated plastic. Contains harmless food grade oil petroleum distillates.

55 03 55	Cleaner & polish, spray stainless steel 420 ml	Tin

Paste Metal Polish

Same as liquid metal polish but for precision machine or shaft grinding. Furnished in 250 grm tins.

55 03 58	Metal polish, paste, 250 grm	Tin

Liquid Furniture Polish

This liquid polish can clean and keep furniture, wood corridors, linoleum tile, porcelain, stonework, leather, and metal in good condition. Mix with water or apply two or three drops to wet cloth and clean. Wipe surface with dry cloth after cleaning.

55 03 61	Polish, liquid, furniture	200 cc	Btl
62	"	400 cc	"
63	"	1.13 ltr	"
64	"	4.5 ltr	"

Spray Furniture Polish

For polishing furniture and keeping a good luster. Instant aerosol spray can clean tables, sideboards or any other furniture made of wood.

55 03 68	Furniture polish spray	220 grm	Tin
69	"	420 grm	"

Plain Wood Polish Liquid

For polishing unvarnished or unpainted wood surfaces. Maintains the natural wood finish and protects against dust, scratches, etc. Furnished in liquid or paste types.

Unit Per Tin

CODE	Size	CODE	Size
Liquid		**Paste**	
55 03 75	500 cc tin	**55 03 80**	270 grm tin
74	700 cc tin	**81**	500 grm tin
76	1 ltr tin		
77	2 ltr tin		
78	4 ltr tin		

Varnished Floor Polish Liquid

For polishing varnished wood floors. Protects from dust and scratching.

Unit Per Tin

CODE	Size	CODE	Size
55 03 84	500 cc tin	**55 03 86**	2 ltr tin
85	1 ltr tin	**87**	4 ltr tin

Tile Emulsion Polish

For cleaning and polishing chemical floor tiles. Will not leave behind a slippery surface after waxing.

Unit Per Tin

CODE	Size	CODE	Size
55 03 90	500 cc tin	**55 03 92**	2 ltr tin
91	1 ltr tin	**93**	4 ltr tin

Carpet Shampoo & Cleaner

Carpet shampoo and cleaner remove dirt and restore a carpet to its original texture. No need for hard scrubbing because the dirt is lifted to the surface automatically where it can be brushed or vacuumed clean.

55 03 96	Carpet shampoo, spray, 480 cc	Tin
97	Carpet cleaner, liquid, 4 ltr	"
98	Carpet cleaner, liquid, 18 ltr	"

Floor Maintenance Products

Liquid wax for use in floor cleaning and maintenance. When ordering, please specify the name and size of the product you require.

Summary List

CODE	Name	Size	Coverage per 18 ltr	Alternative in U.S.A.
	Floor Stripper			
55 05 02	New Super All-go	18 ltr	450-900 m²	Freedom

(to be continued)

CODE	Name	Size	Coverage per 18 ltr	Alternative in U.S.A.
55 05 03	Power Go	18 ltr	450-900 m²	Pro Strip
04	New Powerful Bika	18 ltr	-	Bravo Heavy Duty Stripper
05	Get Off	18 ltr	450-900 m²	Bravo
	Floor Cleaner			
55 05 07	Forward (Non phosphorus)	18 ltr		Go Forward
08	Big Bare	18 ltr		No Comparable
10	Forward Non Rinse	18 ltr		Forward DC
12	Neutra Fresh	18 ltr		Stride
	Wood Floor Maintenance			
55 05 18	Sted Fast	18 ltr	600-1,200 m²	Traffic Wax Paste
19	Gymace	18 ltr	1,100 m²	No Comparable
	Synthetic Chemical Floor Maintenance Self Shining Type Synthetic Resin Wax			
55 05 32	Stardom	18 ltr	1,200 m²	Complete
33	Complete S	5 gal	1,200 m²	Complete
36	Super Complete	18 ltr	1,200 m²	Complete
39	John Star	18 ltr	1,500 m²	Vectra
42	Impress Coat	18 ltr	1,500 m²	Vectra
45	Non-buff	18 ltr	1,500 m²	No Comparable
46	Neutra Coat	18 ltr	1,200 m²	ZF 175
	Hi-solid Synthetic Resin Finish			
55 05 48	Jsaver	18 ltr	1,200 m²	Signature
49	Pro Stage	18 ltr	1,200 m²	Premia
50	Fast Step	18 ltr	1,200 m²	Show Place
51	Grandprix	18 ltr	1,200 m²	Show Place
52	Centurion	18 ltr	1,200 m²	Show Place
	Buffable Type Water Emulsion Wax			
55 05 56	T/G	18 ltr	1,200 m²	No Comparable
	Sealer			
55 05 64	Basic Coat	18 ltr	1,200 m²	Technique
66	Concrete Sealer	18 ltr	400-1,000 m²	JX-4000

Floor Stripper

Unit Per Can

CODE	Name	Size	Remark
55 05 02	New Super All-go	18 ltr	Powerful fast stripper
03	Power Go	18 ltr	Ultra powerful fast stripper
04	New Powerful Bika	18 ltr	Wax stripper
05	Get Off	18 ltr	Fast stripper

Floor Cleaner

Unit Per Can

CODE	Name	Size	Remark
55 05 07	Forward (Non phosphorus)	18 ltr	General purpose cleaner
08	Big Bare	18 ltr	General purpose cleaner
10	Forward Non Rinse	18 ltr	General purpose disinfectant cleaner

(to be continued)

Unit Per Can

CODE	Name	Size	Remark
55 05 12	Neutra Fresh	18 ltr	General purpose neutral cleaner

Wood Floor Maintenance

Unit Per Can

CODE	Name	Size	Remark
55 05 18	Sted Fast	18 ltr	Polishing wax for wood floors
19	Gymace	18 ltr	Finish for wood floors

Synthetic Chemical Floor Maintenance

Synthetic Resin Wax Self Shining Type

Unit Per Can

CODE	Name	Size	Remark
55 05 32	Stardom	18 ltr	High gloss floor finish
33	Complete S	5 gal	Toughest long lasting floor finish wax
36	Super Complete	18 ltr	Metal-interlock floor finish
39	John Star	18 ltr	High gloss floor finish
42	Impress Coat	18 ltr	High gloss floor finish
45	Non-buff	18 ltr	Self shining, non buff, non-slip
46	Neutra Coat	18 ltr	Zinc-free finish

Hi-solid Synthetic Resin Finish

Unit Per Can

CODE	Name	Size	Remark
55 05 48	Jsaver	18 ltr	High performance UHS finish
49	Pro Stage	18 ltr	Ultra high-speed floor finish
50	Fast Step	18 ltr	High performance floor finish
51	Grandprix	18 ltr	High performance floor finish
52	Centurion	18 ltr	High performance floor finish

Water Emulsion Wax Buffable Type

Unit Per Can

CODE	Name	Size	Remark
55 05 56	T/G	18 ltr	Self polishing floor finish

Sealer

Unit Per Can

CODE	Name	Size	Remark
55 05 64	Basic Coat	18 ltr	Long lasting sealer/Base coat
66	Concrete Sealer	18 ltr	Concrete sealer/Finish

Pine Scent Disinfectant Solution

Contains ingredients such as soap, pine oil, and Isopropyl Alcohol. This solution kills germs such as the influenza virus and gerous staph and strep on surfaces preventing the spread of germs in kitchens and bathrooms.

CODE	Contents per	Unit
55 06 01	500 ml	Btl
02	4 ltr	Tin
03	18 ltr	Can

Insecticide Fluid

Excellent Insecticide with quick & lasting effects. Highly effective in disabling flies, maggots, mosquitoes, mosquito larvae, fleas, bedbugs, cockroaches & house ticks.

55 06 06 07	Insecticide fluid	4 ltr 18 ltr	Can Tin

Insecticide Cockroach Residual

The product fights effectively the crawling insects. Residual effect is 6 to 12 months. Solvent base formulation.

55 06 08	Insecticide, cockroach, residual, 5 ltr	Btl

Disinfectant Liquid "Cresol"

Used for general disinfection, has phenolic order.

55 06 11 12	Disinfectant liquid cresol "	500 cc 18 ltr	Btl Tin

Disinfectant Liquid "Phenol" (Carbolic Acid)

Antiseptic, disinfectant and germicide for external use only. Never use on wounds and ulcerations. Also used for general disinfection, and antiseptic purpose.

Caution!

Toxic by ingestion, inhalation and skin absorption.

55 06 16 17	Disinfectant liquid phenol	500 ml 18 ltr	Btl Tin

Cockroach Killers

Aerosol cockroach killer with a rapid disabling effect. For use indoors. Has a pleasant fragrance.

CODE	Contents	Unit
55 06 21 22	300 cc "	Tin 12 Tin/Ctn

Insect Killers

Aerosol insect killer which will eliminate insects and prevent them from entering the accommodations.

CODE	Contents	Unit
55 06 24 25	300 cc "	Tin 12 Tin/Ctn

Insecticide Powder

Effective for the control of flies, fly larvae, mosquitoes, mosquito larvae, cockroaches, fleas, bedbugs and house-ticks.

Application is made by dusting over the places where harmful insects are liable to breed.

55 06 27	Insecticide powder, 500 grm	Btl

Rat Poison

Improved rat poison that kills rats when they feed upon it. Supplied in 125 grm packets with 12 packets in a case.

55 06 30	Rat poison, 125 grm	Pkt

Self-Heating Cockroach Fumigator

Begins working when the lid is removed to fumigate insects effectively.

Features:

1. Heats up when in contact with air and disperses an effective vapor.
2. Kills all exposed insects: cockroaches, house ticks, bedbugs, fleas, flies, mosquitoes, gnats, etc.
3. Flashing effect - infected insects will die after being flushed out from where they hide and breed.
4. Easy to use - just remove the cap.
5. Safe pyrethrin chemical used.
6. Applications: cabin, galley, store rooms, etc.

Instructions for use:

1. Open cabinets, doors and drawers in the area to be treated.
2. Close doors and windows and shut off all fans and air conditioning.
3. Place the canister in the center of the room.
4. Exit after opening the lid and keep the area closed for 1 - 3 hours.

Unit Per Pc.

CODE	Main Ingredient Content	Unit	Capacity
55 06 35	1 grm	Pc.	16 m²
36	2 grm	"	32 m²
37	3 grm	"	48 m²

Disposable Cockroach Traps

Easiest, cleanest way ever to kill roaches without poisons or chemicals harmful to humans and pets.

The cockroach trap works in a completely different way. It consists of a mini house with special insect glue and special food bait that lures roaches inside the trap where they are caught and die.

55 06 40	Cockroach trap with special food bait 5's	Pkt

Sanitary Items for Quarantine Inspection

The listed below are standard items required to maintain ship in a sanitary condition by local quarantine office.

Items	IMPA Code	Remarks
*** Rat Guards**		
Rat Guard	23 23 61 - 64	At least the number of mooring ropes and 2 spares.
*** Rat Traps**		
Rat Trap	17 43 51 - 52	At least 5 traps
*** Rat Poisons**		
Rat Poison	55 06 30	At least 500 grm of rat poisons
*** Insecticides**		
Insecticide Fluid Sprayer or Insect Killer	55 06 06 55 06 60 - 61 55 06 24 - 25	At least 1 to 2 ltr emulsion insecticide, or At least 1 to 2 dozens aerosol (300 ml) insecticide.
*** Disinfectant for Portable Water**		
Sodium Hypochlorite Solution	55 06 71	At least 5 ltrs of disinfectants.

General Disinfectants		
Disinfectant Liquid "Phenol" and	55 06 16	500 grm x 3 - 5 btls
Disinfectant Liquid "Cresol"	55 06 11	500 grm x 3 - 5 btls

Smoke Insecticides

An insecticidal smoke generator containing Permethrin as the active ingredient. Highly effective for the control of cockroaches, house ticks, bedbugs, fleas, and larvae of fly and mosquitoes in buildings, vessel-holds, warehouses, ships, restaurants, hospitals and factories. When fumigated, insecticidal smoke is emitted penetrating into every corner and hard-to-reach place to eradicate the insects.

Features:

1. Highly effective both in knockdowns and long-lasting effects.
2. Flushes insects from hiding places and kills them.
3. Simple to use, ignite the wick of the can with a match.
4. Not harmful to people or animals.
5. Does not corrode metals.

Standard amounts to be used for Covering Space

Size of Tin Insects to be exterminated	No.3 120 grm	No.2 240 grm	No.1 480 grm
Cockroaches, house ticks, bedbugs, etc.	100-134M³	200-267M³	400-533M³
Larvae of fly and mosquito	200-400M³	400-800M³	800-1,600M³

CODE	Nominal Size of Tin	Actual Size	Packaging	Unit
55 06 51	No. 3	120 grm tin	40/Case	Tin
52	No. 2	240 grm tin	12/Case	"
53	No. 1	480 grm tin	12/Case	"

Handy Sprayers

Tin made handy sprayer for insecticides, etc.

55 06 60	Sprayer, handy	Pc.

Shoulder Sprayers

For spraying insecticide or any liquid by utilizing a hand pump. Can be carried on the shoulder for easy use anywhere.

55 06 61	Sprayer shoulder type	4 ltr	Set
62	"	10 ltr	"
63	"	11 ltr	"

Drinking Water Disinfectant

Hadex

A safe, effective and easily applied product, especially intended for disinfecting drinking water in tanks and pipelines. Also keeps the drinking water in good condition.

A liquid product which mixes quickly and easily with water for immediate use. Hadex starts disinfecting immediately, and the water is ready for consumption after a short period of only 30 minutes.

Hadex treatment is based on the tried and tested use of chlorine in the preparation and final treatment of drinking water with long shelf life at least one year under normal conditions (Temperature = 25 deg. C).

Hadex has been tested and approved by a number of maritime authorities, such as ; the Dutch Ministry of Health (CTB registration No.9574 N), the Dutch Directorate General for Shipping and Maritime Affairs – Shipping Inspection Division NSI (NL), DOT (UK), NMD (Norway), GL (Germany) and NATO.

There are three standard dosages for drinking water treatment in most situations.

- Suitable for standard Hadex proportional dosing installations for single flow through drinking water systems.
- Automatic dosing installations for drinking circulation water systems.
- 30ml, dropper bottles for the individual users such as travelers.

Available in 1, 2.5, 10 and 25 litre polythene containers. Non inflammable or explosive.

Unit Per Can

CODE	Contents	CODE	Contents
55 06 65	1 ltr	55 06 67	10 ltr
66	2.5 ltr	68	25 ltr

Name of Mfr. : Hatenboer - Water

Fruit and Vegetable Extra-Shelf-Life Cleaner "ORGACURE®"

Antibacterial and antibrowning washing powder to keep whole and fresh-cut fruits. vegetables and salads safe, fresh and with extra shelf-life (All-in-one). No aftertaste, no residues, no waste. Sustainable, 100% food-grade product. Pour 1 teaspoon per liter tap water, dip fruits and vegetables for 60 sec. in solution, take off, drain well and serve directly or store cold and consume within 7 days. Safe to dispose directly into the sewer. Approved by Agri-Food & Veterinary Authority (AVA) Singapore.

CODE	Contents	Unit
55 06 69	Orgacure powder, 500 grm x 3 pouch	C/T
70	Orgacure powder, 1 kgs x 5 pouch	C/T

Name of Mfr. : Orgacure B.V.

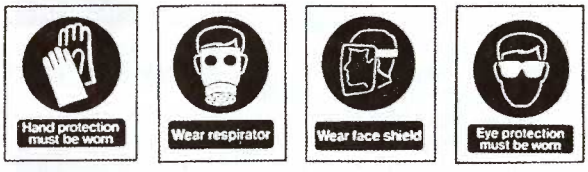
Sodium Hypochlorite Solution

6 % Sodium Hypochlorite (Naoce) solution. Disinfectant for use in drinking water. Use one drop of solution per 10 ltrs of drinking water, 600 ml of solution per 36 tons of drinking water.

55 06 71	Sodium hypochlorite solution,	600 cc	Btl
72	"	18 ltr	Can

Attention!

The industrial chemicals and cleaning agents in this section have been provided with information about their chemical properties and any hazards which may be involved with their use. Discretion and care must always be taken in reading the instructions for the proper storage and use of chemical products. To avoid careless injury, always wear protective clothing, gloves, face shield, or respirator when indicated so in the chemicals instructions.



Sewage Sanitary Disinfectant

(Chlorinated Isocyanurate Tablet)

The Chlorinated Isocyanurate has excellent characteristics and advantages compared with conventional inorganic chlorine compounds.

It is a tablet formulated from chlorinated isocyanuric acid with good chemical stability for algae control, effluent treatment, and disinfection of septic tanks. Available Chlorine is 65%, and packed in special made strong carton drums.

CODE	Weight	Contents	Unit
55 06 76	10 kg	15 grm/tablet × 20 tab/pkt × 33 pkt	C/T
77	15 kg	15 grm/tablet x 1,000 tab	"

IMPORTANT!

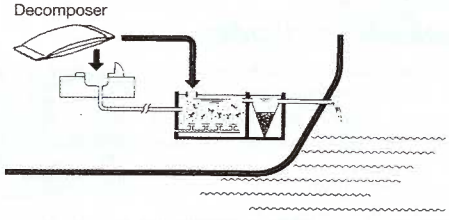
Direction for Storage and Handling

Chlorinated Isocyanurate (C.I.) tablets are strong oxidizing agents, which release chlorine on contact with water. Care should be exercised, therefore, in their storage; all C.I. tablets should be stored under cool dry conditions. They should be stored away from water, moisture, ammonium compounds, amines, oil, grease, any easily oxidizable matter, strong acids, alkalis, and sources of heat. No sweepings or waste should be put into bins, as accidental contamination with easily oxidizable matter could cause ignition and fire.

Decomposers for Ship Digestion Tank Activated Microbial Preparation

1) For the maintenance of sewage devices, the regular application of decomposer stabilizes effluent qualities and prevents the treatment equipment from malfunctioning.
   * Standard Application
   60 g / 1 person / 1 day, every 10 days
2) For seeding at the initial start of new plants or as treatment measures after drawing off sludge. Addition to the decomposer will shorten the lag period of decomposition of the activated biological masses and increase the rate of purification. Use of micro-organisms: at the beginning of use decomposer must be added.
   * Standard Application
   15 – 25 g / 1 person / 1 day, every 10 days
3) Early recovery from accidents (foul smell, bad effluent). In the case where the device is deteriorated due to a change in the quality of flushing water or the tank environment, decomposer assures early recovery of performance and stable operation of the device.
   * Standard Application
   15 – 50 g / 1 person / 1 day, every 5 – 10 days

Apply the appropriate amount of decomposer into a toilet bowl and flush 2 – 3 times.



55 06 80	Activated microbial preparation decomposes 10 kgs	C/T

Drinking Distilled Water Additives

A distilled water additive for drinking water. By applying this additive, well balanced essentials to maintain human health are composed and distilled water is turned into uninjurious water.

1. Add this additive at the ratio of 100 g (100 ppm) to 1 ton of drinking water.
2. Inject a previously dissolved 2 - 3% solution into the drinking water tank.

Example:

In case of drinking water of 5 tons. Take 20 ltr of drinking water in a dissolving container (Bucket or any other similar containers) of exclusive use and dissolve 500 g of additives in it, and then feed it into the drinking water tank.

Physical Properties

Appearance	Water color and granular product
pH (1% solution)	7.0 ± 0.5
Special gravity (1% solution)	1.008 ± 0.05

55 06 84	Distilled water additive for drinking water 10 kgs	C/T

Distilled Water

Pure, distilled water for refilling batteries or accumulators. Supplied in 500 cc or 20 ltr plastic containers.

55 06 88	Distilled water, 500 cc	Btl
89	" 20 ltr	"

Acetone, CH_3COCH_3

(Dimethylketone)

A colourless, volatile liquid with a sweetish odor. **This chemical is flammable and presents a dangerous fire risk.** Used as a paint, varnish, and lacquer solvent or as a spinning solvent to clean and dry parts of precision equipment.

55 08 01	Acetone 500 ml	Btl
02	Acetone 14 kgs	Can

Activated Alumina

A highly porous, granular form of aluminium oxide having preferential adsorptive capacity for moisture and odor contained in gases and some liquids. When saturated, it can be regenerated by heat. The cycle of adsorption and

reactivation can be repeated many times. Used as a catalyst or carrier in chromatography, and in water purification.

55 08 06	Alumina activated,	500 grm	Btl
07	"	15 kgs	Can
08	"	160 kgs	Drm

Activated Carbon
(Activated Charcoal/Coconut)

An amorphous form of carbon characterized by high adsorptivity for many gases, vapors, and colloidal solids.

Used for water and air purification, solvent recovery, waste treatment, removal of sulfur oxide from stack gases and "clean" rooms as a deodorant, and for air conditioning.

55 08 12	Activated carbon 15 kgs	Bag

Aluminium Oxide, Al_2O_3

Non flammable, white powder, balls or lumps of various mesh. Used for absorbing gases and water vapors.

Industrially used for the manufacture of abrasives, electrical insulators, catalyst and catalyst supports.

55 08 15	Aluminium oxide	500 grm	Btl
16	"	20 kgs	C/T

Ammonium Chloride

White crystals, cool saline smell, somewhat hygroscopic. Soluble in water and glycerol. Used for dry batteries, dyeing and painting, soldering flux, fertilizer, electroplating, washing powder, etc.

55 08 20	Ammonium chloride	500 grm	Btl
21	"	25 kgs	Bag

Ammonia Solution

For general cleaning and chemical purposes.

55 08 25	Ammonia solution,	500 grm	Btl
26	"	18 kgs	"

Barium Chloride, $Bacl_2 \cdot 2H_2C$

Colourless flat crystals. Soluble in water. **Toxic by ingestion.** Used as a chemical reagent, lubrication oil additive, boiler compound, textile dyeing, pigments, etc.

55 08 30	Barium chloride,	500 grm	Btl
31	"	25 kgs	Bag

Benzene, C_6H_6

A colourless to light yellow, mobile, nonpolar liquid of highly retractive nature; aromatic odor; vapors burn with a smoky flame. **Flammable, dangerous fire risk.** Used in the manufacture of ethylbenzene (for styrene monomer); dodecylbenzene (for detergents) maleic anhydride, benzene sulfonic acid, as a solvent.

55 08 34	Benzene 500 cc	Btl

Benzine - Ligroin

A saturated, volatile fraction of petroleum boiling in the range of 60 – 100 °C. There is a special grade of ligroin known as petroleum benzine.

Highly flammable, dangerous fire risk. Toxic by ingestion and inhalation. Used as a solvent for resins, paints, varnishes, etc.

55 08 36	Benzine, 500 cc	Btl

Calcium Chloride, $CaCl_2$ or $CaCl_2 \cdot H_2O$

White, deliquescent crystals, granules, lumps or flakes. Used for de-icing and dust control for thawing refrigeration brines, and as a drying and desiccating agent.

55 08 40	Calcium chloride, flake 25 kgs	Bag

Calcium Hypochlorite Solution
(Bleaching Liquor)

Used to whiten textile or paper by chemical action. Also the agent itself.

Bleaching agents include hydrogen peroxide (the most common), sodium hypochlorite, sodium peroxide, sodium chlorite, etc.

55 08 44	Bleaching liquor 30 kgs	Can

Calcium Hypochlorite, $Ca(OCl)_2$

A white, solid, crystalline oxidizing material. **Hazard: Toxic by ingestion, skin contact, and inhalation. Dangerous fire risk when in contact with organic materials.**

Used as an algicide, bactericide, deodorant, portable water purifier, and disinfectant for swimming pools, etc.

55 08 47	Calcium hypochlorite	500 grm	Btl
48	"	20 kgs	Bag

Calcium Hydroxide , $Ca(OH)_2$
(Slaked Lime or Lime Powder)

Soft, white crystalline powder with an alkaline, slightly bitter taste.

Used for mortar, cements, white wash, soil conditioner, drying hold, and cleaning.

55 08 50	Calcium hydroxide, 20 kgs	Bag

Carbon Tetrachloride, CCl_4

Colourless liquid, vapor 5.3 times heavier than air. **Hazard: Toxic by ingestion, inhalation, and skin absorption.**

Use: As a refrigerant, metal degreaser, agricultural fumigant, solvent, or for chlorinating organic compounds.

55 08 60	Carbon tetrachloride	500 grm	Btl
61	"	25 kgs	Can

Industrial Castor Oil

Pale yellow or almost colourless, transparent, viscid liquid with a taint, mild odor.

Use: Plasticizer in lacquers and nitrocellulose, polyurethane coatings, elastomers and adhesives, surface acting agents, industrial lubricants, electrical insulating compounds, etc.

55 08 65	Industrial castor oil,	500 grm	Btl
66	"	17 kgs	Can

Caustic Soda, NaOH

Sodium Hydroxide

White deliquescent solid, chiefly in the form of beads or pellets.

Hazard: Corrosive to tissue in the presence of moisture. Strong irritant to tissue (eyes, skin, mucous membrane).

Used as a detergent.

55 08 70	Caustic soda, flake	225 grm	Btl
71	"	500 grm	Can
72	"	15 kgs	"
73	"	25 kgs	Bag
55 08 75	Caustic soda, block	5 kgs	Can
76	"	10 kgs	"
77	"	20 kgs	"

Soda Ash

Grayish white powder or lumps containing up to 99 % sodium carbonate. Soluble in water, non combustible, non toxic.

Used for soap and detergents, water treatment, cleaning preparation, etc.

55 08 80	Soda ash, 25 kgs	Bag

Common Crystal Soda, $Na_2CO_3 \cdot H_2O$

Sodium Carbonate

White, odorless, small crystals or crystalline powder. Used for cleaning and as a boiler compound. Also used for the pH control of water and for cleaning and bleeding textiles.

55 08 83	Crystal soda	20 kgs	Bag
84	"	25 kgs	"

Chlorothene NU

(Motor Clean)

Dow chemical product name for a series of chlorinated organic solvents. Used for cold cleansing metal parts as an industrial solvent. **Avoid prolonged inhalation of the vapor or repeated contact with the skin.**

55 08 86	Chlorothene NU, 24 kgs	Can

Denatured Alcohol

A mixture or 95 % ethyl alcohol and 5 % water with an additive for denaturing. Unfit for use as a beverage.

Hazard: Flammable, dangerous fire risk. May be toxic by ingestion.

Used as a solvent, antifreeze, brake fluid, or fuel.

55 08 90	Denatured alcohol,	500 grm	Btl
91	"	14 kgs	Can
92	"	200 ltr	Drum

Methanol CH_3OH

(Methyl Alcohol, Wood Alcohol)

Clear, colourless, mobile, highly polar liquid.

Hazard: Flammable, dangerous fire risk. Toxic by ingestion (causes blindness).

Used as an antifreeze, solvent for nitrocellulose, chemical synthesis, fuel for utility plants, etc.

55 08 95	Methanol	500 ml	Btl
96	"	14 kgs	Can
97	"	160 kgs	Drum

Dimethyl Sulfoxide, $(CH_3)_2SO$

Colourless, hygroscopic liquid.

Hazard: Readily penetrates skin and other tissues. Combustible.

Used for industrial cleaners, paint stripping, and in hydraulic fluids.

55 09 01	Dimethyl sulfoxide 500 ml	Btl

Dolomites, $CaMg(Co_3)_2$

A carbonate of calcium and magnesium. Non-combustible.

Used as a refractory for furnaces, in the manufacture of magnesium compounds and magnesium metals, etc.

55 09 04	Dolomite, 30 kgs	Bag

Ethylene Glycol, CH_2OHCH_2OH

Clear, colourless, syrupy liquid which lowers the freezing point of water. Odorless and soluble in water, alcohol and acetone.

Hazard: Toxic by ingestion and inhalation.

Used as a coolant and antifreeze, asphalt emulsion paint, heat transfer agent, brake fluid solvent, or foam stabilizer.

55 09 07	Ethylene glycol	500 ml	Btl
08	"	20 kgs	Can

Ferrous Sulfate, $FeSO_4 \cdot 7H_2O$

Greenish or yellow-brown crystals or granules. Odorless and soluble in water. Extracted from nickel steel or waste sulfuric acid of oxide titanium.

Mainly used for corrosion control of the seawater side of a condenser or for water and sewage treatment.

55 09 11	Ferrous sulfate 25 kgs	Bag

Glycerine, $C_3H_5(OH)_3$

Clear, colourless, odorless, syrupy liquid. Combustible and has low toxicity. Used as a solvent and as a binder for cements and mixes. Also used in special soap, lubricants, softeners, hydraulic fluid, the antifreeze mixture for emergency generators and lifeboat diesel engines.

55 09 14	Glycerine,	500 grm	Btl
15	"	5 kgs	Can
16	"	22 kgs	"

Hydrochloric Acid

A colourless or slightly yellow, fuming, pungent liquid. **A strong, highly corrosive acid which is highly toxic by ingestion and inhalation and is a strong irritant to the eyes and skin.**

Used for the removal of boiler scale, for picking and metal cleaning, industrial acidizing, general cleaning, and as a laboratory reagent.

55 09 20	Hydrochloric acid,	500 grm	Btl
21	"	23 kgs	"
22	"	18 kgs	"

Hydrochloric Acid Solution

Contains 18 ltr in a bottle.

55 09 24	Hydrochloric acid solution, 18 ltr	Btl

Hydrogen Peroxide, H_2O_2

Concentrated solutions are highly toxic and very strong irritants.

Hazard: Dangerous fire and explosion risk, strong oxidizing agent.

Use: Bleaching and deodorizing of textiles, wood, pulp, hair, fur, etc. Also used as an antiseptic or in refining and cleaning metals. Sometimes used as a substitute for chlorine in water and sewage treatment.

55 09 27	Hydrogen peroxide, 20 kgs	Btl

Magnesium Oxide, MgO

White powder, slightly soluble in water, soluble in acids and ammonium salt solutions. Non combustible.

Toxic if the fumes are inhaled.

Used for refractories, especially for steel furnace linings, electrical insulation, removal of sulfur dioxide from stack gases, etc.

55 09 30 31	Magnesium oxide 500 grm " 15 kgs	Btl Bag

Mercury, Hg

Silvery, extremely heavy liquid. **Highly toxic by skin absorption and inhalation of fumes and vapors.**

Used in thermometers and barometers, draft indicators, tank gauges for registration purpose, and in some gyro compasses as a ballistic pendulum. Also used in mercury vapor lamps, arc lamps, and boilers.

55 09 34	Mercury, 500 grm	Btl

Nitric Acid

Transparent, colourless or yellowish corrosive liquid. A strong oxidizing agent that will attack almost all metals.

Hazard: Dangerous fire risk in contact with organic materials. Highly toxic by inhalation, corrosive to the skin and mucous membranes.

Use: Organic synthesis (dyes, drugs, explosives, cellulose nitrate, nitrate salts), photoengraving, etching steel.

55 09 37 38	Nitric acid 500 grm " 25 kgs	Btl "

Oxalic Acid, $HOOCCOOH{\cdot}2H_2O$

Transparent, colourless crystals.

Hazard: Toxic by inhalation and ingestion, strong irritant.

Uses: General metal and equipment cleaning, purifying agent and intermediate for many compounds.

55 09 41 42	Oxalic acid 500 grm " 25 kgs	Btl Bag

Potassium Bichromate, $K_2Cr_2O_7$

Bright, yellowish - red, transparent crystals, bitter, metallic taste.

Hazard: Toxic by ingestion and inhalation. Dangerous fire risk in contact with organic materials. Strong oxidizing agent.

Use: Analytical reagent; brass pickling compositions; electroplating; chrome glues and adhesives, depolarizer in dry cell batteries.

55 09 45	Potassium bichromate, 25 kgs	Can

Potassium Chromate, K_2CrO_4

Yellow crystals, soluble in water.

Hazard: Toxic by ingestion and inhalation.

Use: Reagent in analytical chemistry, aniline black, chromate pigments.

55 09 47 48	Potassium chromate, 500 grm " 20 kgs	Btl Can

Silica Gel

A regenerate adsorbent consisting of amorphous silica. Non-combustible.

Use: Dehumidifying and dehydrating agent, air conditioning, drying of compressed air and other gases, and liquids such as refrigerants and oils containing water in suspension.

55 09 51 52	Silica gel 500 grm " 12.5 kgs	Can

Sodium Bicarbonate, $NaHCO_3$

White powder or crystalline lumps; cooling slightly alkaline taste; soluble in water.

Use: Manufacture of rubber, gold and platinum plating, fire extinguishers, cleaning preparations, lab reagent, antacid, etc.

55 09 55 56	Sodium bicarbonate, 500 grm " 25 kgs	Pkt Bag

Sodium Borate or Borax, $Na_2B_4O_7$

Safe and efficient, white, free flowing crystal cleaner for general cleaning, and washing painted, varnished, and enameled surfaces, kitchen cabinets, refrigerators, etc. Also used in soldering flux.

55 09 58	Sodium borate, 500 grm	Pkt

Sodium Hypochlorite, $NaOCl{\cdot}5H_2O$

Unstable in air unless mixed with sodium hydroxide.

Strong oxidizing agent, usually stored and used in solution, disagreeable, sweetish odor and pale greenish colour. Soluble in cold water.

Hazard: Fire risk in contact with organic materials. Toxic by ingestion, strong irritant to tissue.

Use: Bleaching paper, pulp, textiles, etc. Water purification, fungicide, reagent, germicide.

55 09 60	Sodium hypochlorite 20 kgs	Btl

Sodium Phosphate, Tribasic, $Na_3PO_4 \cdot 12H_2O$

Colourless crystals, soluble in water. Non flammable.

Use: Water softeners, boiler water compounds, detergent, metal cleaner, paint removers, industrial cleaners.

55 09 63	Sodium phosphate, tribasic, 25 kgs	Bag

Sodium Silicate or Water Glasses

Non combustible, non toxic, so called water glass, soluble glass or liquid glass. For mixing with soap, anti-fire agents, cement hardener, and water softener, etc.

55 09 66	Sodium silicate,	500 grm	Btl
67	"	25 kgs	Can

Sulfamic Acid, $HOSO_2NH_2$

White crystalline solid, non volatile, non hygroscopic. Soluble in water and odorless. **Toxic by ingestion.**

Use: Metal and ceramic cleaning, amine sulfamates, pH control, hard-water scale removal, electroplating.

55 09 70	Sulfamic acid	500 grm	Btl
71	"	25 kgs	Bag

Sulphuric Acid, H_2SO_4

Strongly corrosive, dense, oily liquid. Very reactive, dissolves most metals; concentrated acid oxidizes, dehydrates, or sulfonates most organic compounds.

Hazard: Strong irritant to tissue. Use great caution in mixing with water because of heat evolution that causes explosive spattering. Always add the acid to the water, never the reverse.

Use: An alkylation catalyst, electroplating baths, iron and steel, lab reagent, non ferrous metallurgy.

55 09 74	Sulphuric acid	500 grm	Btl
75	"	35 kgs	"
76	"	20 kgs	"

Sulphuric Acid Dilution

Gravity 1 : 1.24 acid for use in a lead type battery.

55 09 78	Sulphuric acid dilution	500 grm	Btl
79	"	30 kgs	"
80	"	20 kgs	"

Toluene, $C_6H_5CH_3$

Colourless liquid, benzene-like odor. Soluble in alcohol, benzene, and ether; insoluble in water.

Hazard: Flammable, dangerous fire risk, toxic by ingestion, inhalation, and skin absorption.

Use: Aviation gasoline and high octane blending stock. Also used as a solvent for paints and coating diluent, and thinner for nitrocellulose lacquers.

55 09 81	Toluene	18 ltr	Can
82	"	200 ltr	Drum

Trichloroethylene, $CHCl:CCl_2$

Stable, low boiling, colourless, photoreactive liquid.

Non flammable, **toxic by inhalation.**

Use: Metal degreasing, solvent dyeing, dry cleaning; refrigerant and heat - exchange liquid; fumigant; cleaning and drying electronic parts, diluent in paints and adhesives.

55 09 85	Trichloroethylene,	500 grm	Btl
86	"	25 kgs	Can

Zinc Chloride, $ZnCl_2$

White granular deliquescent crystals or crystalline powder. Severe irritant to skin and tissue. Used as a dehydrating and condensing agent in organic synthesis: fire proofing and preserving wood: soldering fluxes, electroplating, antiseptic and deodorant preparations.

55 09 90	Zinc chloride,	500 grm	Btl
91	"	25 kgs	Bag

Neutralizer for Ballast Water Chemical Treatment Systems

Sodium Sulfite, Anhydrous - Na2SO3
Sodium Metabisulfite, Anhydrous - Na2O5
Sodium Thiosulfate Pentahydrate - Na2S2O3 5H2O
Sodium Thiosulfate, Anhydrous - Na2S2O3

Since September 2017, International Convention for the Control and Management of Ship's Ballast Water and Sediments has been issued and required neutralizer for ballast water treatment equipment. Under this treaty, all vessels are required for applicable management for ballast water due to avoid damage against marine environment. When de-ballasting it is effect to make harmless by injection of neutralizer in ballast water. Each neutralizer is usually available in 25 kgs/bag.

CODE	Description	**/Cl2 1ppm~10,000t
55 09 96	Sodium Sulfite, Anhydrous	17.8 kgs
97	Sodium Metabisulfite, Anhydrous	13.4 kgs
98	Sodium Thiosulfate Pentahydrate	8.7 kgs
99	Sodium Thiosulfate, Anhydrous	5.5 kgs

**Amount of neutralizer required to neutralize Chlorine. This is theoretical quantity by calculation and may differ from the amount actually requires.

Marine Chemicals

Chemical products for marine engine maintenance, tank cleaning, fuel additives, water treatment, etc. There are many of these products; only popular items are listed below with their common name.

We have provided the marine chemicals comparison table with brand names from major chemical manufacturers over the world.

When it is necessary to use any appointed brand, please specify the manufacturer's name and brand name with the code number.

How to order : CODE

DESCRIPTION, LTR, MANUFACTURER'S NAME and BRAND (Can or Drm)

Unit Per Can or Drm.

CODE	Description	Application	Ltr/Can
55 10 01	Degreaser	General degreaser for machine & parts, and various cargo tanks	18
55 10 02			200
55 10 05	Air intercooler cleaner	Cleaning of air inter-cooler of main engine & generator	18
55 10 06			200
55 10 11	Water soluble degreaser	General purpose degreaser for machinery, parts, or hand cleaning purposes.	18
55 10 12			200

(to be continued)

Unit Per Can or Drm.

CODE	Description	Application	Ltr/Can
55 10 16	Alkaline cleaner	Powdered alkaline cleaner for animal or vegetable oil tanks and painted surfaces of walls or floors	18
55 10 17			200
55 10 21	Electric motor cleaner	Electric motor cleaner for electric motor, parts and appliances	18
55 10 22			200
55 10 26	Carbon solvent for oil carbon	Carbon solvent for oil carbon, and for cleaning of strainer, piston & F.O.burner	18
55 10 27			200
55 10 31	Carbon solvent for hard carbon	Carbon solvent for hard carbon, and cleaning of strainer, piston & F.O.burner	18
55 10 36	Cleaning cooling system-Neutrality	Cleaner for main engine cooling system	18
55 10 37	Cleaning cooling system-Alkalinity		18
55 10 41	Tank cleaner for fuel oil tank	Fuel oil & cargo oil tank cleaner	18
55 10 42			200
55 10 46	Fuel oil additive for sludge dispersion & water separation	Dispersion of sludge component & water separation in fuel oil	18
55 10 47			200
55 10 51	Fuel oil additive for sludge dispersion	Prevention of sludge formation	18
55 10 52			200
55 10 56	Fuel oil additive combustion catalytic type	Prevention of high temperature corrosion, ash sticking, and soot & smoke	18
55 10 57			200
55 10 61	Fuel oil additive combustion catalytic type, concentrated	Prevention of corrosion, carbon & ash deposition, soot fire & smoke	18
55 10 62			200
55 10 63	Fuel oil additive lubricity improver	For gas oil and diesel oil	18
55 10 64	Fuel oil additive anti-mold sterilizer	For diesel oil	18
55 10 65	Fuel oil additive cold oil improver	For marine gas oil (MGO) and marine diesel oil (MDO)	18
55 10 66	Emulsion breaker	For heavy oil & fuel oil, and as sludge breaker of fuel oil tank	18
55 10 67			200
55 10 71	Demulsifying accelerator	Anti-emulsifier and emulsion breaker for recycling purifier water	18
55 10 76	Oil spill clean up agent	Emulsion/dispersion type	18
55 10 77			200
55 10 81	Rust remover	For heat exchanger, evaporator, boiler, removes mill scale & red rust	18
55 10 82	Scale remover		18
55 10 88	Cement & lime remover	Diluted with water, for cargo hold cleaning	18
55 10 89	Cargo hold cleaning agent	Heavy duty alkaline cleaner for petroleum coke	18

(to be continued)

Unit Per Can or Drm.

CODE	Description	Application	Ltr/Can
55 10 86	Cooling water treatment	Corrosion inhibitor for the fresh water cooling system of the internal combustion engine	18
55 10 95			200
55 10 90	Disinfectant for cooling water	For contamination in the cooling water	10
55 10 91	Boiler water treatment	Boiler water treatment for low pressure service	18
55 10 92	Evaporator treatment	Prevention of scale deposition in high and low-pressure evaporators	18
55 10 93	Purifier detergent	For cleaning the purifier	18
55 10 94	Marine organism adhesion inhibitor	For preventing marine organism in sea water system	25

HOCNF & CEFAS

Offshore Cleaning Chemicals

For Offshore Cleaning Chemicals for offshore use, approved by OSPAR Guidelines for Completing **the Harmonised Offshore Chemical Notification Format (HOCNF) & The Centre for Environment, Fisheries and Aquaculture Science (CEFAS).**

Unit Per Can or Drm.

CODE	Product	Content	Description
55 15 05 06	Unitor Cleaning CHP	200 ltr 1,000 ltr	A water-based rig cleaner specially designed to provide efficient cleaning and optimum environmental and handling properties. It contains unique environmentally adapted surfactants, pH regulating additives and corrosion inhibitors allowing removal of oil spills, sludge, oil and water based mud, dirt and grime from all surfaces included painted.
55 15 07 08	Unitor Cleaning CHP 50%	200 ltr 1,000 ltr	
55 15 09 10	Unitor Cleaning CHP RTU	200 ltr 1,000 ltr	
55 15 28	Unitor Scaleclean EX	25 kgs	An environmental adapted and highly effective rust and carbonate remover designed for use in production equipment, boiler, evaporators, etc.
55 15 29	Unitor Cleanphase CB	25 ltr	A degreaser for removing oil, wax, sludge and mud. It is based on a low toxic solvent and emulsifier that eaily split after settling. The product is ideal for cleaning especially tough contamination from drilling, well operations and other activities leaving hydrocarbon-based residues.
55 15 30	Unitor Electrosol Plus	25 ltr	A highly concentrated solvent based product for cleaning and degreasing electrical equipment. It provides rapid penetration, quick clean-up and does not attack insulation.

(to be continued)

Unit Per Can or Drm

CODE	Product	Content	Description
55 15 54	Unitor Scaleclean DL	25 ltr	Rust and carbonate remover containing an acid and wetting gents. It is designed for use in production equipment, boilers, evaporators, etc.
55 15 55 56	Unitor Uniclean	25 ltr 200 ltr	An advanced micro-emulsion cleaner, which combines the properties of a water and solvent based cleaners. Due to its unique properties, it ensures safe handling while in use and also reducing hazards related to covering and hosing the material to be removed. The specially selected surfactants allow maximum penetration of oil and grease while hazards are kept at a minimum. This ensures the product to safely react and remove oil, grease, dirt, sludge and grime. The special surfactants will effectively keep the removed contamination in water solution while being flushed to the drain.

Biodegradable Marine Descaler "Rydlyme Marine®"

An innovative biodegradable descaler designed for the marine industry to improve the performance of vital water systems by safely dissolving deposits, such as Water Scale/ Calcium, Rust, Lime Scale, Barnacles, Zebra Mussels, and Tiger Shells. Applications will be Boilers, Condensers, Keel Coolers, Tube Bundles, Bow Thrusters, Engine Cooling Systems, Heat Exchangers, Air Conditioning, Main and Aux Sea Water Systems and more. Rydlyme Marine can be used for any material except for some metals such as galvanized/zinc, magnesium and some aluminium. 100% biodegradable, non-toxic and non-hazardous. Unlike other chemical descalers and traditional harsh acids, this can be safely handled by personnel and you can even hold it in your bare hand without injury.

CODE	Contents	CODE	Contents
55 10 83 84	15 ltr / case 18 ltr / pail	55 10 85 87	209 ltr / drum 1,249 ltr / tote

Name of Mfr. : Apex Engineering Products Corporation

Biodegradable Degreaser

A waterbased, quick separating degreaser. Most effective and economical and being fully biodegradable it will not harm marine life. To be effective many types of substances, such as grease, fat, oil, soot, dirt, tar, etc.

Unit Per Can

55 15 01 02	Multi Purpose, 25 ltr Multi Purpose, 205 ltr	55 15 03 04	Heavy Duty, 35 ltr Heavy Duty, 185 ltr

Maintenance Cleaner and Degreaser Loctite®

Developed for the toughest cleaning jobs in industrial environments. The broad product range comprises high-tech solutions for removing paint from surfaces (graffiti), cleaning hands, floors, commercial vehicles, boats, awnings, tanks, pipes and many other applications.

Unit Per Can

CODE	Type	Size	Memo.	Characteristics
55 15 13 14	7012	5 ltr 20 ltr	Best for painted surface washing	General cleaner and degreaser for heavy contaminants; cleaning of all metal mechanical parts, synthetical substances, rubber and painted surfaces; solvent-free; can be applied by spraying, dipping and manually; application concentration: 10 to 500 grm/ltr.
55 15 15 16	7013	5 ltr 20 ltr	Best for general parts washing	General cleaner for removal of all kind of contaminants; solvent-free; use undiluted, just apply a sufficient amount of product using the brush or hand shower; application concentration: ready-to-use.
55 15 17 18	7018	5 ltr 20 ltr	Best for high pressure washing applications	High pressure cleaner for removal of dirt, oil and grease from washable surfaces; solvent-free, biodegradable; to be applied using spray equipment or foam generating machine; application concentration: 5 to 500 grm/ltr.
55 15 11 19	7840	750 ml 5 ltr	–	Natural Blue; universal cleaner for removal of dirt, oil and grease from washable surfaces such as engine parts, ovens, exhaust hoods, drilling rigs; to be used manually or with cleaning equipment; solvent-free and biodegradable; pine-scented, non-flammable and non-toxic; contains no ODCs.
55 15 20 21	7860	5 ltr 20 ltr	–	Low Foam Floor Cleaner for daily cleaning of sensitive floor materials; ideal to be used in floor cleaning equipment and also suitable for manual application; solvent-free; application concentration: 25 to 100 grm/ltr.
55 15 22 23	7861	5 ltr 20 ltr	–	Heavy-duty Floor Cleaner for concrete floors; applicable with high-pressure and steam equipment; solvent-free; application concentration: 50 to 200 grm/ltr.

Name of Mfr. : Henkel

Cleaner and Degreaser Henkel BONDERITE®

The products selected in this table provide the right solution for practically any cleaning or degreasing task you might encounter on board.

Unit Per Can

CODE	Product Name	Size	Application	Product Details
55 15 31	BONDERITE Grato Marine Shine Shampoo	5 kgs	Alkaline deck shampoo	Shampoo for general maintenance cleaning with brightening effect. Application concentration: 2 - 5%.
55 15 32	BONDERITE Grato Marine Acid	1 ltr	Acid cleaner for deck and flash rust removal	Removal of flash rust and acid teak deck shampoo. Application concentration: 10 - 50%.
55 15 33	BONDERITE Grato Marine Cleaner	1 ltr	Concentrated cleaning product for difficult cleaning operations	For all deep cleaning, cleaning and renovation of all rubber and plastic parts, leather seats, life boats etc. pH neutral - safe in use. Application concentration: 10 - 100%.
55 15 34	BONDERITE Grato Marine Glass Cleaner	1 ltr	Glass and plastic cleaner	Residue-free removal of grease, nicotine, insects, etc. Suitable for all glass and plastic surfaces. Ready to use wipe on - wipe off cleaner in 1 ltr bottle with trigger.
55 15 35	BONDERITE Grato Marine Polish	1 kgs	Cleaning and renovation polish	Ready to use polish for stainless steel and aluminium. Shining, UV and salt water resistant finish.
55 15 36 37	BONDERITE Grato 3000	20 kgs 200 kgs	One for all high concentrated alkaline cleaner degreaser	Allround degreaser for efficient removal of grease, fats, light flash rust, etc. To be used on all kind or surfaces of machines, parts, painted surfaces or glass. Application concentration: from 1 - 30%, depending on the soiling degree.

(to be continued)

Unit Per Can

CODE	Product Name	Size	Application	Product Details
55 15 38	BONDERITE Grato 3100	26 kgs	Light alkaline high concentrated allround cleaner degreaser	For general cleaning / degreasing operations on more sensitive surfaces (e.g. aluminium). To be used on all kind of surfaces from machines, parts, painted surfaces, glass, etc. Application concentration: 1 - 30%, from 15 °C and beyond, depending on the soiling degree.
55 15 39	BONDERITE Grato ACD 1166	26 kgs	Acid cleaner for lime and oxide removal	For removal of mineral soilings and weak greasy pollutions. Phosphoric acid free. Application concentration: 3 - 30% at 20 - 40°C.
55 15 40	BONDERITE Grato 1166	15 kgs	Phosphoric acid cleaner with detergents	For removal of corrosion of all metals. Removes fats and salts. Spot cleaner after cleaning fats and fatty acids. Safe on painted surfaces and odorless. Application concentration: 1 - 30% at 20 - 80 °C.
55 15 41 42	BONDERITE A	20 kgs 210 kgs	Neutral soap	For general neutral cleaning of all surfaces and applications; not corrosive nor toxic; well foaming; IMO approval. Application concentration: 1 - 20% at 20 - 40 °C.
55 15 43	BONDERITE Glin Floor	10.5 kgs	Mild low foaming floor cleaner	For daily cleaning of all kind of floors. Leaves protection layer. Ideal for use in floor cleaning machines. Application concentration: 5 - 10% at room temperature.

(to be continued)

INTERNATIONAL MARINE PURCHASING ASSOCIATION

Unit Per Can

CODE	Product Name	Size	Application	Product Details
55 15 44	BONDERITE® Glin	25 kgs	Mild alkaline universal degreaser	Universal, liquid cleaner for the cleaning of work shops and machines. Nicely perfumed. Ideal for manual application. High demulsifying properties. Safe solvent, phosphate and alkali free product. Application concentration: 5 - 30% at room temperature.
55 15 45	BONDERITE® Glin G 5	10x1.4 kgs	Renovation paste	Ready to use special paste to remove mineral deposits and oily contamination of all surfaces. Abrasive action but without scratching the surface. To be used at room temperature.
55 15 46	BONDERITE® Grato 12	31 kgs	Light alkaline degreaser	Concentrate for high pressure cleaning of engines and machinery parts. High demulsifying properties. Contains rust protection agent. Application concentration: 5 - 30 % at room temperature up to 40°C.
55 15 47	BONDERITE® Grato 80	35 kgs	Alkaline high pressure and steam jet cleaner	High concentrated degreaser for heavy duty operations. Usable on steel and colored metals. Contains inhibitor for use on aluminium. Application concentration: 5 - 20% at room temperature up to 80°C.
55 15 48	BONDERITE® Solvclean 106	24 kgs	Emulgator free cold cleaner	Solvent based cleaner for removal of oil contaminations. Usable manually or in steam jet cleaner. Application concentration: 20 - 100%.

(to be continued)

Unit Per Can

CODE	Product Name	Size	Application	Product Details
55 15 49	BONDERITE® X	7.5 kgs	Universal cleaning powder	Fast soluble powder for all general cleaning/ degreasing tasks (e.g. floors, deck, machines, cloths, etc.); IMO approval. Application concentration: 50 - 100 grm/ltr.
55 15 50	BONDERITE® X Liquid	10 kgs	Alkaline water based cleaner	Removes vegetable, mineral and animal grease and oils. Can be used on all surfaces (steel, aluminium, painted, etc.); good demulsifying properties. Application concentration: 3 - 20% from room temperature up to 80°C, depending on soil degree.
55 15 51	Novaclean N	36 kgs	Neutral deruster	Neutral deruster & descaler for ferrous and non ferrous metals in spray and immersion processes. Replaces acid or strong alkaline products. Application concentration: 10 - 20% at 20 - 60°C.
55 15 52	Turco VK 5	21 kgs	Liquid silicate free alkaline cleaner	Heavy duty cleaner for high performance degreasing and removal of combustion residues and animal and vegetable fats. Application concentration: 1 - 20% at room temperature.
55 15 53	Turco Plaudit 3752	18 kgs	Multi purpose light alkaline cleaner	Removes shop soils, road grime, greases and lube oils from concrete floors, transportation equipment, construction equipment, drilling equipment and specialized parts. Phosphate and solvent free. Application concentration: 2 - 10% at room temperature.

Green Degreaser 68

A non-ionic water-based highly concentrated blend of biobased cleaning compounds with anti-static effect, good tolerance to hard or soft water, good anti-redepositing capacity and deep cleaning chemistry. It is an environmentally safe cleaner, degreaser, solvent, lubricant and specialty chemical product that derived from renewable, bio-degradable resources for a broad range of industrial application.

It is effective to remove tough-to-clean substances such as oil, grease, dirt and accumulated industrial stains on heavy equipment, tools/parts and machinery. Obtained the "Green Label" from the Singapore Environment Council. Uses and Applications;

A super active alkaline-based colloidal cleaning compound that is particularly effective in heavy-duty applications for general cleaning. It is safe on all surfaces when used as directed. As a concentrate, it is particularly economical in that it can be mixed with water to the desired strength that will adequately perform the cleaning task. It is an effective cleaner in the following categories : All purpose cleaning / degreasing for industrial cleaner, Bilge cleaner, marine cleaner and metal processing for maritime, Oil spills for oil dispersing.

CODE	Contents	CODE	Contents
55 15 61 **62**	5 ltr/can 25 ltr/can	**55 15 63**	200 ltr/drum

Name of Mfr. : Marine Diesel Services Pte Ltd.

Technical Cleaning Liquids

Unit Per Pc.

CODE	Product	Content	Description
55 15 64 **65** **66**	Surface Cleaner	5 ltr 10 ltr 30 ltr	Surface Cleaner is used for cleaning and degreasing surfaces to be joined or sealed with WEICON adhesives and sealants.
55 15 71 **72** **73**	Cleaner S	5 ltr 10 ltr 30 ltr	Removes all oily and greasy soilings even gummy lubricants, without leaving residues. Cleans all metals, ceramics, glass and most plastics.
55 15 67 **68** **69**	Plastic-Cleaner	5 ltr 10 ltr 30 ltr	Plastic Cleaner cleans and degreases plastics and is ideal for pre-treating surfaces when bonding sensitive plastics, rubbers or lacquered materials.
55 15 70 **80** **81**	Brake Cleaner	5 ltr 10 ltr 30 ltr	Universal cleaner, especially for the automotive industry (brakes, clutches, gear boxes, etc.). Evaporates without leaving residues.
55 15 82 **83** **84**	Electro Contact Cleaner	5 ltr 10 ltr 30 ltr	Cleaning and degreasing of electrotechnical or mechanical parts, like e. g. electric machines, measuring instruments, balances, switches or sensors. Also ideal for all electric connections, contacts, relays and switchboard plants.

(to be continued)

Unit Per Pc.

CODE	Product	Content	Description
55 15 85 **86** **87**	Citrus Cleaner	5 ltr 10 ltr 30 ltr	Cleaner and degreaser on the basis of citrus essences. Removes quickly adhesive residues, oils, greases, resin, tar, lubricants, rubber residues as well as residues of lead, felt and ball pens.
55 15 74 **75** **76**	Parts and Assembly Cleaner	5 ltr 10 ltr 30 ltr	Cleaner with especially long working time, especially for coarse, oily and greasy soiling as well as for cleaning bigger areas. Due to the high flash point, it corresponds to the VbF Classification A III.
55 15 88 **89** **90**	Sealant and Adhesive Remover	5 ltr 10 ltr 30 ltr	Removes residues of hardened sealants and adhesives as well as lacquers and paints.
55 15 77 **78** **79**	Workshop-Cleaner	5 ltr 10 ltr 30 ltr	Workshop Cleaner cleans and degreases all metals, plastics, rubbers, glass, ceramics and wood. Free of solvents and phosphates. Bio-degradable.
55 15 91 **92** **93** **94** **95**	Metal-Fluid	100 ml 500 ml 5 ltr 10 ltr 30 ltr	Highly-effective product for indoor care, protection and cleaning of mat and polished metal surfaces, e. g. Stainless steel, aluminium, chrome, nonferrous heavy metal etc.
55 15 96 **97** **98**	Silicone	5 ltr 10 ltr 30 ltr	Ideal sliding and release agent which prevents the build-up of adhesive residues and prevents products from sticking to conveyor belts, chutes and slideways.
55 15 99 **55 16 00** **21**	AT-44	5 ltr 10 ltr 30 ltr	Allround spray with PTFE for corrosion prevention, cleaning, lubrication, preservation and water displacement.
55 16 22 **23** **24**	W 44 T®	5 ltr 10 ltr 30 ltr	Allround problem solver: loosens rust, displaces moisture, eliminates squeaky noises, cleans metal surfaces, protects and preserves tools.
55 16 25 **26** **27**	Rust Loosener	5 ltr 10 ltr 30 ltr	With 6-fold function: loosens rust, displaces water, ensures contact, protects against corrosion, lubricates sliding surfaces and preserves metals.
55 16 28 **29** **30**	Bio Welding Protection	5 ltr 10 ltr 30 ltr	Prevents adhesion of weld spatter to welding nozzles and to surfaces adjacent to the weld without affecting the welding seam itself. Biodegradable - silicone free.
55 16 31 **32** **33**	Leak Detector	5 ltr 10 ltr 30 ltr	Non flammable compound used for fast, convenient and reliable location of even the smallest leaks approved for use in gas pipelines (DIN/ DVGW Approval NG-5170AO0666).

Name of Mfr. : Weicon GmbH & Co. KG

Marine Chemical Comparison Table

CODE	Ltr	Usage & Application		Wilhelmsen (UK) (ex NALFLEET)	Wilhelmsen (UK) (ex UNITOR)	VECOM (The Netherlands)	DREW MARINE (U.S.A.)	MARICHEM (Greece)	CHEMO (Greece)
55 10 01	18	Degreaser		-	Coldwash HD, 25 ltr Cleanbreak, 25 ltr Filtercare, 25 ltr	GP Degreaser, 25 ltr Quick Split Cleaner, 25 ltr	Oil Grease Remover, 25 ltr	Oil & Grease Remover HD 999, 25 ltr Oil &Grease Remover, 25 ltr	Oil & Sludge Remover 25 ltr
55 10 02	200			-	-	GP Degreaser, 200 ltr or 208 ltr	-	Oil & Grease Remover HD 999, 210 ltr Oil & Grease Remover, 210 ltr	Oil & Sludge Remover 210 ltr
55 10 05	18	Air Inter-Cooler Cleaner		-	Air Cooler Cleaner, 25 ltr ACC Plus, 25 ltr	Air Cooler Cleaner, 25 ltr	ACC-9, 25 ltr ACC-ME, 25 ltr	Air Cooler Cleaner & Air Cooler Cleaner L.T., 25 ltr ACC NG, 25 ltr	Air Cooler Cleaner 25 ltr Chemoclean ACC LT, 25 ltr
55 10 06	200			-	-	Air Cooler Cleaner, 200 ltr	-	Air Cooler Cleaner & Air Cooler Cleaner L.T., 210 ltr ACC NG, 210 ltr	Air Cooler Cleaner, 210 ltr Chemoclean ACC LT, 210 ltr
55 10 11	18	Water Soluble Degreaser		-	Aqua-break Px, 25 ltr Enviroclean, 25 ltr	Multicleaner, 25 ltr Ecoclean, 25 ltr GP Enviro, 25 ltr	Enviromate-2000, 25 ltr EDGE, 25 ltr Drew NBD, 25 ltr	General Cleaning & Solvent, 30 ltr Alcactive Liquid, 30 ltr Mariclean DG-25, 30 ltr Liquid Soap, 30 ltr	Fresh Force Kleen, 30 ltr Enviropower HD, 25 ltr, Super Red Plus, 30 ltr, Holdbrite, 30 ltr
55 10 12	200			-	-	-	-	-	Fresh Force Kleen, 210 ltr Enviropower HD, 210 ltr Super Red Plus, 210 ltr, Holdbrite, 210 ltr
55 10 16	18	Alkaline Cleaner		RO Alkaline Cleaner, 25 ltr	Alkleen Liquid, 25 ltr Aquatuff High Foam, 25 ltr H. P. Wash, 25 ltr Ultra Sonic Cleaner USC 12, 1 ltr Aquatuff, 25 ltr Alkleen Safety Liquid, 25 ltr	Tankclean Alkaline, 25 ltr	LAC, 25 ltr Drew ABD, 25 ltr	Alcaclean H.D., 30 ltr	Alkasolvent Liquid,30 ltr Alkasafe Cleaner, 30 ltr Alkasolvent Liquid (POT) 30 ltr Holdbrite, 30 ltr
55 10 17	200			-	Alkleen Liquid, 210 ltr Alkleen Safety Liquid, 210 ltr	-	-	Alcaclean XF, 210 ltr	Alkasolvent Liquid, 210 ltr, Alkasafe Cleaner, 210 ltr Holdbrite, 210 ltr
55 10 21	18	Electric Motor Cleaner		-	Electro-solve-E, 25 ltr	Electroclean Slow, 25 ltr Electroclean Fast, 25 ltr Electroclean CF, 25 ltr	Drew Electric 2000, 25 ltr	Electroclean A, 25 ltr Electroclean B, 25 ltr Electroclean Superfast, 25 ltr Electroclean Enviro, 25 ltr Electroclean Eco Quick, 25 ltr	Lectra Kleen, 25 ltr Electroclean 316, 25 ltr Electroclean Fast, 25 ltr Electroclean Non Flammable, 25 ltr
55 10 22	200			-	-	-	-	-	-
55 10 26	18	Carbon Solvent	For Oil Carbon	-	Carbon Remover, 25 ltr Carbonclean LT, 25 ltr	Carbon Remover NC Filterclean, 25 ltr	Carbon Remoyer, 25 ltr	Carbon Remover, 25 ltr Marichem C.R. – LT., 25 ltr	Carbon Remover Super, 25 ltr Chemoclean Carbon LT, 25 ltr
55 10 27	200			-	-	-	-	-	-
55 10 31	18		For Hard Carbon	-	Carbon Remover, 25 ltr	Carbon Remover NC/Filterclean, 25 ltr	SNC-2000, 25 ltr	Carbon Remover, 25 ltr	Carbon Remover Super, 25 ltr Chemoclean Carbon LT, 25 ltr
55 10 36	18/200	Cleaning Cooling Systems	Neutrality	-	Commissioning Cleaner, 25 ltr	Gp Degreaser, 25 ltr Descaling Extra, 25 ltr	HDE-777, 25 ltr	Oil & Grease Remover HD 999, 25 ltr Oil & Grease Remover, 25 ltr	Degreaser HD, 25 ltr Degreaser HD, 210 ltr Special Step No. 1, 25 ltr Special Step No. 1, 210 ltr
55 10 37	18/200		Alkalinity	-	-	Tankclean Alkaline Extra, 25 ltr	Ameroid OSC, 25 ltr	-	Alkasolvent Liquid, 30 ltr Alkasolvent Liquid, 210 ltr
55 10 41	18	Tank Cleaner	For Fuel Oil Tank	-	Seaclean Plus, 25 ltr Seaclean, 25 ltr Unipol, 25 ltr Tankleen Swift, 25 ltr	Seaclean Voyage, 25 ltr Tankclean HD Split, 25 ltr	TC No.4, 25 ltr Drew TC Sea, 25 ltr	Tank Cleaner, 25 ltr Tank Cleaner-S, 25 ltr Marichem TTC, 25 ltr Tank Cleaner A, 25 ltr	Tank & Bilge Cleaner, 25 ltr Tank Super Cleaner, 25 ltr Coal Tar Remover, 25 ltr
55 10 42	200			-	Seaclean Plus, 210 ltr Unipol, 210 ltr Tankleen Advance, 210 ltr Tankeen Bright, 190 ltr Tankleen Tar, 210 ltr	Seaclean Voyage, 200 ltr or 208 ltr Tankclean HD Split, 200 ltr	TC No.4, 200 ltr Drew TC Sea, 200 ltr	Tank Cleaner, 210 ltr Tank Cleaner-S, 210 ltr Marichem TTC, 210 ltr Tank Cleaner A, 210 ltr	Tank & Bilge Cleaner, 210 ltr Tank Super Cleaner, 210 ltr Coal Tar Remover 210 ltr
55 10 46	18	Fuel Oil Additive	Sludge Dispersion & Water Separation	-	-	FOT Sludge Dispersant, 25 ltr	F.O.T., 25 ltr Amergy-222, 25 ltr	F.O.T., 25 ltr F.O.T. New Generation 25 ltr	Fueltreat 880, 25 ltr Fueltreat 880 Plus, 25 ltr

CODE	Ltr	Usage & Application		Americol (The Netherlands)	MAGNUS (U.S.A.)	Rochem (U.S.A.)	Redox (Singapore)	Marine Care (The Netherlands)
55 10 01	18	Degreaser		Tank Cleaner - Oil & Grease Remover Antol 24, 10 ltr	Degreaser HD, 20 ltr	Degreasol Cold Wash	Oil & Grease Emulsifier, 25 ltr	Careclean Degreaser GP, 25 ltr Careclean Degreaser HD, 25 ltr Careclean Voyage, 25 ltr
55 10 02	200			Tank Cleaner - Oil & Grease Remover Antol 24, 200 ltr	Degreaser HD, 200 ltr	Degreasol Cold Wash	Oil & Grease Emulsifier, 209 ltr	Careclean Degreaser GP, 200 ltr Careclean Degreaser HD, 200 ltr Careclean Voyage, 200 ltr
55 10 05	18	Air Inter-Cooler Cleaner		Air Cooler Cleaner HD, 20 ltr	Air Cooler Cleaner, 20 ltr	ACC	Air Cooler Cleaner, 25 ltr	Careclean ACC, 25 ltr
55 10 06	200			Air Cooler Cleaner HD, 200 ltr	Air Cooler Cleaner, 200 ltr	ACC	Air Cooler Cleaner, 209 ltr	-
55 10 11	18	Water Soluble Degreaser		Aquabreak, 10 ltr	Magnaclean EC, 20 ltr	Citrisol Alclean Safety L H.P. Cleaner	Heavy Duty Cleaner, 25 ltr	Careclean Multiclean, 25 ltr Careclean Neutral HCF, 25 ltr Careclean GP Enviro, 25 ltr
55 10 12	200			-	-	-	-	Careclean Multiclean, 200 ltr Careclean Neutral HCF, 200 ltr Careclean GP Enviro, 200 ltr
55 10 16	18	Alkaline Cleaner		Alkaline Liquid, 10 ltr	Alkaline Cleaner, 20 ltr	Alclean Liquid	Heavy Duty Cleaner, 25 ltr	Careclean Alkaline, 25 ltr Careclean Alkaline Extra, 25 ltr
55 10 17	200			-	-	-	-	Careclean Alkaline, 200 ltr Careclean Alkaline Extra, 200 ltr
55 10 21	18	Electric Motor Cleaner		Electrocleaner SE, 20 ltr	Electroclean M, 20 ltr	-	Motor Cleaner, 25 ltr	Careclean ECS Safe, 25 ltr Careclean ECS Quick Dry, 25 ltr
55 10 22	200			-	Electroclean M, 200 ltr	-	-	-
55 10 26	18	Carbon Solvent	For Oil Carbon	Carbon Remover - Filter Cleaner, 20 ltr	Carbon Remover, 20 ltr	Oil & Grease Emulsifier, 25 ltr	Carbon Remover Filterclean	Careclean Carbon, 25 ltr
55 10 27	200			-	Carbon Remover, 200 ltr	-	Carbon Remover Filterclean	-
55 10 31	18		For Hard Carbon	Carbon Remover - Filter Cleaner, 20 ltr	Carbon Remover, 20 ltr	Carbon & Varnish Remover, 25 ltr	Carbon Remover Filterclean	-
55 10 36	18	Cleaning Cooling Systems	Neutrality	Tank Cleaner – Oil & Grease Remover Antol 24, 10 ltr Clean Break Fast Separating Antol FS, 10 ltr	Pre Commission CCS, 20 ltr	Clear Break, 25 ltr	Degreasol Cold Wash Degr. Separating	Careclean Degreaser GP, 25 ltr Careclean Degreaser HD, 25 ltr
55 10 37	18		Alkalinity	Tank Cleaner - Oil & Grease Remover Antol 24, 10 ltr	Pre Commission BOC, 20 ltr	-	Degreasol Cold Wash	-
55 10 41	18	Tank Cleaner	For Fuel Oil Tank	Tank Cleaner - Oil & Grease Remover Antol 24, 10 ltr	Tank Cleaner, 20 ltr	Heavy Duty Tank Cleaner, 25 ltr	Tankclean HD	Careclean Voyage, 25 ltr Careclean Degreaser HD, 25 ltr
55 10 42	200			Tank Cleaner - Oil & Grease Remover Antol 24, 200 ltr	Tank Cleaner, 200 ltr	Heavy Duty Tank Cleaner, 209 ltr	Tankclean HD	Careclean Voyage, 200 ltr Careclean Degreaser HD, 200 ltr
55 10 46	18	Fuel Oil Additive	Sludge Dispersion & Water Separation	-	Fuel Oil Treatment FT, 20 ltr	Fuel Oil Treatment, 25 ltr	-	Caretreat Sludge, 25 ltr

CODE	Ltr	Usage & Application		NIHON YUKA (Japan)	NEOS (Japan)	YCC (Japan)	ICHINEN CHEMICALS (Japan)	KURITA (Japan)
55 10 01	18	Degreaser		Yunisol C, 18 ltr	**55 11 01** A, 18 ltr	**55 33 26** Parts Cleaner, 18 ltr	Kuriclean 11, 18 ltr	-
55 10 02	200			-	-	-	-	-
55 10 05	18	Air Inter-Cooler Cleaner		Yunisol AC, 18 ltr	**55 11 03** One-1, 18 ltr	-	Kuriclean AC, 18 ltr	-
55 10 06	200			-	One-1, 200 ltr	-	-	-
55 10 11	18	Water Soluble Degreaser		Yunisol SS, 18 ltr	**55 11 04** M-One 2S, 18 kgs FD-20, 18 kgs Power Challenger R, 18 kgs	**55 33 36** TCW, 18 ltr	Kuriclean 10/10P, 18 ltr	-
55 10 12	200			-	Deck Bright, 200 kgs	-	-	-
55 10 16	18	Alkaline Cleaner		Yunisol SP, 15 kgs	**55 11 02** CM200C Powder, 20 kgs	-	-	Kuripearl, PK-842, 20 kgs
55 10 17	200			-	-	-	-	-
55 10 21	18	Electric Motor Cleaner		Yunisol MC5, 5 kgs	**55 11 09** Solvent 500 Aerosol, 300 cc Solvent 550, 18 kgs	-	Kuriclean Super, 18 ltr	-
55 10 22	200			-	-	-	-	-
55 10 26	18	Carbon Solvent	For Oil Carbon	Yunisol H, 18 ltr Yunisol SH, 18 ltr	Solvent 13, 18ltr Solvent 300, 18ltr	**55 33 39** Carbon Attack, 18 ltr	Kuriclean CR, 20 kgs	-
55 10 27	200			-	-	-	-	-
55 10 31	18		For Hard Carbon	Yunisol K-48, 18 ltr Hi-Carbon, 18 ltr	Solvent 200, 18ltr	-	-	Kuripearl PF-1, 10 kgs
55 10 36	18	Cleaning Cooling Systems	Neutrality	-	-	-	Kuriclean PS1, 18 ltr	-
55 10 37	18		Alkalinity	-	-	-	Kuriclean PS2, 18 ltr	-
55 10 41	18	Tank Cleaner	For Fuel Oil Tank	Yunisol C, 18 ltr	**55 11 05** FD-7, 18 ltr A, 18ltr	**55 33 28** Tank Cleaner, 18 ltr	-	Kuripearl PK-842, 20 kgs
55 10 42	200			-	-	-	-	-
55 10 46	18	Fuel Oil Additive	Sludge Dispersion & Water Separation	For Sludge : Yunic 555D, 18 ltr	-	**55 33 01** A100, 18 ltr	Kuritonic MD-C, 18 ltr	-

CODE	Ltr	Usage & Application		Wilhelmsen (UK) (ex NALFLEET)	Wilhelmsen (UK) (ex UNITOR)	VECOM (The Netherlands)	DREW MARINE (U.S.A.)	MARICHEM (Greece)	CHEMO (Greece)
55 10 47	200	Fuel Oil Additive	Sludge Dispersion & Water Separation	-	-	FOT Sludge Dispersant, 200 ltr	Amergy-222, 200 ltr	F.O.T,, 210 ltr F.O.T. New Generation, 210 ltr	FOT-630, 210 ltr Fueltreat 880, 210 ltr
55 10 51	18		Sludge Dispersion	-	-	FOT Sludge Dispersant, 25 ltr	Amergy-222, 25 ltr	F.O.T,, 25 ltr F.O.T. New Generation, 25 ltr	FOT-630, 25 ltr Fueltreat 880, 25 ltr
55 10 52	200			-	-	FOT Sludge Dispersant, 200 ltr	Amergy-222, 200 ltr	F.O.T,, 210 ltr F.O.T. New Generation, 210 ltr	FOT-630, 210 ltr Fueltreat 880, 210 ltr
55 10 56	18		Combustion Catalytic Type	-	-	FOT Combustion Catalyst, 25 ltr	Amergize, 25 ltr Amergy-1000, 25 ltr	F.O.T. 10, 25 ltr F.O.T. 10 New Generation, 25 ltr	Fueltreat 880, 25 ltr F-83, 25 ltr F-83 Plus, 25 ltr
55 10 57	200			-	-	FOT Combustion Catalyst, 200 ltr	Amergize, 200 ltr Amergy-1000, 200 ltr	F.O.T. 10, 210 ltr F.O.T. 10 New Generation, 210 ltr	Fueltreat 880, 210 ltr F-83, 210 ltr F-83 Plus, 210 ltr
55 10 61	18		Combustion Catalytic Type (Prevention of High Temperature Corrosion)	-	Fuel Power Soot Remover, 25 kgs	Valve Treat, 25 ltr Soot Remover Powder, 25 kg Soot Remover Liquid, 25 ltr	Soot Release, 25 kgs Drewclean EST, 25 ltr LT Soot Release, 25 kgs	F.O.T. C-100, 25 ltr F.O.T. C-100 New Generation, 25 ltr	Soot Remover Liquid, 25 ltr Soot Remover Powder, 25 kgs F-83 Plus, 25 ltr
55 10 62	200			-	-	Valve Treat, 200 ltr	-	F.O.T. C-100, 210 ltr F.O.T. C-100 New Generation, 210 ltr	Soot Remover Liquid, 210 ltr F-83 Plus, 210 ltr
55 10 63	18/200		Lubricity Improver for Gas Oil and Diesel Oil	-	-	FOT LI 4100, 25ltr	-	FOT LS, 25 ltr, FOT ULS, 25 ltr	Fueltreat XLS, 25 ltr Fueltreat XLS, 210 ltr Chemo Lubricity Improver, 25 ltr Chemo Lubricity Improver, 210 ltr
55 10 64	18		Diesel Oil Anti-mold, Sterilizer	-	-	-	-	Fuel Biocontrol, 25 ltr	-
55 10 65	18		Cold Flow Improver for Marine Gas Oil (MGO) and Marine Diesel Oil (MDO)	-	-	-	-	-	-
55 10 66	18	Emulsion Breaker		-	-	Oil Spill Dispersant Type 1, 25 ltr	EB-70 (Japan only), 25 ltr	Fuelbreak, 25 ltr	Chemobreak, 25 ltr
55 10 67	200			-	-	Oil Spill Dispersant Type 1, 200 ltr	-	Fuelbreak, 210 ltr	Chemobreak, 210 ltr
55 10 71	18/200	Demulsifying Accelerator		-	-	FOT/FOT Sludge Dispersant, 25 ltr	-	F.O.T., 25 ltr F.O.T. New Generation, 25 ltr	Cleanbreak Plus, 25 ltr Cleanbreak Plus, 210 ltr
55 10 76	18	Oil Spill Clean up Agent		-	Seacare OSD-2, 25 ltr Seacare Ecosperse LT23, 25 ltr	OSD Ready to Use, 25 ltr OSD Type 1, 25 ltr	OSD/LT, 25 ltr Drewclean EOSD, 25 ltr	Oil Spill Emulsifier, 25 ltr Marichem Oil Spill Dispersant, 30 ltr	Oil Spill Dispersant NF, 25 ltr Seawash No.2, 30 ltr Seawash RTU, 30 ltr
55 10 77	200			-	Seacare OSD, 210 ltr Seacare OSD-2, 210 ltr	OSD Ready to Use, 200 ltr	OSD/LT, 200 ltr Drewclean EOSD, 200 ltr	Oil Spill Emulsifier, 210 ltr Marichem Oil Spill Dispersant, 210 ltr	Oil Spill Dispersant NF, 210 ltr Seawash No.2, 210 ltr

(to be continued)

CODE	Ltr	Usage & Application	Wilhelmsen (UK) (ex NALFLEET)	Wilhelmsen (UK) (ex UNITOR)	VECOM (The Netherlands)	DREW MARINE (U.S.A.)	MARICHEM (Greece)	CHEMO (Greece)
55 10 81	18	Rust Remover	-	Metal Brite, 25 ltr Metal Brite HD, 25 ltr Slip-Coat, 25 ltr Slip Coat Plus, 25 ltr Aquatuff High Foam, 25 ltr	Rust Remover, 25 ltr	Rust Stain Remover, 25 ltr	Rust Remover & Rust Shield Phos, 30 ltr	Rust Blemish Remover, 30 ltr Rust Remover Plus, 30 ltr
55 10 82	18	Scale Remover	-	Descalex, 25 kgs Descaling Liquid, 25 ltr	Descaling Liquid Extra, 25 ltr Descaling Powder, 25 kgs	SAF-Acid, 25 kgs	Descaler Liquid 555, 30 ltr Descaler Powder, 25 kgs	Scale Remover Powder, 25 kgs Scale Remover Liquid, 30 ltr
55 10 88	18/200	Cement & Lime Remover	-	-	Veclean Acid MP, 25 ltr	-	Cement Remover, 30 ltr, Cement Remover, 210 ltr	Cement Remover Super, 30 ltr
55 10 89	18/200	Cargo Hold Cleaner for Petroleum Coke	-	-	Tankclean Alkaline Extra, 25 ltr	-	Marichem PCS, 30 ltr, Marichem PCS, 210 ltr,	Pet Coke Remover, 30 ltr
55 10 86	18	Cooling Water Treatment	Engine Water Treatment 9-108, 25 ltr Engine Water Treatment 9-111AL, 25 ltr Dieselguard NB, 25 kgs Rocor NB Liquid, 25 ltr NALFLEET 2000, 25 ltr Cooltreat AL, 25 ltr Brine Corrosion Inhibitor, 25 ltr	-	Cooltreat NCLT, 25 ltr	Liquidewt, 25 ltr Dewt-NC 25 kgs, Maxigold 25 ltr	D.C.W.T. Non Chromate, 30 ltr D.C.W.T. Powder, 25 kgs	CWT-NT, 30 ltr CWT-Special, 30 ltr
55 10 95	200		NALFLEET 2000, 210 ltr	-	-	-	-	-
55 10 90	10	Disinfectant for Cooling Water	Bioguard Plus, 25 ltr	-	-	-	Maricil, 30 ltr	-
55 10 91	18	Boiler Water Treatment	BWT-Liquid Plus, 25 ltr Condensate Treatment 9-150, 25ltr Condensate Control, 25 ltr Combitreat, 25 kgs Liquitreat, 25 ltr Hardness Control, 25 kgs Alkalinity Control, 25 ltr Oxygen Control, 25 ltr Boiler Coagulant, 25 ltr Autotreat, 25 ltr Oxygen Scavenger Plus, 25 ltr Oxygen Scavenger 9-035, 25 ltr Oxygen Scavenger 9-002, 25 ltr Cat Sulphite L, 25 ltr Hardness Treatment 7208, 25 ltr Oxytreat, 25 ltr	-	Boiler Treat One Shot, 25 ltr Hardness Control, 25 ltr Alkalinity Control, 25 ltr Condensate Control, 25 ltr Oxygen Control, 25 ltr Liquid Coagulant, 25 ltr Scale Sequestrant, 25 ltr Boiler Treat Combi , 25 ltr Condensate Treat, 25 ltr	AGK-100, 25 ltr Prewplex AT, 25 ltr Drewplex OX, 25 ltr Amerzine, 25 ltr Adjunct-B, 25 kgs GC, 25 ltr SLCC-A, 25 ltr Liquid Coagulant, 25 ltr	B.W.T. New Formula, 30 ltr BWT Powder, 25 kgs Alkalinity Control , 30 ltr Phosphate, 25 kgs Oxycontrol, 30 ltr Boiler Sludge Conditioner, 30 ltr Marichem CCI, 30 ltr Optitreat, 30 ltr, Marzine Plus, 30 ltr, Oxyblock D, 30 ltr	BWT-200, 30 ltr Chemophos, 30 ltr Chemalk, 30 ltr Condensamin, 30 ltr Hydrazine, 30 ltr Liquid Coagulant, 30 ltr Catalyzed Liquid Sulphite, 30 ltr Chemoplex AT, 30 ltr Chemoplex OX, 30 ltr
55 10 92	18	Evaporator Treatment	Maxi-Vap Plus, 25 ltr Vaptreat, 25 ltr MultiVap, 25 ltr	-	Evaporator Treat, 25 ltr Evaporator Treat CF, 25 ltr Defoamer HT, 25 ltr	Ameroyal, 25 ltr	Evaporator Treatment, 30 ltr	Evaporator Treat, 30 ltr Chemovap Super, 30 ltr
55 10 93	18	Purifier Detergent	-	-	-	-	-	-
55 10 94	18	Marine Organism Adhesion Inhibitor	-	-	-	-	-	-

CODE	Ltr	Usage & Application		Americol (The Netherlands)	MAGNUS (U.S.A.)	Rochem (U.S.A.)	Redox (Singapore)	Marine Care (The Netherlands)
55 10 47	200	Fuel Oil Additive	Sludge Dispersion & Water Separation	-	-	-	Fuel Oil Treatment, 209 ltr	Caretreat Sludge, 200 ltr
55 10 51	18		Sludge Dispersion	-	FOT SD, 20 ltr	-	Fuel Oil Treatment, 25 ltr	Caretreat Sludge, 25 ltr
55 10 52	200			-	FOT SD, 200 ltr	-	Fuel Oil Treatment, 209 ltr	Caretreat Sludge, 200 ltr
55 10 56	18		Combustion Catalytic Type	-	FT Combustion Catalyst, 20 ltr	-	Combustion Improver, 25 ltr	Caretreat Combustion, 25 ltr
55 10 57	200			-	Combustion Catalyst, 200 ltr	-	Combustion Improver, 209 ltr	Caretreat Combustion, 200 ltr
55 10 61	18		Combustion Catalytic Type (Prevention of High Temperature Corrosion)	-	Vanex FT Soot Remover LQ, 20 ltr	-	Soot Cleaner, 25 ltr Soot Cleaner Powder, 25 kg	Caretreat Economizer, 25 ltr
55 10 62	200			-	Vanex FT Soot Remover LQ, 200 ltr	-	Soot Cleaner, 209 ltr	-
55 10 63	18		Lubricity Improver for Gas Oil and Diesel Oil	-	-	-	-	-
55 10 64	18		Diesel Oil Anti-mold, Sterilizer	-	-	-	-	-
55 10 65	18		Cold Flow Improver for Marine Gas Oil (MGO) and Marine Diesel Oil (MDO)	-	-	-	-	-
55 10 66	18	Emulsion Breaker		-	MagnaBreak, 20 ltr	-	Oil & Grease Emulsfier, 25 ltr	Careclean Quick Split, 25 ltr
55 10 67	200			-	MagnaBreak, 200 ltr	-	Oil & Grease Emulsfier, 209 ltr	-
55 10 71	18	Demulsifying Accelerator		-	MagnaDemul, 20 ltr	-	Fuel Oil Treatment, 25 ltr	-
55 10 76	18	Oil Spill Clean up Agent		OSR-SB, 20 ltr	Oil Spill Disperser, 20 ltr Oil Spill Disperser LT, 20 ltr	OSR LT	Oil Spill Dispersant, 25 ltr	Careclean OSD (Enviro), 25 ltr
55 10 77	200			-	Oil Spill Disperser, 200 ltr	OSR LT	Oil Spill Dispersant, 209 ltr	Careclean OSD (Enviro), 200 ltr
55 10 81	18	Rust Remover		Metalbrite & Descale Liquid Amefix, 10 ltr	Rust Scale Remover, 20 ltr	Descaling Powder Metalbrite	Rust Remover, 25 ltr	Careclean Rust, 25 ltr
55 10 82	18	Scale Remover		Amecid, 10ltr	Safe Descaler PA, 20 kgs Safe Descaler LQ, 20 ltr	-	Scale & Oxide Remover, 25 ltr SAF Acid Powder, 25 kg	Careclean F Descalex P, 25 kg
55 10 88	18	Cement & Lime Remover		-	-	-	-	-
55 10 89	18	Cargo Hold Cleaner for Petroleum Coke		-	-	-	-	-
55 10 86	18	Cooling Water Treatment		-	NCL Engine Water Treatment, 20 ltr	-	Cooling Water Treatment, 25 ltr	Caretreat 2 Diesel, 25 ltr
55 10 95	200			-	-	-	-	-
55 10 90	10	Disinfectant for Cooling Water		-	-	-	-	-
55 10 91	18	Boiler Water Treatment		-	LPBWT-Liquid, 20 ltr Hardness Control, 20 kgs Alkalinity Control, 20 ltr Oxytreat Control, 20 ltr Condensate CC, 20 ltr Liquid Coagulant, 20 ltr	-	Boiler Water Treatment, 25 ltr	Caretreat 3 Boiler, 25 ltr Caretreat 4 Condensate, 25 ltr
55 10 92	18	Evaporator Treatment		-	Evaporator treat, 20 ltr	-	Evaporator Treatment, 25 ltr	Caretreat 1 Evaporator,25 ltr
55 10 93	18	Purifier Detergent		-	-	-	-	-
55 10 94	18	Marine Organism Adhesion Inhibitor		-	-	-	-	-

CODE	Ltr	Usage & Application		NIHON YUKA (Japan)	NEOS (Japan)	YCC (Japan)	ICHINEN CHEMICALS (Japan)	KURITA (Japan)
55 10 47	200	Fuel Oil Additive	Sludge Dispersion & Water Separation	For Sludge : Yunic 555D, 200 ltr For Water : Yunic 300, 200 ltr	-	**55 33 02** A100, 200 ltr	Kuritonic MD-C, 200 ltr	-
55 10 51	18		Sludge Dispersion	Yunic 555D, 18 ltr	-	-	Taicrush M, 18 ltr Taicrush A-38, 18 ltr Taitonic 101, 18 ltr	-
55 10 52	200			Yunic 555D, 200 ltr	-	-	Taicrush M, 200 ltr Taicrush A-38, 200 ltr Taitonic 101, 200 ltr	-
55 10 56	18		Combustion Catalytic Type	Econofree A, 18 ltr	-	-	Taitonic 203H, 18 ltr	-
55 10 57	200			Econofree A, 200 ltr	-	-	Taitonic 207H, 200 ltr	-
55 10 61	18		Combustion Catalytic Type (Prevention of High Temperature Corrosion)	-	-	-	Kuritonic Econ 3B, 18 ltr Kuritonic Hicon 3C,18 ltr	-
55 10 62	200			Yunic 600SX, 200 ltr	-	-	Kuritonic Econ 3B, 200 ltr Kuritonic Hicon 3C, 200 ltr	-
55 10 63	18/200		Lubricity improver for Gas Oil and Diesel Oil	Yunic 750LS-F, 18 ltr, 200 ltr	-	-	LUB-UP HS, 18 ltr	-
55 10 64	18/200		Diesel Oil Anti-mold, Sterilizer	Destol F-Ⅱ, 18 ltr, 200 ltr	-	-	Kuritonic A-5, 18 ltr	-
55 10 65	18/200		Cold Flow Improver for Marine Gas Oil (MGO) and Marine Diesel Oil (MDO)	Wax Breaker, 18 ltr, 200 ltr	-	-	CARRYOL KA-241, 16 kg	-
55 10 66	18	Emulsion Breaker		-	-	-	Kuritonic EB, 18 ltr	-
55 10 67	200			Yunic #300, 200 ltr	-	-	Kuritonic EB, 200 ltr Kuritonic TCA, 200 ltr	-
55 10 71	18	Demulsifying Accelerator		-	-	-	Kuritonic EBW, 18 ltr	-
55 10 76	18	Oil Spill Clean up Agent		Yunisol FL (100), 18 ltr Yunisol Self-Mixing S-7, 18 ltr	**55 11 25** AB3000N, 18 ltr Self-Mixing S-7, 18ltr D-1128, 18ltr	**55 33 32** Blue Clean, 18 ltr	Maleclean 505, 18 ltr	Top Clean, 18 kgs
55 10 77	200			Yunisol FL (100), 200 ltr Yunisol Self-Mixing S-7, 200 ltr	**55 11 26** AB3000N, 200 ltr	Blue Clean, 200 ltr	-	-
55 10 81	18	Rust Remover		Yunisol P, 18 ltr	**55 11 28** CM-305C, 20 kgs PC-400, 25 kgs PC-200, 25 kgs	**55 33 23** Metal Clean, 18 ltr	-	Kuripearl S-232, 20 kgs
55 10 82	18/200	Scale Remover		Yunisol X, 18 ltr Yunisol SR, 18 ltr, 200 ltr	**55 11 29** CM305C, 20 kgs	-	Kuriclean PS-3, 18 ltr Taislime C-10, 20 kgs	Kuridine SP, 20 kgs
55 10 88	18	Cement & Lime Remover		-	-	-	-	-
55 10 89	18	Cargo Hold Cleaner for Petroleum Coke		-	-	-	Klinhold SR, 20 kgs	-
55 10 86	18	Cooling Water Treatment		Yuniprot PC-250L, 22 kgs	**55 11 32** PN-106S, 10 ltr	-	HI-MOL AM-5, 10 kgs HI-MOL L-10, 20 kgs	Polycrin I-175, 20 kgs Polycrin A-491, 9 kgs
55 10 95	200			-	-	-	-	-
55 10 90	10	Disinfectant for Cooling Water		Germicidal Agent for YUNIPROT, 1 ltr	-	-	Taislime MT, 10 kgs	-
55 10 91	18	Boiler Water Treatment		Yunicon RS-5, 20 kgs Yunicon RS-40H, 20 kgs Yunizon D 10 kgs	-	-	-	Kuriborn 304, 10 kgs Kalgen 300s, 12 kgs Kalgen 400s, 10 kgs Hikalgen 360s,10 kgs Oxynon A702/H171,18 kgs Kurinpower WZ-406
55 10 92	18	Evaporator Treatment		Yunipoly EV-100, 20 ltr	-	-	Taislime SP-10, 20 kgs	Kurifloat M-305, 20 kgs
55 10 93	18	Purifier Detergent		Disc clean, 18 ltr Yunisol PF2, 18 ltr	-	-	Kuriclean DC-100, 18 ltr (Neutral type) Kuriclean DCR, 18 ltr (Acid type)	-
55 10 94	18	Marine Organism Adhesion Inhibitor		Yunishell (Chemical & System)	-	-	Taimeed P-50, 50 g x 20	-

Ferryl Marine Chemicals

A range of high-quality maintenance chemicals designed for marine use. For cabin, deck and engine departments.

Unit Per Drm/Btl./Can

CODE	Product No./Unit	Application
45 04 23	Ferrycid Rustremover 25 ltr/drum	Efficient removal of light and heavy rust on steel, cleaning of (wooden) decks, rust stain removal on painted surfaces, removal of limescale and cement.
45 04 24	Ferryl Cleaning Fluid Oil & Grease Remover 25 ltr/drum	Water-soluble, emulsifying, solvent-based degreaser. Removes light and heavy deposits of oil and grease on decks, engine parts, oil preheaters, tools.
45 04 26 **32**	Ferryl Fermaid Alkaline Cleaning Liquid 25 ltr/drum 1 ltr/bottle	Alkaline cleaning liquid concentrate for general cleaning and light degreasing of decks, containers / chambers, refrigerators, fishing vessels.
45 04 28 **27**	Ferryl Electroclean 450 ml/spray can 25 ltr/drum	Safe cleaning liquid with a high flash point and quick evaporation for cleaning of electrical equipment and machine parts.
45 04 29	Ferryl Cabin Clean General Cleaning Liquid 25 ltr/drum	Cleaning liquid concentrate for general cleaning of cabins, mess rooms, bathrooms, sanitary installations.
45 04 30 **31**	Ferryl Airrefreshment Bad Odour Neutraliser 500 ml/spray bottle 25 ltr/drum	Chemically neutralises bacteria in the air, removing bad odour, leaving fresh scent. For cabins, bathrooms, cargo holds, freezers, fishing vessels.

Name of Mfr. : Ferryl Sales Limited.

Hold Cleaning Solutions

Hold Barrier (Prior to loading)

For best protection of the cargo hold bulkheads. It is a unique blend of natural ingredients and film stability improvers, which can be easily applied by ship's crew prior to loading. It effectively prevents residue adhesion, stains and footprints of cargoes adhering to the surfaces of cargo holds and/or causing corrosion and are difficult to clean.
Benefits;

- More effective than limewash and much easier to remove.
- Protects metal against corrosive cargo and paint against cargo penetration.
- Prevents the deterioration of cargo hold condition.
- Not harmful to cargoes, coatings and the environment.

Unit Per Can

CODE	Description	Weight per Can	Remarks
55 16 01	Hold Barrier (#507001)	210 ltr	-
55 16 02	Hold Barrier XR (#507002)	210 ltr	Extra resistant formulation for extra demanding cargoes.
55 16 03	Hold Barrier Concentrate (#507004)	210 ltr	Concentrated form of Hold Barrier and Hold Barrier XR.

Name of Mfr.: Chemo Marine Chemicals

Hold Cleaning Solutions (After discharging)

Cost effective, non-flammable, water based, heavy duty cleaners containing special surfactants, detergents and builders, for effectively removing all types of cargo stains and residues, after cargo discharge, while minimizing coating discolouration.

Application Table

Cargo	Product Name	Cleaning Procedure
Coal	Holdbrite XF	Remove all residues from the cargo hold. Pre-wash the cargo hold with sea or fresh water and let it dry. Apply the product. Use suitable spraying equipment and dosages varying from 5 to 20% in fresh water, depending on the contamination. Allow solution to penetrate soil for 10-60 minutes and then wash off thoroughly with high pressure water, preferably hot. Always wash off before chemicals dry on the surface. Products may be used undiluted for hand cleaning.
Pet coke	Pet Coke Remover	
Sulphur	Holdbrite XF	
Concentrates/ Specific ore residues	Holdbrite XF	
Miscellaneous feedstock	Holdbrite XF	
Cement/ Cement clinkers	Cement Remover Super	Remove all residues from the cargo hold. Pre-wash the cargo hold with sea or fresh water and let it dry. Apply the product. Use suitable spraying equipment and dosages varying from 10 to 50% in fresh water, depending on the contamination. Allow solution to penetrate soil for 10-30 minutes and then wash off thoroughly with high pressure water, preferably cold. Always wash off before chemicals dry on the surface.
Baxite/Iron ore/Iron ore pellets	Bauxite Remover	
Limestone/ Rust stains	Lime Out	

Unit Per Can

CODE	Product's Name	Weight per Can	Remarks
55 16 11 **12**	Holdbrite XF #501202	25 ltr 210 ltr	Heavy duty alkaline cleaner with extra foaming effect
55 16 13 **14**	Pet Coke Remover #502012	25 ltr 210 ltr	Effective liquid product for pet coke removal
55 16 15 **16**	Cement Remover Super #502405	25 ltr 210 ltr	Powerful cement cleaner.
55 16 17 **18**	Chemo Bauxide Remover #502415	25 ltr 210 ltr	Liquid acid for the effective removal of bauxite residues.
55 16 19 **20**	Lime Out #502417	25 ltr 210 ltr	Effective removal of limestone

Name of Mfr.: Chemo Marine Chemicals

Conversion Table

Mass (Weight)

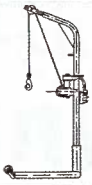
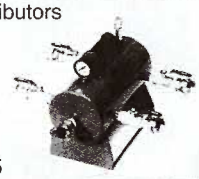
	g	kg	t	lb	oz
g	1	1×10^{-3}	1×10^{-6}	2.204×10^{-3}	0.0352
kg	1×10^{3}	1	1×10^{-3}	2.204	35.27
t	1×10^{6}	1×10^{3}	1	2204	35270
lb	453.6	0.4536	4.536×10^{-4}	1	16
oz	28.35	0.02835	2.835×10^{-5}	1/16	1

Volume

	cm^3 (cc or ml)	m^3	l	in^3	qt	pt	fl-oz	ft^3	gal
cm^3 (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m^3	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in^3	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
Ft^3	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

59

PNEUMATIC & ELECTRICAL TOOLS

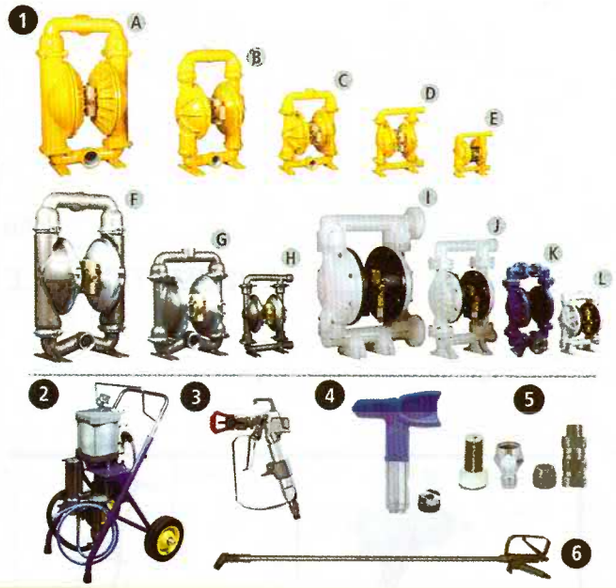
Pneumatic Hand Tools P. 59-1~9	Deck Scalers P. 59-9~21	Hand Scalers P. 59-21~36	Pneumatic Saws P. 59-36~37
Pneumatic Winches  P. 59-37 ~ 38	Neoprene Rubber Buckets P. 59-38	Air Motors P. 59-38~39	Air Winches P. 59-40
Sand Blasters P. 59-41~42	Tank Cleaning Machines P. 59-43~47	Vacuum Cleaners P. 59-48 ~ 49	High Pressure Cleaners P. 59-49 ~ 52
Hold Cleaning Guns P. 59-52~54	Air Line Filters P. 59-54~55	Air Distributors  P. 59-55	Electric Hand Tools P. 59-55 ~ 64
Chain Hoists P. 59-64 ~ 65	Ventilations/ Fans P. 59-65 ~ 71	Pumps/Ejectors P. 59-71 ~ 86	

Products with IMPA nos.

1. **Aluminium Diaphragm pumps**
   A) 59.16.04 Size : 3"
   B) 59.16.03 Size : 2"
   C) 59.16.02 Size : 1-1/2"
   D) 59.16.01 Size : 1"
   E) 59.16.05 Size : 1/2"
   Stainless Steel Diaphragm Pumps
   F) 59.17.06 / 07 Size : 2"
   G) 59.17.03 / 04 Size : 1-1/2"
   H) 59.17.01 / 02 Size : 1"
   Plastic Diaphragm Pumps
   I) 59.16.14 Size: 2"
   J) 59.16.13 Size: 1-1/2"
   K) 59.16.12 Size: 1"
   L) 59.16.11 Size: 1/2"
2. **Airless Paint Sprayers Air & Electric Powered**
   27.01.06 to 08 • 27.01.13 / 15
3. **Airless Paint Spray Hand Guns**
   27.01.21 to 23
4. **Airless Paint Spray Tips**
   27.02.01 to 07 • 27.02.16 to 22
   27.02.31 to 37
5. **Paint Spray Gun Accessories**
   27.01.36 to 48
6. **Airless Paint Spray Pole Guns**
   27.01.26 to 28
7. **Copper Tubes**
   71.14.01 to 75 / 71.15.01 to 10
8. **Electric Deck Scalers**
   59.04.09
9. **Dog Bolts With Wing Nuts**
   69.24 / 69.30
10. **Electric Descaler Kit**
    59.12.17 & 18
11. **Electric High Pressure Washer**
    59.08.52 to 57
12. **Electric Needle Scaler**
    59.12.01 / 02
13. **Electric Portable Ventilation Fan**
    59.14.02 / 03/ 06/07/08/09
14. **Electric Sump Pump**
    59.16.21 to 30
15. **Flange Jacks**
    61.51.84/85
16. **Flexible Extension Hoses**
    61.76.80 to 82
17. **Pneumatic Hand Scaler**
    59.05.12
18. **FRL Units**
    59.08.01 to 05 • 59.08.11 to 15
    59.08.21 to 25 • 59.08.31 to 35
    59.06.03 to 07
19. **Gasket Cutter**
20. **Grease Dispenser**
    61.75.01
21. **Grease Nipples**
    61.76.05 to 11 • 61.76.13 to 27
    61.76.30 to 38
22. **High Pressure Nylon Paint Spray Hose**
    27.01.61 to 68
23. **Impact Wrenches**
    59.01.01 to 59.01.09
24. **Mucking Winches**
    59.06.03 • 59.06.05
    59.06.07
25. **Pneumatic Chain Hoist**
    59.13.51 to 59.13.57
26. **Non-Spark Chain Hoist**
    61.50.21 to 61.50.25
27. **Pneumatic Safety Lamp**
    33.06.37
28. **Aluminium Hold Cleaning Gun**
    59.07.41
29. **Neoprene Rubber Buckets**
    59.06.11 & 12
30. **Non Spark Shovel**
    61.59.52
31. **Air Motors**
    59.09.66 to 59.09.76
32. **Tank Cleaning Machines**
    59.06.51 to 59.06.57
33. **Pneumatic Descaler Kit**
    59.12.51
34. **Pneumatic High Pressure Washer**
    59.08.51
35. **Pneumatic Barrel Pump**
    59.16.53
36. **Pneumatic Long Reach Scalers**
    59.04.51 / 52 / 53 / 54
37. **Pneumatic Portable Ventilation Fan**
    59.14.25 & 26
38. **Pneumatic Submersible Pumps**
    59.16.35 / 37
39. **Pneumatic Vacuum Cleaner**
    59.07.22
40. **Pneumatic Triple & Single Scrabblers**
    59.03.81 to 83
41. **Angle & Straight Grinders**
    Pneumatic - 59.03.01/02/ 33
    Electric - 59.10.21 to 24 /
    59.10.31 to 34
42. **Pneumatic Chisel Scaler**
    59.05.83
43. **Pneumatic Needle Scalers**

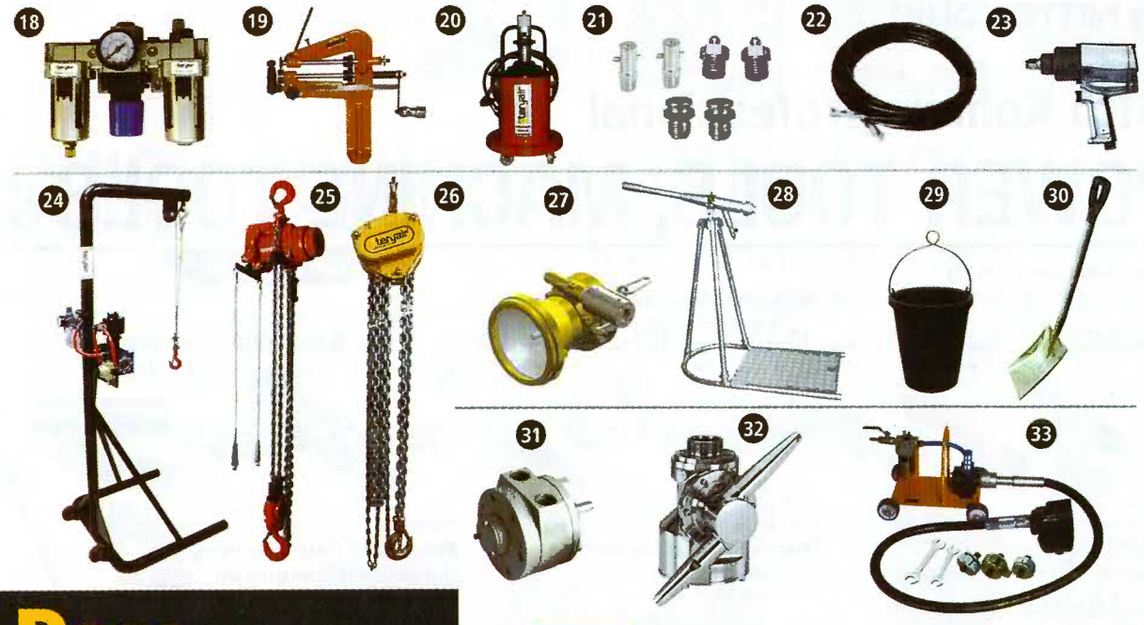
Imps No.	No. of Needles
59.04.61	2mm x 29s
59.04.62	2mm x 29s 3mm x 12s
59.04.63	2mm x 53s 3mm x 23s
59.04.64	2mm x 66s 3mm x 28s 4mm x 14s
59.04.83	2mm x 66s 3mm x 28s 4mm x 14s

44. **Replacement Needles For Needle Scalers**
    59.04.66 to 69
    59.04.86 to 89 & 92
45. **Replacement Spares For Needle Scalers**
46. **Pneumatic Die Grinder**
    59.03.26
47. **Valve Seat Cutter Set**
    63.34.51
48. **Ventilation Tubes**
    59.14.81 to 98
49. **Water Turbine Fans**
    59.14.36 / 37
50. **Compressed Air Driven Fans**
    59.14.46 / 47



Buy cashewnuts

Pay peanuts.



teryair®

www.teryair.com

ISO 9001:2008

CE

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NITTO KOHKI

Nitto Kohki's professional

POWER TOOLS, MACHINE TOOLS &

See Section 59

Pneumatic Jet Chisels
- For quick and efficient removal of weld slag, rust, paint and other accumulated materials

Model **AJC-16** CE
Model **JT-20** CE
Model **JC-16** CE
Model **JEX-24** CE
Model **JEX-28** CE
Model **JEX-2800A** CE

Original Needles for Jet Chisels

Electric Jet Chisels
- For use with electric power source

Model **EJC-32A** CE 115 / 230 V AC

Pneumatic Chipping Hammers
- For hammering, chipping and sheet metal work.

Model **A-300** CE

Pneumatic Flux Chippers
- For scaling and chipping rust and cleaning metal surfaces

Model **CH-24** CE

Pneumatic Long Handle Scrapers
- For scraping and derusting with long reach

Model **S-250**
Model **S-500**
Model **S-1000**
Non - CE

Pneumatic Hand Drills
- For light and medium duty drilling

Model **ADR-65** CE
Model **ADR-100** CE

Pneumatic Hacksaws
- For cutting metal sheets

Model **SSW-110** CE

Pneumatic Belt Sanders
- For sanding and grinding in narrow spaces, recessed corners and curved surfaces

Model **B-10CL** CE
Model **B-20CL** CE
Model **B-30CL** CE

Pneumatic Angle Grinders
- For heavy-duty grinding

Model **MG-40** CE
Model **MYG-70** CE

Pneumatic Die Grinders
- For deburring and precision grinding

Model **L-25B** CE

Pneumatic Bevelers
- For PSPC requirements on surface preparation of steel material prior to coating

Model **CBR-03** CE

Pneumatic Auto Files
- For efficient filing with less operator fatigue

Model **SH-100A** CE

Pneumatic Orbital Sanders
- For finishing work of various materials

Model **FS-50A** CE
Model **FS-100C** CE

Go to SECTION 59 of this IMPA catalog for more details of our POWER TOOLS & MACHINE TOOLS

Focused on you
NITTO KOHKI CO., LTD.
Web **www.nitto-kohki.co.jp/e**

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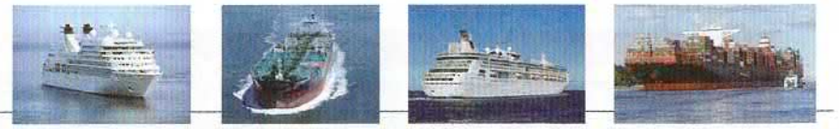


QUICK CONNECT COUPLINGS
that are useful on and off the ship

Portable Magnetic Base Drill Machine "Atra Ace" series
- For drilling holes speedily on metal plates

See Section 59

Manual drill feeding type

Cordless
Model **CLA-2720** CE 230 V AC (Battery charger)

With cord
Model **LO-3550** CE 230 V AC
Model **WOJ-3200** CE 115 / 230 V AC
Model **AO-5575A** CE 230 V AC

Automatic drill feeding type
With cord
Model **WA-3500** CE 115 / 230 V AC
Model **WA-5000** CE 115 / 230 V AC

HI-BROACH
High speed steel cutters for Atra Ace series
- For drilling holes speedily on metal plates

JETBROACH
Tungsten carbide tip cutters for Atra Ace series
- For drilling holes speedily on metal plates

See Section 35

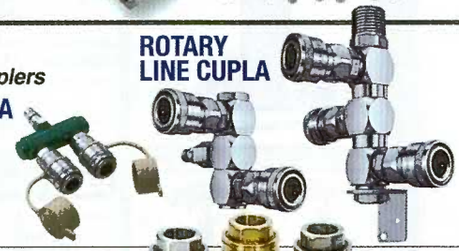
Quick-Connect Couplers
- For All Purposes

HI CUPLA

Line Couplers Branch Piping Couplers
- For Air

LINE CUPLA

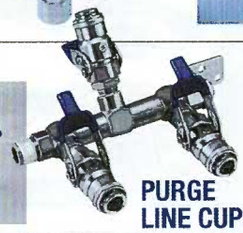
ROTARY LINE CUPLA



Purge System Hi Couplers and Line Couplers

PURGE CUPLA

PURGE LINE CUPLA



Double End Shut Off Coupler
Standard pressure

SP CUPLA Type A

See Section 85

Double End Shut Off Coupler
High pressure 210kgf/cm²

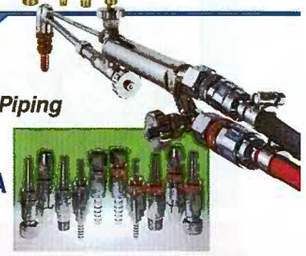
HSP CUPLA

Double End Shut Off Coupler
Ultra high pressure 700kgf/cm²

700R CUPLA

Quick Couplers for Welding Equipment Piping
- For oxygen and fuel gas

MINI CUPLA SUPER



Go to SECTION 35 and 85 of this IMPA catalog for more details of our QUICK CONNECT COUPLINGS

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NITTO KOHKI (SHANGHAI) CO., LTD. : http://www.nitto-kohki.cn / **NITTO KOHKI AUSTRALIA PTY LTD** : http://www.nitto-australia.com.au
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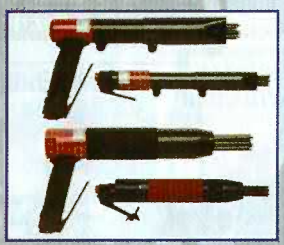
TRELAWNY™

SURFACE PREPARATION TECHNOLOGY

SMALL AREA DESCALING



NEEDLE SCALERS

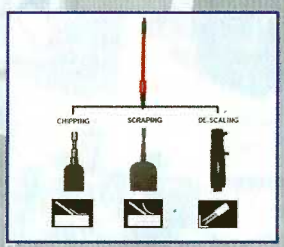
Model	Code
2B	59.04.81
2BPG	59.04.82
3B	59.04.84
3BPG	59.04.83
VL223	59.05.18
VL203	59.05.00
VL303	59.05.10

CHISEL SCALERS

Model	Code
2B	59.05.81
2BPG	59.05.82
3B	59.05.84
3BPG	59.05.83
VL223	59.05.19
VL203	59.05.13
VL303	59.05.14

ATEX NEEDLE SCALERS

Model	Code
VL223 ATEX	139.2423
VL203 ATEX	139.2403
VL303 ATEX	139.2433



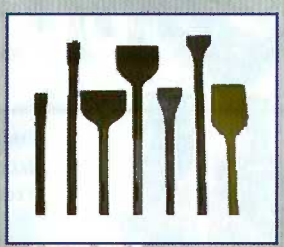
LONG REACH SCALERS

Model	Code
2ft Chisel	59.04.51
4ft Chisel	59.04.52
5ft Chisel	59.04.53
6ft Chisel	59.04.54
4ft LITE Chisel	59.04.50
5ft LITE Chisel	59.04.59
6ft LITE Chisel	59.04.60

REPLACEMENT NEEDLES

Model	Code
3mm Chisel Tip x100	59.04.87
2mm Flat Tip x100	59.04.86
3mm Flat Tip x100	59.04.89
3mm Pointed Tip x100	59.04.88
3mm B.Copper x100	453.1310

Other options available



REPLACEMENT CHISELS

Model	Code
19mm Chisel	59.05.91
64mm Chisel	59.05.93
35mm Cranked Chisel	59.05.95
19mm Chisel*	59.19.01
64mm Chisel*	59.19.02
35mm Cranked Chisel*	59.19.04

***For Low Vibration Chisel Scalers**

SCALING HAMMERS

Model	Code
SF1 Cruciform	59.03.84
SF3 Cruciform	153.5300
SF1 Beryllium Copper	151.5110
SF3 Beryllium Copper	153.5310
Cruciform Cutter Head	59.03.85
Beryllium Copper Head	59.03.89

ANGLE GRINDERS

Model	Code
4" Grinder	59.03.01
7" Grinder	59.03.02
4" Low Vib Grinder	170.4075
7" Low Vib Grinder	170.4071

PEENING PREPARATION TOOL

Model	Code
2" PPT Air C Flaps	59.22.51
2" PPT Air Star	59.22.53
2" PPT 230v Star	59.22.55
4" PPT Air C Flaps	59.22.52
4" PPT Air Star	59.22.54
4" PPT 230v Star	195.C421

Other Models Available

MINI-BLASTERS

Model	Code
SF MiniBlast 9	318.2009
SF MiniBlast 25	318.2025

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TFP200 DECK SCALER

Model	Code
TFP200 110v 50hz	59.22.34
TFP200 110v 60hz	59.22.35
TFP200 230v 50/60hz	59.22.36
TFP200 400v 50/60hz	59.22.37
TFP200 Pneumatic	59.22.31

TFP200 CONSUMABLES

Model	Code
Heavy Duty Drum	59.22.47
Cutter Shafts	59.22.49
TCT Cutter	59.22.41
Star Cutter	59.22.42
Beam Cutter	59.22.43
Twisted Wire Brush	59.22.45
Crimped Wire Brush	59.22.44

TRIDENT NEPTUNE

Model	Code
110v 50/60hz	59.12.41
230v 50/60hz	59.12.42
Pneumatic	59.12.81

TRIDENT NEPTUNE SPARES

Model	Code
Flexible Drive Shaft	59.12.99
6 Cutter Head	59.12.86
Heavy Duty Head	59.12.75
6" Power Brush	59.12.93
6" Twisted Knot Brush	59.12.91
Crimped Wire Brush	59.12.97
Twisted Knot Brush	59.12.95

SF11 DECK SCALER

Model	Code
SF11 Cruciform	59.04.05
SF11 Beryllium Copper	59.04.00
SF11 c/w Dust Shroud	159.5912
Cruciform Cutter Head	59.03.85
Beryllium Copper Head	59.03.89

HYDRAFLEX

Model	Code
Hydraflex Kit	59.07.40
Cleaning Gun	59.07.42
2½" Hose Coupling	59.07.46
2" Hose Coupling	59.07.47
Water Hose Adaptor	59.07.48
2" Ball Valve	59.07.49

VACUUMS

Model	Code
110v Dry	303.11KV30/2D
110v Wet/Dry	303.11KV30/2WD
110v Type H	303.KV30/2DH
230v Dry	303.22KV30/2D
230v Wet/Dry	303.22KV30/2WD
230v Type H	303.22KV30/2DH
AIR Dry	303.10KAV30/D
AIR Wet/Dry	303.10KAV30/WD
AIR Type H	303.10KAV30/DH

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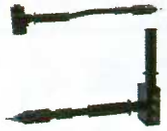
JS-16, JS-20

JS-24, JS-28



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CT-24

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Pneumatic Saw Kit
RAS-45

"IWA"
Pneumatic Hand Scaler
HS-20

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Pneumatic Deck Scaler
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Scaling Width: 282mm

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"IWA"
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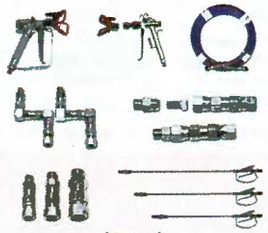

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EOC 371S-50	0.4	50	591621 to 591644
EOC 751S-50	0.75	50	
EOC 752S-50	0.75	50	
EOC1500S-50	1.5	50	
EOC1500T-50	1.5	50	
EOC1500S-80	1.5	80	
EOC1500T-80	1.5	80	
OSC 21.5	1.5	50	
OSC 22.2	2.2	50	
OSC 23.7	3.7	50	
OSC 31.5	1.5	80	
OSC 32.2	2.2	80	
OSC 33.7	3.7	80	
OSC 35.5	5.5	80	
OSC 43.7	3.7	100	
OSC 45.5	5.5	100	
OSC 47.5	7.5	100	
OSC 411	11	100	
OSC 67.5	7.5	150	
OSC 611	11	150	

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Plastic Trolley		JM11.170PA-R	JM13.180PA	JM15.150PA	JM15.200PA
Output Flow Rate	L/min	11	13	15	15
Max Output Pressure	bar	170	180	150	200
Output Power	kW/Hp	4/5.5	5.5/7.5	5.5/7.5	5.5/7.5
Approx. Weight	kg	70	73	73	73

Customized Three Phase Motor, 60HZ, 1750RPM

Steel Trolley		JM13.250CA	JM18.300CA	JM18.400CA	JM20.350CA	JM25.400CA	JM27.500CA
Output Flow Rate	L/min	13	18	18	20	25	27
Max Output Pressure	bar	250	300	400	350	400	500
Output Power	kW/Hp	7.5/10	11/15	15/20	15/20	22/30	30/40
Approx. Weight	kg	124	163	175	185	250	278

Models	*Similar IMPA Code
JM15.200CS	590851
JM15.150SD/SG	590860
JM15.200SD	590861
JM15.250SG	590862
JM21.200CA	590735
JM15.150PA	590737
JM11.170PA	590852
JM13.180PA	590852
JM15.150PA	590853
JM15.150PA	590854
JM15.200PA	590855
JM21.200CA	590855
JM15.200PA	590856
JM21.200CA	590856
JM**.350CB/CA JM**.500CB/CA	590871 to 873
JM**.350SD JM**.500SD	590875 to 877

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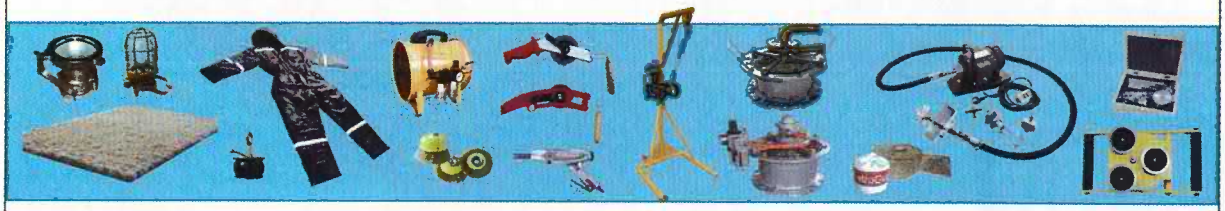

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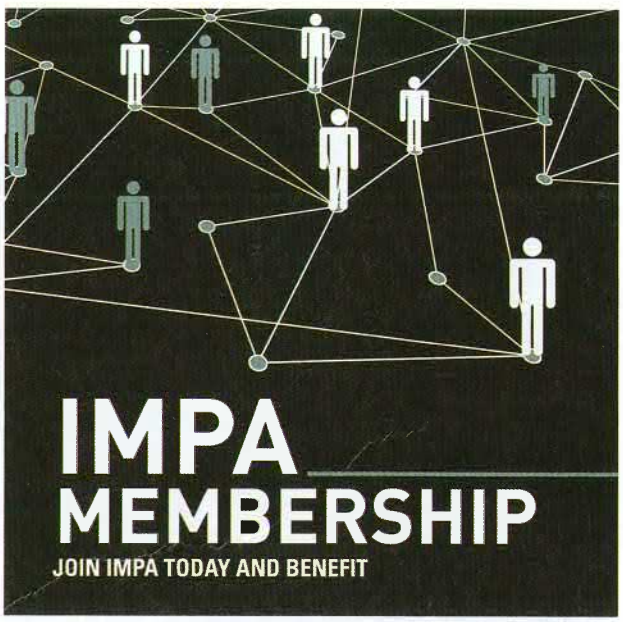

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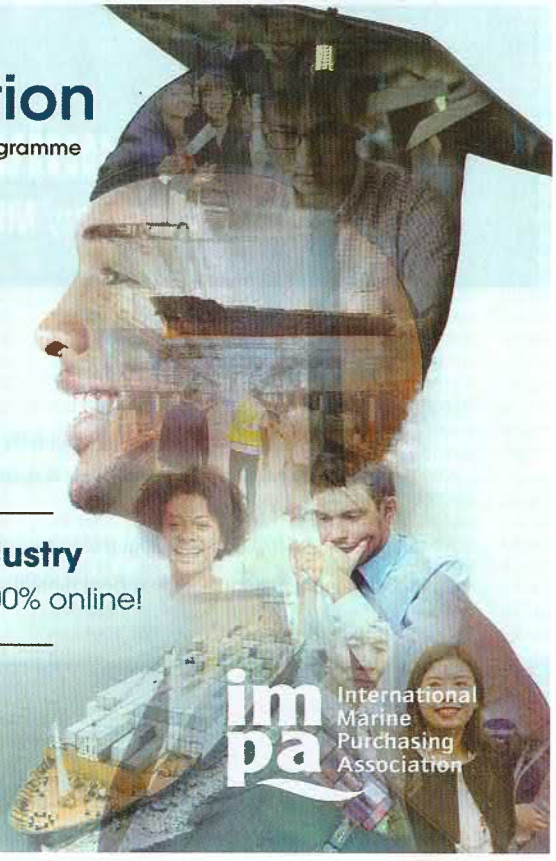

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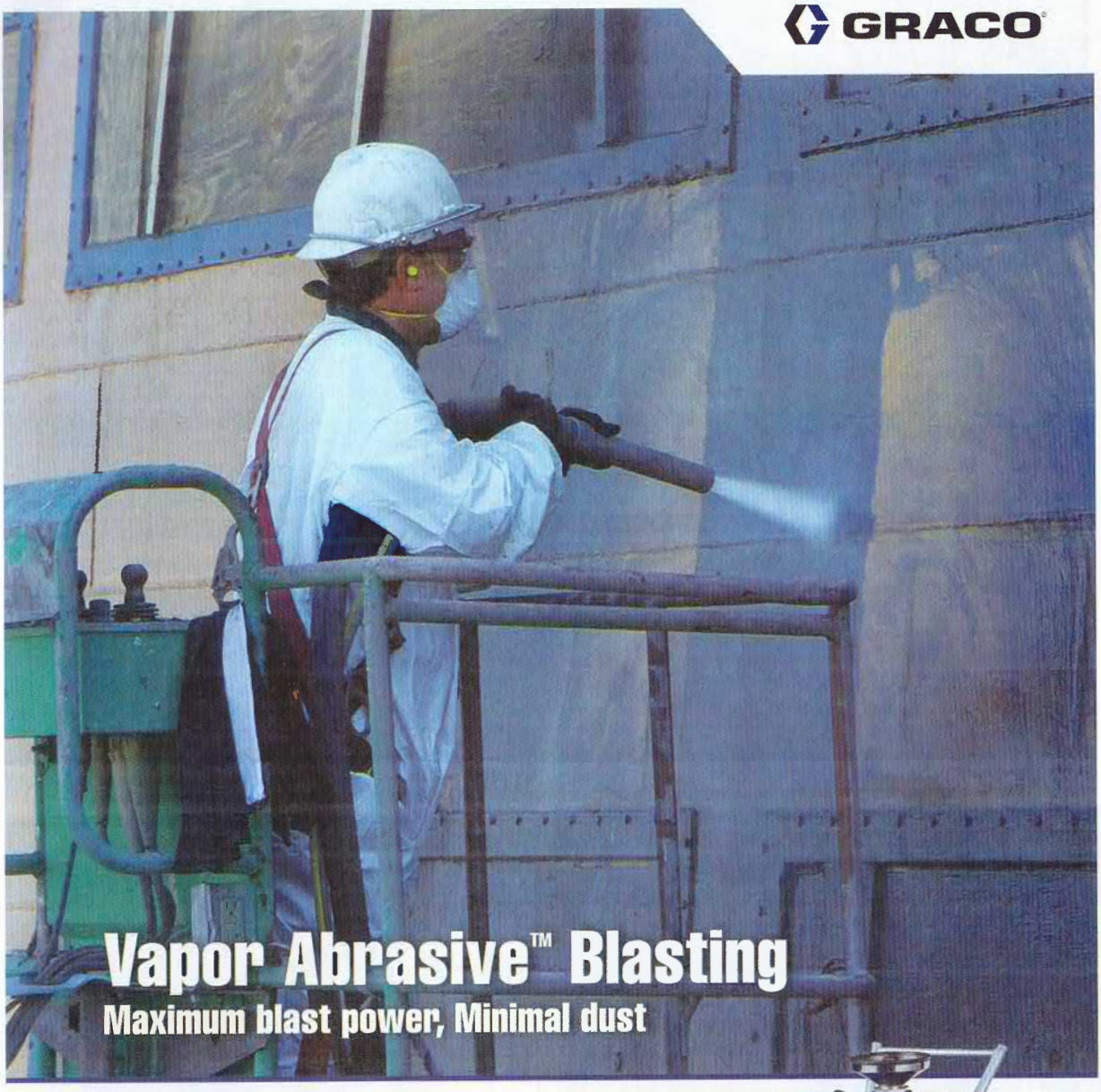

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590217	59-1	590287	59-1	590387	59-6	590479	59-23	590552	59-31	590623	59-40	590715	59-37
590218	59-1	590288	59-6	590388	59-6	590480	59-23	590553	59-31	590624	59-38	590716	59-37
590219	59-1	590289	59-6	590389	59-7	590481	59-26	590554	59-31	590630	59-38	590717	59-37
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INTERNATIONAL MARINE PURCHASING ASSOCIATION

590778	59-44	590871	59-51	590986	59-39	591134	59-59	591262	59-18	591402	59-65	591491	59-66
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590782	59-44	590874	59-51	590989	59-39	591141	59-60/63	591265	59-18	591407	59-65	591494	59-66
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590786	59-44	590876	59-52	591002	59-56/62	591143	59-60	591267	59-18	591409	59-65	591496	59-66
590790	59-54	590877	59-52	591003	59-56/62	591144	59-60/64	591268	59-18	591411	59-66	591497	59-66
590791	59-45	590878	59-51	591004	59-56/62	591145	59-60/64	591269	59-18	591412	59-66	591498	59-66
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1. Pneumatic Hand Tools

Pneumatic Impact Wrenches

Pneumatic power impact wrenches deliver extremely high power to fasten and loosen bolts or nuts for quick assembling and disassembling jobs.

The square drive size and capacity at which different types of handles are provided differ from manufacturer to manufacturer as shown in the pneumatic tools comparison table on page 59-7. Choose the most suitable model for the 13 mm to 76 mm sized bolt capacity. The specifications listed here are for your reference. If you wish to order impact wrenches from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-7.

Recommended air pressure is 0.59 MPa(6 kgf/cm²). Air hose nipple is furnished, but sockets and air hoses are sold separately.

Pistol Handle

Grip Handle

Side Handle

How to order : CODE

Impact wrench, pneumatic, SQUARE DRIVE, NOMINAL BOLT DIAM, TYPE of HANDLE, MODEL

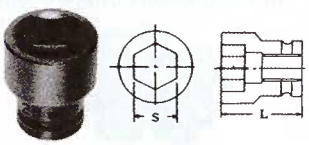
Unit Per Set

CODE	Square Drive		Nom. Bolt Diam mm	Free Speed R.P.M.	Air Inlet PT	Air Hose Size	Net Weight kgs
	mm	Inch					
59 01 01	12.7	1/2	13.0	6,500	1/4	9.5	2.8
02	15.9	5/8	16.0	8,800	1/4	9.5	3.7
05	19.0	3/4	22.0	4,000	3/8	12.7	7.9
06	25.4	1	32.0	3,500	1/2	12.7	11.7
07	31.8	1-1/4	38.0	3,200	1/2	12.7	15.10
59 01 08	38.1	1-1/2	56.0	3,500	1	19.0	36.0
09	44.45	1-3/4	76.0	1,400	1	19.0	56.0

Note: Air hose nipple is furnished, but sockets and air hoses are an extra order.

Sockets for Impact Wrench

Heavy duty six point square drive sockets for use with the impact wrench. Various sizes with different square drives are available.



How to order : CODE

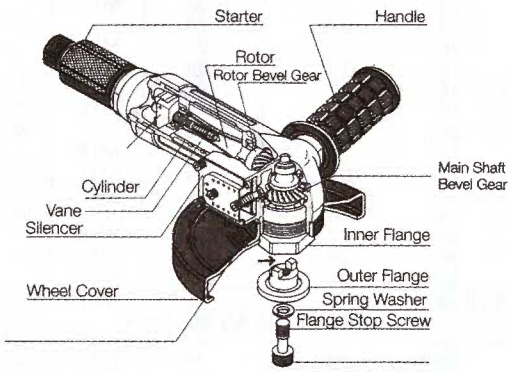
Socket for impact wrench, SQUARE DRIVE, SOCKET SIZE

Unit Per Pc.

CODE	Socket Size (S) (Opening) mm	Overall (L) Length mm	For Bolt Size	
			mm	Inch
9.5 mm (3/8") SQ. Drive				
59 02 01	6	25	M3.5	
02	7	25	M4	
03	8	25	M5	
04	9	25	M5	
05	10	27	M6	W3/16
59 02 06	11	27	M7	
07	13	27	M8	
08	14	27	M8	
09	17	27	M10	W3/8
10	19	30	M12	W7/16
59 02 11	21	35		W1/2
12	22	35	M14	
12.7 mm (1/2") SQ. Drive				
59 02 13	10	38	M6	W3/16
14	11	38	M7	
15	12	38		W1/4
16	13	38	M8	
17	14	38	M8	
59 02 18	17	40	M10	W3/8
19	19	40	M12	W7/16
20	21	40		W1/2
21	22	40	M14	
22	23	40	M14	
59 02 23	24	40	M16	
24	26	42		W5/8
25	27	42	M18	
26	29	50	M18	
27	30	50	M20	
59 02 28	32	50	M22	W3/4
19.0 mm (3/4") SQ. Drive				
59 02 29	17	48	M10	W3/8
30	19	48	M12	W7/16
31	21	48		W1/2
32	22	48	M14	
33	23	50	M14	
59 02 34	24	50	M16	
35	26	50		W5/8
36	27	52	M18	
37	29	52	M18	
38	30	52	M20	
59 02 39	32	52	M22	W3/4
40	35	55		W7/8
41	36	55	M24	
42	38	55	M24	
43	41	55	M27	W1
59 02 44	46	70	M30	W1-1/8
45	50	75	M33	W1-1/4
25.4 mm (1") SQ. Drive				
59 02 46	17	57	M10	W3/8
47	19	57	M12	W7/16
48	21	57		W1/2
49	22	57	M14	
50	23	57		
59 02 51	24	57	M16	
52	26	57		W5/8
53	27	57	M18	
54	29	57	M18	
55	30	57	M20	
59 02 56	32	57	M22	W3/4
57	35	62		W7/8
58	36	62	M24	
59	38	68	M24	
60	41	68	M27	W1
59 02 61	46	75	M30	W1-1/8
62	50	75	M33	W1-1/4
63	55	80	M36	
64	58	80		W1-1/2
65	60	85	M39	
59 02 66	63	85		W1-5/8
38.1 mm (1-1/2") SQ. Drive				
59 02 67	46	94	M30	W1-1/8
68	50	100	M33	W1-1/4
69	54	100		W1-3/8
70	55	100	M36	
71	58	105		W1-1/2
59 02 72	60	105	M39	
73	63	110		W1-1/8
74	65	110	M42	
75	67	110		W1-3/4
76	70	110	M45	
59 02 77	71	115		W1-7/8
78	75	115	M48	
79	77	115		W2
80	80	120	M52	
81	85	120	M56	W2-1/4
59 02 82	90	125	M60	
83	95	140	M64	W2-1/2
84	100	140	M68	
85	105	145	M72	
86	110	147	M76	W3
59 02 87	115	150	M80	

* Please write for if required size is not listed.

Pneumatic Angle Grinders



A pneumatic angle (vertical) grinder has a speed rating suitable for sanding, rust removal, rough grinding and cutting applications.

A wide variety of models from various manufacturers is available. The specifications listed here are for your reference. If you wish to order Angle Grinders from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-8.

Recommended air pressure is 0.59 MPa (6 kgf / cm²). Air hose nipple and tools for wheel mounting are furnished as standard accessories. However, grinding wheels, sanding discs and wire brushes are extra.

59 03 01

59 03 02

59 03 50

How to order : CODE

Angle grinder, pneumatic,
WHEEL SIZE (O.D. x THICKNESS x I.D.), MODEL

Unit Per Set

CODE	Wheel Size O.D. x T x I.D. mm	Free Speed R.P.M.	Air Inlet PT	Air Hose mm	Weight kgs
59 03 05	58 x 3 x 9.6	19,000	1/4	9.0	0.6
01	100 x 6 x 15	13,000	3/8	9.0	1.6
04	115 x 6 x 22	13,000	3/8	9.0	1.6
50	125 x 6 x 22	12,000	3/8	9.0	2.2
02	180 x 6 x 22	7,600	3/8	13.0	2.5
03	230 x 7 x 22	5,900	3/8	12.7	4.0

Rubber Pads for Pneumatic Grinder

It is necessary to furnish the original type of rubber pad as the sizes of rubber pads differ from manufacturer to manufacturer. Please specify the manufacturer and model of the angle grinder you are currently using when ordering.

How to order : CODE

Rubber pad for pneumatic angle grinder, WHEEL DIAM, APPLICABLE MODEL

Unit Per Pc.

CODE	For Wheel Dia	CODE	For Wheel Dia
59 03 56	58 mm	**59 03 60**	125 mm
16	100 mm	**17**	180 mm
40	115 mm	**21**	230 mm

Angle De-Scalers

A series of hand held mechanical scaling machines based on the patented rotating chain link system. It is ideal for spot scaling and more than ten times faster than a normal needle gun. Easy to operate, vibration-free and designed for operator comfort.

Pneumatic Type

033-3000

Unit Per Set

CODE	59 03 23
Model	Rustibus 033-3000
Working Width	30 mm
Air Consumption	230 ltr/min. (625 l/min full load)
Air Pressure	6 bar / 90 psi
Result	St3++/SSPC-SP11
Dimensions	L 450 x H 200 x W 145 mm
Weight	3.4 kgs
Name of Mfr.	Dalseide Shipping Services

Electrical Type

034-4000

032-2000

Unit Per Set

CODE	59 03 44	59 03 28
Model	034-4000	032-2000
Working Width	30 mm	
Power Source	AC 110-120V 60 Hz 10A	AC 220-240V 50/60 Hz 7.3A
Result	St3+++ (SSPC-SP11+++)	
Dimensions	L580 x H300 x W165 mm	L450 x H220 x W130 mm
Weight	5.7 kgs	4.5 kgs
Name of Mfr.	Dalseide Shipping Services	

Replacement Chain Drums for Rustibus Angle De-Scalers

Disposable Chain Drum

Twisted Knot Wire Brush

For Pneumatic Model 033-3000

Unit Per Pc.

CODE	Items	Part No.
59 03 22	R33 chain drum	033-3156
25	R33 wire brush	033-3202
74	R33 Air motor	033-3001
75	R33 Screen	033-3010

For Electrical Models 034-4000 & 032-2000

Unit Per Pc.

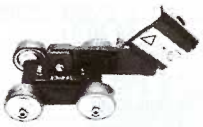
Description	For model 034-4000		For model 032-2000	
	CODE	Part No	CODE	Part No
Disposable chain drum	**59 03 76**	034-4156	**59 03 37**	032-2156
Twisted knot wire brush	**77**	034-4202	**39**	032-2202
Motor	**78**	034-4001	**80**	032-2001
Screen	**79**	034-4010	**81**	032-2010

Magno Rollers

for Rustibus Angle De-Scaler

Magno Rollers are a magnetised wheelbase for the Rustibus 30 series. They use a powerful magnet to support the entire Rustibus hand tool which makes them perfect for use on angled steel surfaces. It will enhance safety and operator comfort, and it will reduce operator strain in any working position.

Attached with Angle De-Scaler



033-6300 for R33 Magno roller

034-6400 for R34 Magno Roller

032-6200 for R32 Magno roller

Unit Per Set

CODE	59 03 24	59 03 55	59 03 30
Model	033-6300	034-6400	032-6200
For Magno Roller	R33	R34	R32
Weight kgs (lbs)	0.9 (2)	0.82 (1.8)	0.9 (2)

Name of Mfr.: Dalseide Shipping Services

Explosion-proof Angle De-Scalers

Specially designed and produced for use on tankers, gas carriers, oil tankers, FPSOs, rigs and platforms, or in on shore oil and gas refineries. In fact anywhere that you need to do maintenance on steel, in a potentially explosive atmosphere. After thorough and intensive testing, the machines received the final stamp of approval by DNV (Det Norske Veritas). Certified by DNV to meet EX/ATEX 94/9/EC directive.

Unit Per Set

CODE	59 03 35
Model	X33 AIR (033-X3000)
Working Track mm (")	25 (1)
Air Consumption L/min (CFM)	625 (22)
Working Pressure bar (psi)	6 (87)
rpm	2,500 (Free speed)
Result	ST3 +++ (SSPC-SP11 +++)
Size mm (")	L 450 (17.5) x 200 (8) x 145 (5.5)
Weight kgs (lbs)	3.7 (8)

Name of Mfr.: Dalseide Shipping Services AS

Pneumatic Die Grinders

Compact and easy to handle air tool designed for precision grinding, reshaping of machine parts, grinding small castings, removing welding slags and sharpening and finishing wood, glass and plastics.

Recommended air pressure is 0.59 MPa (6 kgf/cm²) and the item is furnished with a hose nipple and tools for wheel mounting. The specifications listed here are for your reference. If you wish to order die grinders from a specific manufacturer, please order from the comparison table listing major international manufacturers and model numbers on page 59-8.

How to order : CODE

Die grinder, pneumatic, COLLET CHUCK SIZE, MODEL

Unit Per Set

CODE	Collet Chuck Size mm	Free Speed R.P.M.	Air Inlet PT	Air Hose mm	Weight kgs
59 03 26	6.0	25,000	1/4	9.5	0.53

Pneumatic Straight Grinders

A pneumatic high speed straight (horizontal) grinder. Compact, lightweight, and easy to operate. Speed governors are built-in to control the spindle speed. Recommended air pressure is 0.59 MPa (6 kgf/cm²). Furnished with air hose nipple and tools for wheel mounting. Grinding wheels are sold separately.

The specifications listed here are for your reference. If you wish to order straight grinders from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-8.

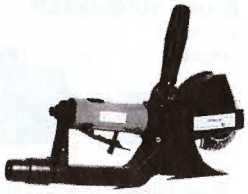
How to order : CODE

Straight grinder, pneumatic, WHEEL SIZE (O.D. x THICKNESS x I.D.), MODEL

Unit Per Set

CODE	Wheel Size O.D. x T x I.D. mm	Free Speed R.P.M.	Air Inlet PT	Air Hose mm	Weight kgs
59 03 31	65 x 13 x 9.5	14,600	1/4	9.5	1.4
32	125 x 19 x 12.7	7,600	3/8	12.7	2.8
33	150 x 25 x 15.7	6,300	3/8	12.7	3.7
34	76 x 13 x 9.5	11,000	3/8	10.0	1.9

Pneumatic Hand De-Scalers



Easy to handle, light weight surface preparation tool with a lot of power. This versatile piece of equipment utilizes a variety of abrasives from wire brushes, coating removal discs to erasers for removal of adhesive products.

Unit Per Set

CODE	59 03 43
Model	Rustibus Mini Profiler 025-3000
Working Width	25 mm
Air Consumption	113 ltr/min
Air Pressure	6.3 bar / 90 psi
Result	St3++/SSPC-SP11
Dimensions	L275 x H150 x W80 mm
Weight	1.5 kgs

Name of Mfr.: Dalseide Shipping Services

Accessories for Pneumatic Hand De-scaler

Hub Assembly

Steel Bent Belt

Wheel Assembly

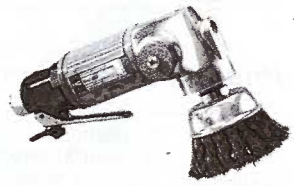
Unit Per Pc.

CODE	Items	Part No.
59 03 45	R25 Hub assembly 23 mm	025-0401
49	R25 Steel bent belt, course	025-0423
54	R25 Coating removal wheel assembly	025-0410

Pneumatic Derusting Brushes

For removing rust; used in machine building, mould making and container construction, in steel construction and ship building as well as in foundries.

Model MAG-9000®



Quality

A sturdy, durable, slim and compact tool for derusting works, even in places that are difficult to reach.

Safety

Optimized speed for brushing applications.

Efficiency

Fatigue-free working thanks to excellent weight-power ratio and the motor's vibration-free support. The standardized chuck (available as M14 collet chuck) accepts all standard brushes. Fast and efficient brush maintenance thanks to compact built-in units.

Unit Per Set

CODE	59 20 71
Model	MAG-9000®
Power	600 watt
Speed	9,000 min^{-1}
Chuck	M14 x 2 mm
Operating Pressure	6.3 bar
Air Consumption	11.8 ltr/sec
Air Connection	G 3/8"
Weight	1.2 kgs
Standard Accessories	Tool with chuck M14, quick-coupling nipple, hose nipple and assembly wrenches

Name of Mfr. : Holger Clasen GmbH & Co. KG

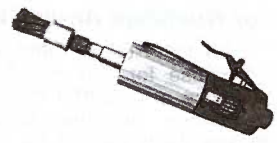
Accessories for Derusting Brush MAG-9000®

Wire Cup Brush, Plaited 80 mm dia | Wire Cup Brush, Plaited 60 mm dia | Wire Cup Brush, Crimped 80 mm dia | Conical Wheel Brush, Plaited 100 mm dia

Unit Per Pc.

CODE	Item	Description	Name
		Wire Cup Brush	
59 20 72	Crimped	80 mm dia for light rust	BT 80-M14
73	Plaited	80 mm dia for heavy rust	BT 80-K-M14
74	Crimped, stainless steel	80 mm dia for light rust	BT 80-VA-M14
79	Crimped	60 mm dia for light rust	BT 60-M14
75	Plaited	60 mm dia for heavy rust	BT 60-K-M14
80	Crimped, stainless steel	60 mm dia for light rust	BT 60-VA-M14
		Conical Wheel Brush	
59 20 76	Plaited	100 mm dia for heavy rust in indentations	BT 100 F-M14
77	Plaited, stainless steel		BT 100 F-VA -M14
		Protective Cover	
59 20 78	For protection against removed material that is flying around when using conical wheel brushes		TB08772/115

Model GG 30/54 & GG30/65



The compact design makes rust removal easy, even in places that are difficult to reach. Fatigue-free working thanks to excellent weight-power ratio and the motor's vibration-free support. The standardised chuck (available as 0.5 - 7 mm dia collet chuck) accepts all standard brushes. Fast and efficient brush maintenance thanks to compact built-in units.

Unit Per Set

CODE	59 20 81	59 20 91
Model	GG 30/54	GG30/65
Power	300 watt	300 watt
Speed	5,400 min^{-1}	6,500 min^{-1}
Chuck	0.5 – 7 mm	0.5 - 7 mm
Operating Pressure	6.3 bar	6.3 bar
Air Consumption	9.0 ltr/sec	9.0 ltr/sec
Air Connection	G 1/4"	G 1/4"
Weight	0.5 kgs	0.5 kgs
Standard Accessories	6 mm dia standard chuck, Quick-coupling nipple, Assembly wrenches, Hanging device and second handle	6 mm dia standard chuck, Quick-coupling nipple, Assembly wrenches, Hanging device and second handle

Name of Mfr. : Holger Clasen GmbH & Co. KG

Accessories for Derusting Brush GG 30/54 & GG30/65

Wire Brush with 6 mm Shank

Unit Per Pc.

CODE	Ferrule Dia	Wire Size Dia	Name
59 20 82	20 mm	0.15 mm	BP-30305
83		0.26 "	BP-30302
84		0.30 "	BP-30304
59 20 85	23 mm	0.15 mm	BP-30308
86		0.26 "	BP-30310
87		0.30 "	BP-30311
88		0.50 "	BP-30312
59 20 89	29 mm	0.15 mm	BP-30314
90		0.26 "	BP-30316

Model GG26/270 & GG28/370

GG26/270

GG28/370

The compact design makes rust removal easy, even in places that are difficult to reach. Fatigue-free working thanks to excellent weight-power ratio and the motor's vibration-free support. Fast and efficient brush maintenance thanks to compact built-in units.

Unit Per Set

CODE	59 20 92	59 20 93
Model	GG26/270	GG28/370
Power	260 watt	280 watt
Speed	27,000 min^{-1}	37,500 min^{-1}
Chuck	6 mm	6 mm
Operating Pressure	6.3 bar	6.3 bar
Air Consumption	6.6 ltr/sec	5.8 ltr/sec

(to be continued)

Unit Per Set

CODE	59 20 92	59 20 93
Air Connection	G 1/4"	G 1/4"
Weight	0.6 kgs	0.5 kgs
Standard Accessories	6 mm dia collet chuck, inlet and exhaust air hose, adapter, quick coupling nipple, assembly wrenches and locking pin	6 mm dia collet chuck, inlet and exhaust air hose, adapter, quick coupling nipple, assembly wrenches

Accessories for Straight Grinder GG 26/270 & GG28/370

Grinding Pin

Tungsten Pin

Unit Per Pc.

CODE	Description	Dimension	Model Number
59 20 94	Diamond	4 x 20 mm	101 99 055
95	grinding pins,	6 x 20 mm	101 99 056
96	cylindrical shape	8 x 20 mm	101 99 057
59 20 97	Grinding pin set	10 different types, grade O, coarse grain	101 99 150
59 20 98	Tungsten carbide burr with long shaft, drill bit tip 135°	6 x 19 mm	101 99 026
59 20 99	Tungsten carbide burr set	5 different types, cut 3 PLUS	101 99 040

Pneumatic Hand Drills

For use on light and medium duty drilling. Power is controlled by a built-in air regulator located on the pistol or grip handle, for adjusting to different drilling surfaces. The types of handle differ from manufacturer to manufacturer. Recommended air pressure is 0.59 MPa (6 kgf/cm²).

Key chuck and air hose nipple are equipped as standard accessories. The specifications listed here are for your reference. If you wish to order hand drills from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-8 and 59-9.

Pistol Handle

Grip Handle

How to order : CODE

Hand drill, pneumatic, DRILLING CAPACITY mm, TYPE of HANDLE, MODEL

Unit Per Set

CODE	Drilling Capacity mm	Collet Chuck Size mm	Free Speed R.P.M.	Air Inlet PT	Air Hose mm	Weight kgs
59 03 41	6.5	6.5	2,900	1/4	9.5	0.75
42	9.5	10.0	1,400	3/8	9.0	1.4
46	8.0	8.0	1,500	1/4	9.5	1.2
47	13.0	13.0	700	3/4	9.5	2.3
48	16.0	16.0	400	1/4	9.5	2.9

Pneumatic Heavy Duty Rotary Drills

Powerful rotary drills have a very smooth operation for accurate drilling, reaming, tapping and tube rolling. Side handled type will be supplied in standard. The air hose nipple is equipped as a standard accessory.

Side Handle

Recommended air pressure is 0.59 MPa (6 kgf/cm²). The specifications listed here are for your reference. If you wish to order heavy duty rotary drills from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-9.

How to order : CODE

Rotary drill, pneumatic, heavy duty, DRILLING CAPACITY mm

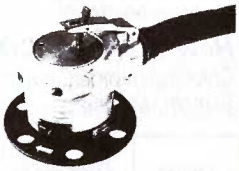
Unit Per Set

CODE	Drilling Capacity mm	Collet Chuck Size mm	Free Speed R.P.M.	Air Inlet PT	Air Hose mm	Weight kgs
59 03 51	22.0	M.T. #2	600	3/8	12.7	5.8
52	32.0	M.T. #3	380	1/2	12.7	14.0
53	50.0	M.T. #4	160	1/2	19.0	18.7

Note : M.T. denotes Morse Taper.

Pneumatic Radial Chamfering Tool

For radius chamfering on the scallop parts or holes of bridge members, or on steel materials used in seawater ballast tanks and double-side skin bulk carrier production. Dual cutting head with 4 radius surfaces per tip and a quick-change base. Meets or exceeds PSPC* requirements on surface preparation of steel materials prior to coating.



*PSPC stands for Performance Standard for Protective Coatings regulated by International Maritime Organization.

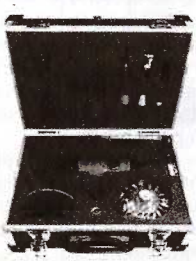
Unit Per Set

CODE	59 03 57
Model	CBR-03
Free Speed	12,000 min^{-1} (rpm)
Chamfering Capacity	3 mm radius
Minimum Workpiece Thickness	6 mm
Air Pressure	0.6 (6) MPa (kgf/cm²)
Air Consumption (No-load)	0.65 m³/min
Inlet Size	Rc 1/4
Weight	2 kgs
Accessories included	2 pieces of Indexable insert 12.7 R3 (Installed), 2 pieces of Indexable insert set screw (Installed), Indexable insert set screw, Spanner T-15D, Handle

Name of Mfr. : Nitto Koki Co., Ltd.

Pneumatic Multi-Tool

A pneumatic multi tools enable for use as grinding, sanding, drilling, milling, and brushing with one tool. Handy, light weight and can be used in small areas for small repairs.



Unit Per Set

CODE	59 03 58
Air Pressure	6.3 bar
Disc Size Diameter	100 x 16 mm
RPM	5000 – 1500 rpm/min.
Power	1.0 HP
Shaft	3/8" x 24 UNF
Air Consumption	3.6 CFM
Drilling Capacity	6.0 mm
Flap Disc	100 mm
Brush	100 mm x 3/8" x 24 UNF
Burr/Grinding Stones	Max. 25 mm
Length	234 mm
Weight	1.1 kgs

Pneumatic Chipping Hammers

Powerful hammers for billet chipping, general chipping and the removal of calking/weld flux, paint and rust in limited space. There are two kinds of shank types, round or hexagon, are available. When ordering, please specify which shank model is required.

Required air pressure is 0.59 MPa (6 kgf/cm²). The specifications listed here are for your reference. If you wish to order chipping hammers from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-9.

How to order : CODE

Chipping hammer, pneumatic, BLOW PER MINUTE, TYPE of SHANK, MODEL

Unit Per Set

CODE	Type of shank	Blow per Minute	Piston Dia mm	Air Inlet PT	Air Hose mm	Weight kgs
59 03 61	Round	2,600	19.0	3/8	9.5	1.7
59 03 62	Hexagon	2,300	18.0	1/4	9.5	2.2

Chisels for Pneumatic Chipping Hammer

These chisels differ from manufacturer to manufacturer. When ordering, it is necessary to provide information about the manufacturer and model of the chipping hammer you are currently using.

Flat

Moil Point

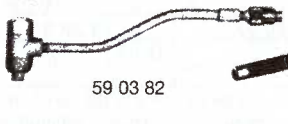
Unit Per Pc.

CODE	Description	Shank
59 03 66	Flat chisel	Round
67	Moil point chisel	"
59 03 72	Flat chisel	Hexagon
73	Moil point chisel	"

Pneumatic Scaling Hammers

Suitable for the removal of old paint and rust. The specifications listed here are for your reference. If you wish to order scaling hammers from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-9.

Recommended air pressure is 0.59 MPa (6 kgf/cm²). The air hose nipple is furnished as a standard accessory. Due to slight differences in available models, please specify the manufacturer's name and model number when ordering spare hammers.



59 03 82

59 03 83

How to order : CODE

Scaling hammer, pneumatic, NUMBER of PISTONS, MODEL

Unit Per Set

CODE	Number of Piston	Piston Dia mm	Stroke mm	Free Speed R.P.M.	Air Inlet PT	Air Hose mm	Weight kgs
59 03 82	1	30.0	15	8,000	3/8	9.5	2.1
83	3	22.0	10	7,000	3/8	12.7	3.2

Spare Hammer Heads

for Pneumatic Scaling Hammer

These hammer heads differ from manufacturer to manufacturer. When ordering, it is necessary to provide information about the manufacturer and model of the scaling hammer you are currently using.

Unit Per Pc.

CODE	Number of Piston	CODE	Number of Piston
59 03 87	1	**59 03 88**	3

Scaling Hammers

SF Single and Triple Head

Highly effective for quick removal of heavy scale and coatings. The single head tools are perfect for smaller and awkward to reach areas, being lightweight and easy to handle it's perfect for reaching behind structures and up against bulkheads. The three head tools give faster production for more open areas. Options include spark resistant Beryllium Copper heads and single piece steel pistons.

SF-1

Hammer Head

Single Head

Unit Per Set

CODE	59 02 88	59 02 89	59 02 90	59 03 84
Model	SF1			VLSF1
Part No.	151.5100	151.5110	151.5180	196.5095
Head	Cruciform taper fit Tungsten Carbide head	Taper fit Beryllium Copper head	Cruciform single piece Steel	Cruciform taper fit Tungsten Carbide head
B.P.M.	3,000			
Air Consumption (Lps/cfm)	3.3/7			4.25/9
Noise Level (db(A))	88.1			90.9
Vibration Level (Aeqm/s2)	6.8			4.4
Length mm	485			500
Working Height mm	152.5			
Weight kgs	2.5			

Name of Mfr. : Trelawny SPT Ltd.

Triple Heads

Unit Per Set

CODE	59 02 91	59 03 59	59 03 64
Model	SF3		
Part No.	153.5300	153.5310	153.5380
Head	Cruciform taper fit Tungsten Carbide head	Taper fit Beryllium Copper head	Cruciform single piece Steel
B.P.M.	3,000		
Air Consumption (Lps/cfm)	5.2/11		
Noise Level (db(A))	92.7		
Vibration Level (Aeqm/s2)	13.4		
Length mm	485		
Working Height mm	152.5		
Weight kgs	3.7		

Name of Mfr. : Trelawny SPT Ltd.

Spare Head

for Trelawny Scaling Hammer

Unit Per Pc.

CODE	59 03 85	59 03 89	59 03 65
Item	Tungsten carbide	Beryllium copper	Single piece steel piston
Part No.	426.5351	606.5303	612.5305

Note : SF1 and SF3 spares are compatible with SF11 deck scaler.
Name of Mfr. : Trelawny SPT Ltd.

Scaling Piston Hammers

5 Piston Hammer

Can be equipped with pistons in hardened steel, spark proof bronze or tungsten carbide.

5 Piston Hammer

Spare Piston

Specification

Model	819-0
Scaling Width	95 mm
Strikes per Min.	6,500
Feeding Pressure	5 bar
Air Consumption	900 ltr/min.
Air Inlet Connector	1/2"
Air Hose	13 mm
Weight	3.8 kgs

Name of Mfr. : I.CO. s.r.l.

CODE	Description	Model	Unit
59 03 95	Scaling piston hammer, pneumatic, 5 piston	819-0	Set
96	Spare piston for 5 piston scaling hammer	819-2	Pc.

Comparison Table of Pneumatic Tools

Products from a few manufacturers are listed below and the next two pages for your reference. If there is any question as to what model is most suitable, please ask for further information or brochures from the local manufacturer when ordering.

In the table below, the products for each manufacturer are listed vertically according to the (square drive size, wheel diameter, drill capacity, number of pistons, etc) which are listed in the left hand column.

When ordering: Impact wrenches

1. Select the square drive size required : 12.7 mm
2. Select a manufacturer from one of the columns to the right : Atlascopco
3. List the representative code for that size : 59 01 01
4. List the model number of the tool from that manufacturer : LMS 28HR – 13

Impact Wrenches

CODE	Square Drive	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	OTHERS	FUJI (Japan)
59 01 01	12.7 mm (1/2")	LMS 28HR-13 (8434128000) (Pistol) 9,500 r.p.m.	2903 P1 (Pistol) 6,000 r.p.m.	A2 (Pistol) 10-16 mm	-	WP 421 D (Pistol) 7,000 r.p.m.	YW-14PRK (Pistol) 6,000 r.p.m	13WH2 (Pistol) 4,800 r.p.m	UW-13SK (Pistol) 6,500 r.p.m.	NW-14H (Pistol) 5,500 r.p.m	-	FW-14PH-2 (Pistol) 7,500 r.p.m
59 01 02	15.9 mm (5/8")	-	2908 P1 (Pistol) 6,000 r.p.m.	-	-	WP 421 D-5/8 (Pistol) 7,000r.p.m.	-	16WPA (Pistol) 5,200 r.p.m.	-	-	-	FW-14PH-3 (Pistol) 7,500 r.p.m.
59 01 05	19.0 mm (3/4")	LMS 58HR-20 (8434158001) (Pistol) 5,500 r.p.m.	2920 B1 (Grip) 5,000 r.p.m.	A3 (Pistol) 12-22 mm	-	WP 2049-3/4 (Pistol) 6,200 r.p.m.	YW-26S (Grip) 5,500 r.p.m.	22WB (Grip) 3,800 r.p.m.	UW-22S (Grip) 4,000 r.p.m.	NW-22A (Grip) 4,500 r.p.m.	-	FW-250P-2 (Pistol) 5,000 r.p.m.
59 01 06	25.4 mm (1")	LMS 68HR-25 (8434168001) (Pistol) 5,000 r.p.m.	2920 B3 (Grip) 5,000 r.p.m.	A4 (Grip) 16-28 mm	-	WP 2059-1 (Pistol) 4,000 r.p.m.	YW-32C (Grip) 4,200 r.p.m	32WH (Grip) 3,600 r.p.m	UW-32SLA (Grip) 3,500 r.p.m	NW-32 LA (Grip) 4,000 r.p.m.	-	FW-320P-1 (Pistol) 4,800 r.p.m.
59 01 07	31.8mm (1-1/4")	-	-	A5 20-36 mm	-	-	-	45WA (28.6 mm) (Side) 2,800 r.p.m.	UW-401 (Grip) 2,600 r.p.m.	-	-	FW-420-2 (Grip) 4,500 r.p.m.
59 01 08	38.1 mm (1-1/2")	LMS 88GOR-38 (8434188001) (Grip) 3,800 r.p.m.	5980 A1 (Side) 830 r.p.m.	A6-0 (Side) 27-45 mm	-	W-2119 (Grip) 3,300 r.p.m.	YW-50C (Side) 3,000 r.p.m.	50WHA2 (Side) 2,500 r.p.m	UW-550 (Side) 3,500 r.p.m.	NWH-500 (Side) 3,500 r.p.m.	-	FW-50-7 (Side) 4,000 r.p.m.

(to be continued)

Impact Wrenches

CODE	Square Drive	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	OTHERS	FUJI (Japan)
59 01 09	44.45 mm (1-3/4")	-	-	A6-1 30-80 mm	-	-	-	75WB (Side) 2,400 r.p.m	UW-75S (Side) 1,400 r.p.m.	NWH-750 (Side) 2,200 r.p.m.	-	FW-75-7 (Side) 3,000 r.p.m.

Angle Grinders

CODE	Wheel Diam.	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	Trelawny SPT Ltd. (U.K.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	NITTO KOHKI (Japan)	FUJI (Japan)
59 03 05	58 mm	-	-	-	-	GW21A/190 19,000 r.p.m	-	-	-	-	-	-	-
59 03 01	100 mm	LSV28 ST12-12 (8423012516) (115 mm) 12,000 r.p.m.	TA 120 RP64 12,000 r.p.m.	170.4050 12,000 r.p.m.	3602-00-E-4 12,000 r.p.m.	DW 104 13,000 r.p.m.	116GLF 115RAW 11,500 r.p.m.	G4-SA 13,000 r.p.m.	YGS-4GS-2 13,600 r.p.m.	USG-40S 13,300 r.p.m.	NAG-400A 13,600 r.p.m	**(59 03 06)** MG-40 13,000 r.p.m	FA-30-3 13,500 r.p.m.
59 03 04	115 mm	-	-	-	-	DW104/115 13,000 r.p.m.	-	-	-	-	-	-	-
59 03 50	125 mm	-	-	-	-	DW105-1 12,000 r.p.m.	-	-	-	-	-	-	-
59 03 02	180 mm	LSV48 SA085-18 (8423013206) 8,500 rpm	77A 75P 107M 7,500 r.p.m.	170.4070 7,000 r.p.m.	3602-00-E-7 7,000 r.p.m.	DW 108 7,600 r.p.m.	15GL-60RA 6,000 r.p.m.	G7-SA 7,500 r.p.m.	YGS-7GS-3 7,600 r.p.m.	USG-7S 7,400 r.p.m.	NAG-70A 7,600 r.p.m.	**(59 03 08)** MYG-70 7,600 r.p.m.	FA-6C-1 7,600 r.p.m.
59 03 03	230 mm	LSS64 S060-23 (8423264146) 6,000 r.p.m.	88V 60P 109M 6,000 r.p.m.	-	3600-00-E 9 6,000 r.p.m.	-	1945 VSL 4,500 r.p.m.	7VC 6500F 6,500 r.p.m.	-	UVG-2300 SL59 5,900 r.p.m.	NVG-230SL 5,900 r.p.m.	-	FV-9BH-1M 5,900 r.p.m.

Die Grinders

CODE	Chuck Size	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	NITTO KOHKI (Japan)	FUJI (Japan)
59 03 26	6 mm	LSF28 S250 (8423123511) LSF28 S250-R (8423123548) 25,000 r.p.m.	TD 250RG4M 25,000 r.p.m.	-	GG30/220K 22,000 r.p.m.	116GLF-250 25,000r.p.m.	MG-0A 25,000r.p.m	HG-38NB-2 22,000r.p.m	UG-25NA 23,500 r.p.m.	RG-383-06 RG-383-20 (1/4") 22,000 r.p.m.	**(59 04 31)** L-25B 27,000 r.p.m.	FG-26H-1 FG-26H-1F 24,000 r.p.m

Straight Grinders

CODE	Wheel Diam.	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	OTHERS	FUJI (Japan)
59 03 31	65 mm	-	-	-	-	-	GS-2 14000 r.p.m.	HG-65GS 14,600 r.p.m.	UG-65S 14,300 r.p.m.	NHG-65DLW 14,600 r.p.m.	-	FG-3H-1 14,600 r.p.m.
59 03 32	125 mm	LSR 64 S072-13 (8423164030) 7,200 r.p.m.	-	-	-	-	-	HG-120GS-2 7,600 r.p.m.	UG-125H 7,600 r.p.m.	NHG-125LW 7,500 r.p.m.	-	FG-5H-1 7,600 r.p.m
59 03 33	150 mm	LSR 64 S060-15 (8423164022) 6,000 r.p.m.	88HL 60H 106 6,000 r.p.m.	200-0 5,000 r.p.m.	-	560 BSL 5/8 6,000 r.p.m.	-	HG-150GS-2 6,300 r.p.m.	UG-150H 6,300 r.p.m.	NHG-150LW 6,200 r.p.m	-	FG-6H-1 6,300 r.p.m.
59 03 34	76 mm	LSR 28 S110-08 (8423132503) 11,000 r.p.m..	TXD 180RH63 18,000 r.p.m.	-	-	15NGEL 180-WC 18,000 r.p.m.	-	HG-75GS 12,700 r.p.m	-	-	-	FG-3H-2 12,700 r.p.m.

Hand Drills

CODE	Drill Capacity	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	NITTO KOHKI (Japan)	FUJI (Japan)
59 03 41	6.5 mm	-	3 AJ1 (6.0 mm) (Pistol) 3,800 r.p.m.	-	DG30/290P (Pistol) 2,900 r.p.m	111DO-40B (Pistol) 4,000 r.p.m.	YRD-6N (Pistol) 2,800 r.p.m.	YBD-6 (6.3 mm) (Pistol) 3,600 r.p.m.	UD-50-45 (Pistol) 5,000 r.p.m.	NRD-6PB (Pistol) 2,400 r.p.m	ADR-65 (Pistol) 2,900 r.p.m.	FRD-6PH-3 (Pistol) 2,800 r.p.m.
59 03 42	9.5 mm	LBB 36 H026 (10 mm) (8421040833) (Pistol) 2,600 r.p.m.	5 AN3 (10.0 mm) (Pistol) 1,000 r.p.m.	AR-X10 (10.0 mm) (Pistol) 2,000 r.p.m.	DG30/100P (Pistol) 1,000 r.p.m.	111DO-14B (Pistol) 1,400 r.p.m.	YRD-8N (Pistol) 1,850 r.p.m.	YBD-10 (10.0 mm) (Pistol) 1,000 r.p.m.	UD-80-12 (Pistol) 1,500 r.p.m.	NRD-10P (10.0 mm) (Pistol) 2,000 r.p.m.	ADR-100 (Pistol) 2,000 r.p.m.	FRD-8PX-2 (Pistol) 1,300 r.p.m.
59 03 46	8 mm	LBB26 EXP-045 (8421050012) (Pistol) 4,500 r.p.m.	780 (Pistol) 350 r.p.m.	-	DG30/170P (Pistol) 1,700 r.p.m.	111DO-28B (Pistol) 2,800 r.p.m.	-	YBD-8B (Pistol) 1,500 r.p.m.	UD-60-15 (Pistol) 1,600 r.p.m.	-	-	FRD-8PX-1 (Pistol) 2,600 r.p.m.

(to be continued)

Hand Drills

CODE	Drill Capacity	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	NITTO KOHKI (Japan)	FUJI (Japan)
59 03 47	13 mm	LBB 36 H007 (8421040807) (Pistol) 700 r.p.m.	7806 (Pistol) 950 r.p.m.	AR-X13 (Pistol) 1,500 r.p.m.	DG40/80P (Pistol) 750 r.p.m.	15DP-8B (Pistol) 800 r.p.m.	YRD-13N (Pistol) 700 r.p.m	RD-13 (Grip) 1,200 r.p.m.	UD-80-07 (Pistol) 830 r.p.m.	NRD-12PA (Pistol) 1,500 r.p.m	-	FRD-8PX-3 (Pistol) 900 r.p.m.
59 03 48	16 mm	LBB 45H017 (8421050132) (Pistol) 1,700 r.p.m.	-	AR-X16 (Pistol) 900 r.p.m.	-	-	-	RD-16R (Side) 900 r.p.m.	UD-80-04 (Pistol) 460 r.p.m.	NRD-16R (Side) 900 r.p.m.	-	FRD-16Z-1 (Grip) 800 r.p.m.
59 03 51	22 mm	-	22 MA2 (Side) 350 r.p.m.	AR-X22 (Side) 600 r.p.m.	-	-	-	RD-23RL (Side) 570 r.p.m.	URD-22R (Side) 600 r.p.m.	NRD-22RLW (Side) 600 r.p.m	-	FRD-23R-21 (Side) 480 r.p.m.
59 03 52	32 mm	-	33 SKA (Side) 300 r.p.m.	-	-	-	-	RD-32R (Side) 450 r.p.m.	URD-32LR (Side) 380 r.p.m.	NRD-32LRLW (Side) 270 r.p.m	-	FRD-32R-11 (Side) 380 r.p.m.
59 03 53	50 mm	-	44 SMA (51.0 mm) (Side) 155 r.p.m.	-	-	-	-	-	URD-500R (Side) 160 r.p.m.	-	-	FRD-50R-11 (Side) 150 r.p.m.

Remark: (Pistol), (Grip) and (Side) are types of handles.

Chipping Hammers

CODE	Type of Shank	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	Trelawny SPT Ltd. (U.K.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	NITTO KOHKI (Japan)	FUJI (Japan)
59 03 61	Round	-	K2LA 2SA Bore 22mm 3,600 b.p.m.	-	850-0 P.D. 24mm 2,000 b.p.m.	ACH-16 6,000 b.p.m.	CH-22 Bore 28.6mm 2,000 b.p.m.	BRH-6 P.D. 20 mm 3,500 b.p.m.	PC-1S(R) P.D. 28.5mm 3,000 b.p.m.	AA-00(R) P.D. 20mm 2,700 b.p.m.	AA-00SP(R) P.D. 18 mm 3,800 b.p.m.	A-300 P.D. 19mm 2,600 b.p.m.	FRH-6A-2 P.D. 20 mm 3,000 b.p.m.
59 03 62	Hexagon	RRC22F-01 (8425020222) P.D.15mm 3,700 b.p.m.	K2LA 1SA Bore 22mm 3,600 b.p.m.	160.6009 4,400 b.p.m.	-	MHA 2 3,000 b.p.m.	-	-	PC-1S(H) P.D. 28.5mm 3,000 b.p.m.	AA-00(H) P.D. 20mm 2,700 b.p.m.	AA-00SP(H) P.D. 18 mm 3,800 b.p.m.	-	FRH-6A-1 P.D. 20 mm 3,000 b.p.m.

Remark: P. D. = Piston Diameter, B. P. M. = Blow per Minute.

Scaling Hammers

CODE	No. of Piston	ATLASCOPCO (Norway)	INGERSOLL-RAND (U.S.A.)	ICO (Italy)	Holger Clasen (Germany)	CLECO (U.S.A.)	Trelawny SPT Ltd. (U.K.)	YOKOTA (Japan)	YUTANI (Japan)	URYU (Japan)	NPK (Japan)	FUJI (Japan)
59 03 82	1	-	-	800-0 5,700 b.p.m.	S 21 3,900 b.p.m.	-	SF-1 3,000 b.p.m.	YK-2 8,000 b.p.m.	SCH-2 4,000 b.p.m.	-	S-2A 3,500 b.p.m.	FS-2A 8,000 b.p.m.
59 03 83	3	-	3161 C1 3,800 b.p.m.	797-0 7,000 b.p.m.	S 31 3,200 b.p.m.	SC-3A 5,200 b.p.m.	SF-3 3,000 b.p.m.	-	-	-	MS-30 7,000 b.p.m	-

Remark: B. P. M. is Blow per Minute.

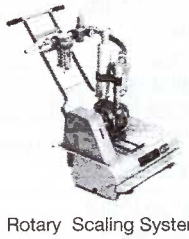
2. Deck Scalers

Deck Scalers

For use in removing scales and surface paint from the ships deck. The scaler has a handle, allowing the operator to stand during use, relieving fatigue and protecting the eyes from dust and chipped metal or scale. Various types of scaling operation machines are available.

Required air pressure is 0.59 MPa (6 kgf/cm²).

Reciprocating Piston System



Rotary Scaling System

Pneumatic Powered

How to order : CODE

Deck scaler, pneumatic, SCALING SYSTEM, MODEL

Unit Per Set

CODE	59 04 01
Model	KC-100
Scaling System	Reciprocating Piston System
Numbers of Piston Head	11 pcs
Piston Diam	22 mm
R. P. M.	4,000 Blow/min
Scaling Width	300 mm
Weight	65 kgs

Name of Mfr.: Kobe Cleaner

Unit Per Set

CODE	59 04 06	59 04 07
Model	MOA	DSA
Scaling System	Rotary Scaling System	
Numbers of Scaling Head	84 pcs Striking chipping leaves	44 pcs Striking wheels
R. P. M.	3,000	2,000
Scaling Width	280 mm	280 mm
Weight	120 kgs	136 kgs
Name of Mfr.	Flexotube-trident	Arnessen

Engine Powered

How to order : CODE

Deck scaler, engine powered, rotary scaling head system, MODEL

Unit Per Set

CODE	59 04 03	59 04 08
Model	S-12	DSG
Scaling System	Rotary Scaling System	
Numbers of Head and Shape	30 cutter blades	44 pcs striking wheels
Engine	4-cycle gasoline engine	
R. P. M.	3,400	2,000
Scaling Width	120 mm	280 mm
Weight	98 kgs	173 kgs
Name of Mfr.	YK Trading	Arnessen

Electric Powered

How to order : CODE

Deck scaler, electric powered, rotary scaling system, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

CODE	59 04 09	59 04 10
Model	KC-120	DS2
Scaling System	Rotary Scaling System	
Numbers of head and shape	84 pcs Striking blades or 25 pcs wire wheel brush	44 pcs Striking wheels
Electrical Motor	AC 220V, 3 phase 3 HP (2.2 kW)	AC 220V, 3 phase
R. P. M.	3,470	1,725
Scaling Width	300 mm	280 mm
Weight	120 kgs	168 kgs
Name of Mfr.	Kobe Cleaner	Arnessen

Replacement Heads for Deck Scaler

These replacement heads for deck scalers differ from manufacturer to manufacturer. When ordering, it is necessary to provide information about the manufacturer and model of the deck scaler you are currently using.

Piston Head

Cutter Blade Assembly

Cutter Drum Assembly

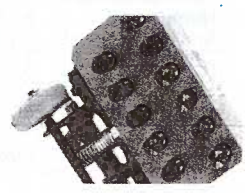
CODE	Item	For	Unit
	For Pneumatic Powered		
59 04 11	Piston head	KC-100	Pc.
16	Cutter blade assembly	MOA	Set
19	Cutter drum assembly	DSA	"
	For Engine Powered		
59 04 13	Cutter blade assembly	S-12	Set
19	Cutter drum assembly	DSG	"
	For Electric Powered		
59 04 17	Cutter blade assembly	KC-120	Set
18	Wire wheel brush unit	KC-120	"
19	Cutter drum assembly	DS2	"

7TH
59

Deck Scalers

Trelawny Scaleforce

Eleven Multi-Head Scaler



Large area corrosion control for all duties on-board ship and off-shore platforms. De-scaling / de-rusting, removal of paint and marine growth on all steel work. Removal of floor coatings paint / epoxy etc.

Features and benefits

- Unique Vibro-lo vibration damping system
- Wear resistant Tungsten carbide-tipped cutter-heads (59 03 98)
- Spark resistant Beryllium Copper head available (59 03 99)
- Quick change replaceable scaling heads
- Dust Shroud available
- Spares compatible with Trelawny SF1 & SF3 handheld models

Unit Per Set

CODE	59 04 05	59 04 00
Model	SF-11	
Part No.	159.5910	159.5930
Machine	Fitted with tungsten carbide cruciform head	Fitted with beryllium copper cruciform head
Cutting Width	250 mm	
BPM	3,000 × 11	
Air Consumption	33 ltr/sec (70 cfm)	
Noise Level	103.1 LpA dB(A) 113.1 LwA dB(A)	LwA 113.1 dB(A)
Vibration (AEQ)	5.76 m/s²	
Length	1,295 mm (51.2")	
Head Dimensions	Width 285 mm Height 150 mm (6") Depth 150 mm (6")	
Weight	36 kgs (79.4 lbs)	

Remark: LpA dB(A) – Sound Power Level
LwA dB(A) – Sound Pressure Level
Name of Mfr.: Trelawny SPT Ltd.

Replacement Heads for Trelawny Deck Scaler SF-11

Unit Per Pc.

CODE	59 03 98	59 03 99
Material	Tungsten carbide	Beryllium copper
Pt/No.	426.5351	606.5303

Note: Beryllium copper head is spark resistant.
Name of Mfr.: Trelawny SPT Ltd.

Large Area Deck De-scalers

Trelawny TFP 200 Multi-Planer

Scaling Width : 200 mm

Rust / paint removal from all areas of ship's decks. Accurate depth control and fully adjustable handle-bar. Built-in hand brake for safety. Rapid work rate.

Air

Electric

Air Powered

Unit Per Set

CODE	59 22 31
Model	TFP200
Part No.	320.2012
Working Width	195 mm (7.7")
Distance from Wall	45 mm (1.8")
Cutter Head Speed	1,528 rpm
Noise Level	94.1 LpA dB(A) 107.1 LwA dB(A)
Vibration (AEQ)	10.3 m/s²
Size W x D x H	350 x 800 x 1,000 mm (13.8" x 31.5" x 39.4")
Weight	45 kgs (99 lbs)

Remark: LpA dB(A) – Sound Power Level
LwA dB(A) – Sound Pressure Level
Name of Mfr.: Trelawny SPT Ltd.

Electric Powered

Unit Per Set

CODE	59 22 34	59 22 35	59 22 36	59 22 37
Model	TFP200			
Part No.	320.2002	320.2016	320.2004	320.2006
Voltage	110 V	110 V	220-240 V	380-440V
Phase & Hz	1ph 50 Hz	1ph 60 Hz	1ph 50/60 Hz	3ph 60 Hz
Working Width	195 mm (7.7")			
Distance from Wall	45 mm (1.8")			
Cutter Head Speed	1,650 rpm			
Noise Level	89.9 LpA dB(A) 102.9 LwA dB(A)			
Vibration (AEQ)	10.3 m/s^2			
Size W×D×H	350 × 900 × 900 mm			
Weight	68 kgs (149.9 lbs)			

Remark: LpA dB(A) – Sound Power Level
LwA dB(A) – Sound Pressure Level
Name of Mfr.: Trelawny SPT Ltd.

Replacement Heads
for Large Area Deck De-Scaler TFP200

← Heavier Scaling Lighter Burnishing →

Tipped Cutter | Star Cutter | Beam Cutter | Twisted Knot Wire Brush | Crimped Wire Brush

Applications

Tipped cutter	Hard wearing tungsten tips for removing heavily corroded areas.
Star cutter	Removal of light corrosion and heavy coating build up.
Beam cutter	Removal of light rust, leaving less stress point lines.
Twisted knot wire brush	Heavy surface rust and light paint removal.
Crimped wire brush	For burnishing and surface rust removal.

Unit Per Pc.

CODE	Item	Part No.
59 22 41	Tipped cutter, tungsten carbide	320.5500
42	Star cutter	320.3658
43	Beam cutter	320.5120
44	Crimped wire brush	320.9610
45	Twisted knot wire brush	320.9620

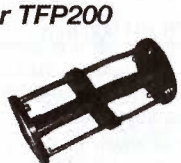
Name of Mfr.: Trelawny SPT Ltd.

Replacement Drum Head Assemblies

Unit Per Pc.

CODE	Item	Part No.
59 22 32	Tungsten carbide tipped cutter drum head	320.1020ST
33	Star cutter drum head	320.1020SS
38	Beam cutter drum head	320.1020SB
39	Crimped wire brush head	320.9610
40	Twisted knot wire brush head	320.9620

Heavy Duty Drums and Cutter Shafts for TFP200



Heavy Duty Drum

Cutter Shaft

Unit Per Pc.

CODE	With Shaft Diameter	Pt/No.	CODE	Diameter	Pt/No.
Heavy Duty Drum			Cutter Shaft		
59 22 47	12 mm	320.002H	59 22 49	12 mm	320.0020

Scaling Machines
Rustibus Model 2000

Designed to de-scale and power brush decks on ships and rigs without time consuming and costly ways. The use and fast replacement of specially prepared chain links is the key to this quick and efficient surface treatment. To remove and gather dust, scales and debris, it can be connected to an ejector.

Electric (Standard) | Diesel | Pneumatic (Standard)

Electric (Standard)

Unit Per Set

CODE	59 12 05	59 12 06
Model	Rustibus 2000	
Working Track	200 mm	
Voltage	AC 220 V	AC 440 V
Phase	3	
Power	21 / 12.2 amps	
RPM	1,425 / 1,720	
Power Frequency	50 / 60 Hz	
Dimensions	L 1,320 x H 900 x W 420 mm	
Weight	90 kgs	
Name of Mfr.	Dalseide Shipping Services	

Remark : AC 110 volt type is available if required. Please specify on ordering, which model is required. Standard model or LOW Model.

Diesel

Unit Per Set

CODE	59 12 07
Model	Rustibus 2000
Working Track	200 mm
Power	7.0 hp
RPM	0 - 1,800
Diesel Consumption	2 ltr / hr
Motor	Yanmar L70 AE-S
Dimensions	L 1,320 x H 900 x W 420 mm
Weight	90 kgs
Name of Mfr.	Dalseide Shipping Services

Pneumatic (Standard)

Unit Per Set

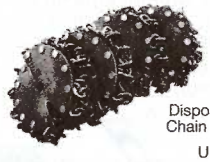
CODE	59 12 08
Model	Rustibus 2000
Working Track	200 mm
Air Consumption	6 m^3 / min.
BPM	200
Work Pressure	6 – 8 ATO
Hose	1"
Dimensions	L 1,320 x H 900 x W 420 mm
Weight	90 kgs
Name of Mfr.	Dalseide Shipping Services

Remark : Please specify on ordering, which model is required. Standard model or LOW Model. See product photos.

Model 2000 Electric (Low)

Model 2000 Pneumatic (Low)

Replacement Heads for Rustibus 2000 Scaling Machine



Disposable Chain Drum

Unit Per Pc.

CODE	Item	Part No.
59 12 09	Disposable chain drum	200-0156

Scaling Machines

Rustibus Model 1200 Electric

Developed for de-scaling smaller areas and spot scaling surfaces. This scaling machine uses a disposable chain drum system with specially prepared chain links that deliver 80,000 blows per minute and this is the key to its quick and efficient method of surface preparation. Capacity : 12 m² / 120 ft² per hour.

Unit Per Set

CODE	**59 12 10**	**59 12 11**	**59 12 12**
Model	Rustibus 1200		
Working Track	120 mm		
Voltage	AC 220 V		AC 440 V
Phase	1	3	3
Power	3.5 / 2 amps		
RPM	1,410 / 1,715		
Power Frequency	50 / 60 Hz		
Dimensions	L 950 x H 900 x W 280 mm		
Weight	18 kgs		
Name of Mfr.	Dalseide Shipping Services		

Remark: AC110V type is available if required.

Scaling Machines

Rustibus Model 400

Electric

Pneumatic

Developed for de-scaling along edges, smaller areas and spot scaling surfaces. The use and fast replacement of specially prepared chain links is the key to this quick and efficient surface treatment. This machine uses a disposable chain drum system with specially prepared chain links that deliver 28,000 of blows per minute and this is the key to its quick and efficient method of surface preparation.

Electric

Unit Per Set

CODE	**59 12 13**	**59 12 14**	**59 12 19**
Model	Rustibus 400		
Working Track	40 mm		
Voltage	AC 220 V		AC 440 V
Phase	1	3	3
Power	3.5 / 2 amps		
RPM	1,410 / 1,715		
Power Frequency	50 / 60 Hz		
Dimensions	L 950 x H 900 x W 280 mm		
Weight	18 kgs		
Name of Mfr.	Dalseide Shipping Services		

Remark: AC110V type is available if required.

Pneumatic

Unit Per Set

CODE	**59 12 20**
Model	Rustibus 400
Working Track	40 mm
Air Consumption	2,400 ltr/min.
Work Pressure	6 – 8 ATO
Hose	1/2"
Dimensions	L 950 x H 900 x W 240 mm
Weight	24 kgs
Name of Mfr.	Dalseide Shipping Services

Chain Drums for Scaling Machine

Rustibus 400

A disposable chain drum for one-time-use for Rustibus 400 scaling machine. It doesn't require any spares replacement.

59 12 34	Chain drum for scaling machine, Rustibus 400, part no.040-0156	Pc.

Scaling Machines

Rustibus Model 1200 Air

For de-scaling medium / large surfaces such as main deck, hatch covers, tank tops, etc. It can easily be transported around the vessel. The only consumable part is the disposable chain drum which are made for one-time-use only and do not require any spares replacement. Simply use them until they are destroyed and then replace the entire drum with a new one. One chain drum set normally lasts for approx. 200 – 225 m², all depending on the use and surface conditions.

Unit Per Set

CODE	**59 12 33**
Model	Rustibus 1200 Air
Capacity / Hour	18 m² / 194 ft²
Working Track	120 mm (5")
Drum RPM	1,850
Blow / min.	80,000
Air Consumption	3.6 m³/min. (127 CFM)
Work Pressure	6 – 8 bar (87 – 116 psi)
Hose	19 mm (3/4")
Power	4 hp / 2.98 kw
Motor RPM	1,900
Size	L 950 x W 470 x H 900 mm
Weight	47 kgs
Accessories	Lubricator and filter are supplied
Mfr's Name	Dalseide Shipping Services

Remark : A water nozzle system is fitted to air driven models to reduce spark generation.

(to be continued)

Chain Drums for Scaling Machine

Rustibus 1200

A disposable chain drum for one-time-use for Rustibus 1200 scaling machine. It doesn't require any spares replacement.

59 12 37	Chain drum for scaling machine, Rustibus 1200, part no.120-0156	Pc.

Scaling Machines

Chain Impact Type Rustbit 500

The chain type electric motor driven deck scaling machine provides effective and quick rust removal performance with only one person. It can cover approx. 10m²/hour on flat areas (hatch, deck, etc). Three-linked chains made of tempered steel strike against decks & remove rusts, scales and old paints.

Unit Per Set

CODE	**59 12 35**	**59 12 36**
Model	Rustbit 500	
Working Capacity	10 m²/hour	
Electric Motor Driven	AC 220 V	AC 440 V
	0.75kw, 3ph, 60Hz	
RPM	1,250	
Dimensions (L x W x H)	1,400 x 390 x 1,050 mm	
Net Weight	47 kgs	
Name of Mfr.	BC Taechang Industrial Corporation	

Spare Parts for Chain Impact Scaling Machine Model Rustbit 500

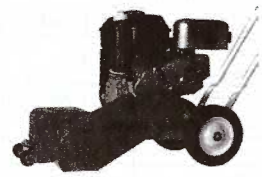
Parts No.	Description	Parts No.	Description
DS500-0	Chain drum, Complete ass'y	WB700-0	Wire brush, Complete ass'y
DS500-1	Chain (25 pcs/set)	WB700-1	Brush (3 pcs/set)
DS500-2	Plate (5 pcs/set)	WB700-2	Boss
DS500-3	Bolt & nut (10 pcs/set)	WB700-3	Cover
DS500-4	Boss	WB700-4	Bolt & nut (4 pcs/set)
DS500-5	Collar (25 pcs/set)	WB700-5	Cover bolt

Scaling Machines

Aurand

Featuring a 4-3/4" rotating head and heavy duty electric motor or gasoline drive. Designed with sturdy 42 inch handles and large rubber tires for easy maneuverability and stand-up operation. For cleaning any hard accumulation from concrete floors and walkways or for stripping painted lines from blacktop or concrete pavement. Also useful for removing the eggshell surface from new concrete to insure proper paint adhesion.

W1E



W1G

Unit Per Set

CODE	**59 12 38**	**59 12 39**	**59 12 40**
Model	W1E		W1G
Cleaning Area	4-3/4" Wide		
Power Source	AC 115V 60Hz Singlephase motor totally enclosed	AC 230V 60Hz Singlephase motor totally enclosed	Gasoline Motor 5 HP, 4 cycle unit, 3,500 rpm
Horse Power	2 HP		5 HP
Remarks	Ball bearings lubricated with moisture resistant grease.		1) Ball bearing hand-pull starter. 2) Two quart fuel tank Uses regular gasoline
Weight	97 lbs	115 lbs	92 lbs
Size	Height: 42" to top of handles Width: 12" to outside of wheels, 15" to outside of motor & guard Length: 48"		Height: 42" to top of handles Width: 12" to outside of wheels, 15" to outside of cutter housing & guard Length: 48"

Name of Mfr.: Aurand Manufacturing & Equipment Co., Inc.

Explosion-proof Deck Scalers

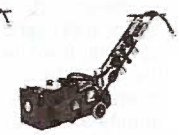
Rustibus EX Series

Specially designed and produced for use on tankers, gas carriers, oil tankers, FPSOs, rigs and platforms, or in on shore oil and gas refineries. In fact anywhere that you need to do maintenance on steel, in a potentially explosive atmosphere. After thorough and intensive testing, the machines received the final stamp of approval by DNV (Det Norske Veritas). Certified by DNV to meet EX/ATEX 94/9/EC directive.

X400 AIR

X1200 AIR

X2000 AIR



X2000 AIR LOW

Unit Per Set

CODE	**59 12 47**	**59 12 48**	**59 12 49**	**59 12 50**
Model	X400 AIR (040-X3000)	X1200 AIR (120-X3000)	X2000 AIR (200-X3000)	X2000 AIR LOW (200-X9000)
Working Track mm (")	40 (1.6)	120 (5)	200 (8)	
Capacity hour m² (ft²)	6 (64)	18 (194)	83 (183)	30 (320)
Blow/min.	28,000	80,000	200,000	
Air Consumption m³/min (CFM)	2.4 (85)	3.5 (127)	6 (212)	

(to be continued)

Unit Per Set

CODE	59 12 47	59 12 48	59 12 49	59 12 50
Working Pressure bar (psi)	7 (101)	7 (101)	6.5 (94)	
Hose mm (")	13 (1/2)	19 (3/4)	25 (1)	
Power hp (kW)	2.5 (1.86)	4 (3)	8 (6)	
rpm	1,900	1,900	1,850	
Result	ST3 +++ (SSPC-SP11 +++)			
Size mm (")	L : 950 (37) H : 900 (35) W: 240 (9)	L : 950 (37) H : 900 (35) W: 470 (18)	L : 2,190 (85) H : 430 (17) W : 420 (16)	
Weight kgs (lbs)	24 (53)	45 (100)	83 (183)	100 (220)

Name of Mfr.: Dalseide Shipping Services

Spare Parts for Rustibus Deck Scaler

These spare parts can be applied to the scalers with same model numbers whatever the power source are different, or with/no explosion-proof type.

Unit Per Pc.

For Model 400 Series		For Model 1200 Series	
59 18 01	**59 18 02**	**59 18 03**	**59 18 04**
Standard Wire Brush (040-0158)	Heavy Duty Wire Brush (040-0202)	Standard Wire Brush (120-0158)	Heavy Duty Wire Brush (120-0151)

For Model 2000 Series

59 18 05	**59 18 06**	**59 18 07**
Chain Drum Assembly (200-0151)	Wire Brush Assembly (200-0155)	Wire Brush for R2000 (200-0158)

For Model 2000 Series

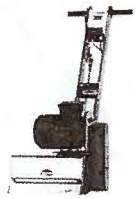
59 18 08	**59 18 09**	**59 18 10**
R2000 17 mm Bearing (200-0170)	R2000 20 mm Bearing (200-0180)	Shaft for Chain Drum (200-2300)

Name of Mfr. : Dalseide Shipping Services AS

Rust Removal Machines

Designed for efficient removal of rust, paint and old covering from large surfaces. It's easy to control by the operator, thus improving quality and quantity of work. According to the need, there are many different types of completely interchangeable tools that can be applied to the standard drum. It's also possible to apply steel-wire, brass or nylon brushes etc. Please specify the "tension" when ordering.

Pneumatic



Electric

Pneumatic

Unit Per Set

CODE	59 19 61	59 19 62
Model	11400-0-200	11400-0-300
Scaling Width mm	200	300

(to be continued)

Unit Per.Set

CODE	59 19 61	59 19 62
Drum Speed rpm	1,700	
Air Feeding Pressure bar	6	
Consumption about 120 cbm/hr	5	
Overall Dimensions mm	355 x 1,200 x H950	455 x 1,200 x H950
Weight kgs	65	70

Name of Mfr. : I.C.O. s.r.l.

Electric

Scaling Width - 200 mm

Unit Per Set

CODE	59 19 64	59 19 65	59 19 66
Model	11500-0-200M		
Power Source	AC 110V Single phase	AC 220V Single phase	AC 220V Three phase
Drum Speed rpm	1,700		
H.P.	3		
Overall Dimensions mm	355 x 1,200 x H950		
Weight kgs	43		

Name of Mfr. : I.C.O. s.r.l.

Scaling Width - 300 mm

Unit Per Set

CODE	59 19 67	59 19 68	59 19 69
Model	11500-0-300M		
Power Source	AC 110V Single phase	AC 220V Single phase	AC 220V Three phase
Drum Speed rpm	1,700		
H.P.	3		
Overall Dimensions mm	455 x 1,200 x H950		
Weight kgs	48		

Name of Mfr. : I.C.O. s.r.l.

Accessories

for ICO Rust Removal Machine

Star Cutter Drum

Tungsten Carbide Drum

Drum with Crop Ends of Chain

Steel Wire Brush

Unit Per Pc.

CODE	For Width mm	ICO No.	CODE	For Width mm	ICO No.
Star Cutter Drum			Tungsten Carbide Drum		
59 19 71	200	11700-0-S200	**59 19 73**	200	11700-0-W200
72	300	11750-0-S300	**74**	300	11750-0-W300
Drum with Crop Ends of Chain			Steel Wire Brush		
59 19 75	200	11700-0-C-200	Twisted Wire		
76	300	11750-0-C-300	**59 19 77**	200	11708-2-200
			78	300	11758-2-300
			Simple Wire		
			59 19 79	200	11708-3-200
			80	300	11758-3-300

Drum Body

Flange

Washer

Star Cutter

Tungsten Carbide Cutter

Steel Hammer

Steel Cutter

Bush for Hammer

Unit Per Pc.

CODE	Description	ICO No.	CODE	Description	ICO No.
59 19 81	Drum body, 200 mm	11700-1	**59 19 88**	Washer	11700-6
			89	Star cutter	11700-7
82	Drum body, 300 mm	11750-1	**90**	Tungsten carbide cutter	11700-9
83	Flange	11700-2			
84	Cutter shaft for 200 mm	11700-3	**91**	Steel hammer	11700-13
85	Cutter shaft for 300 mm	11750-3	**92**	Steel cutter	2000-24
			93	Bushes for hammer	11700-13B
86	Screw for flange	11700-4			
87	Elastic washer	11700-5			

Electric Multi-Purpose Surface Machines

Fitted with heavy duty grinder, direct-on-line starter and safety lever switch. They are designed in easy manoeuvre, lightweight, reduce long hours fatigue by squatting and the safety switch for cutting off power supply in case of emergency. Can use for grinding, cutting, removing light and heavy rusts, surface profile and polishing. They are good for corners, hard to reach areas and uneven surface as tools are fitted in front. It can use Velcro sanding disc pad with different grits.

Standard Accessories (1 each)

Twisted Cup Brush Double Row

Crimped Bevel Brush

Knotted Bevel Brush

Cutting Grinding Disc

Sanding Disc Grit #36

Velcro Backing Pad

Unit Per Set

CODE	59 22 81
Model	CEG-230
Disc Size	5" – 7"
Voltage	220-240 V
Phase/Frequency	Single / 50/60 Hz
Power/Amperes	2,200 W/11A
Speed	6,500 r/min
Max	80 m/s
Size	78 × 42 × 96 cm
Weight	31 kgs

Name of Mfr. : Cobolt – KM Kinley

Spare Accessories for Electric Multi-purpose Surface Machine

CODE	Description	Unit
59 22 82	Cup brush, twisted, double row, 5"	Pc.
83	Brush, crimped bevel, 5"	"
84	Brush, knotted bevel, 5"	"
85	Cutting/grinding disc, 7"	"
86	Sanding disc Grit #36, 7"	"
59 22 87	Velcro backing pad, 7"	Pc.

Name of Mfr. : Cobolt – KM Kinley

Water Operated Surface Machines

Operated by deck line water pressure where there is no electricity and air available on deck. Available scaling width in 200 mm and 300 mm. Fitted with 2" Nakajima type water hose coupling for water inlet and outlet. Please advise type of water hose coupling and size in use if you need other type or size of coupling.

Unit Per Set

CODE	59 24 01	59 24 02
Model	COW-200	COW-300
Scaling Width	200 mm	300 mm
Water Inlet/Outlet	Nakajima Type 2"	
Max. Water Supply	70 m^3/hr at 10.5 bar	
Size	85 × 40 × 92 cm	85 × 52 × 92 cm
Weight	62 kgs	70 kgs
Standard Accessories	Hammer cutters assembly	

Name of Mfr. : Cobolt – KM Kinley

Spare Assemblies
for Water Operated Surface Machine

Spare Assemblies

Beam Cutters Assembly

Star Cutters Assembly

Hammer Cutters Assembly

Tungsten Carbide Cutters Assembly

HD Star Cutters Assembly

Crimped Wire Wheel Assembly

Twisted Wire Wheel Assembly

CODE	Description		Unit
59 24 03	Beam cutters assembly,	200 mm	Pc.
04	"	300 mm	"
59 24 05	Star cutters assembly,	200 mm	Pc.
06	"	300 mm	"
59 24 07	Hammer cutters assembly,	200 mm	Pc.
08	"	300 mm	"
	Tungsten carbide cutters assembly,		
59 24 09		200 mm	Pc.
10	"	300 mm	"

(to be continued)

CODE	Description		Unit
59 24 11	HD star cutters assembly,	200 mm	Pc.
12	"	300 mm	"
59 24 13	Crimped wire wheel assembly,	200 mm	Pc.
14	"	300 mm	"
59 24 15	Twisted wire wheel assembly,	200 mm	Pc.
16	"	300 mm	"

Name of Mfr. : Cobolt – KM Kinley

Rust Removal and Surface Cleaning Machines

Mammut IV

Rust removal machines for removing rust, paint or slag on big-sized surfaces in corrosion protection, ship building, machine building and shipyards.

Quality
Perfect for removing heavy rust, rust on plates and light rust. Sturdy support rollers ensure perfect and quiet working conditions.

Safety
Two-hand operation ensures a controlled, steady working position. Durable spray protection prevents removed material from flying around.

Efficiency
Quickly removes rust from large surface areas with little effort. Working up to the edge with the optional available edge grinder RR45.

Electric Model

Unit Per Set

CODE	**59 24 51**	**59 24 52**	**59 24 53**
Model	MAMMUT IV 115 V	MAMMUT IV 230 V	MAMMUT IV 400 V
Voltage	AC 115V Single Phase	AC 230V Single Phase	AC 400 3 Phase
Frequency	50/60 Hz		
Speed min^{-1}	1,500		
Power	1.5 kW		

Name of Mfr.: Holger Clasen GmbH & Co. KG

Pneumatic Model

Unit Per Set

CODE	**59 24 54**
Model	Mammut IV DL
Speed min^{-1}	2,000

Name of Mfr.: Holger Clasen GmbH & Co. KG

Accessories for Rust Removal and Surface Cleaning Machine

MR 260 Milling Wheel Roller

ML 260 Impact Hammer Roller

MEB 120 Brush Roller

MEBK 120 Brush Roller

Unit Per Pc.

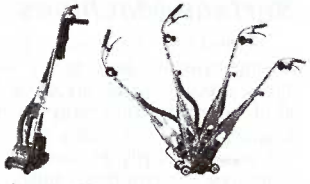
CODE	Item	Name	Description
59 24 55	Milling wheel roller	MR 260	With 42 milling wheels, 260 mm working width / For heavy rust and paint coats

(to be continued)

Unit Per Pc.

CODE	Item	Name	Description
59 24 56	Impact hammer roller	ML 260	With 63 curved impact hammers / For medium-thick rust and paint
59 24 57	Brush roller	MEB 120	Crimped wire Ø 150 mm, 250 mm working width, for light rust
58	Brush roller	MEBK 120	Plaited wire, Ø 150 mm, 250 mm working width, strong brushing effect, for heavy rust films or paint coats
59 24 59	Edge grinder	RR 45	For working vertical surfaces (e.g., bulwarks and superstructures) / Extends working width by approx. 100 mm / With 15 milling wheels
60	Edge grinder with protective cover	KWZG + Schutz	RR 45 edge grinder, with extra protection cover
59 24 61	Spare part case	Mammut-ETK-FR	Spare part case with wear and spare parts for 4 sets milling wheel roller MR260

Electric Power Edgers



Lightweight portable edger for edging in tight area due to advantage of swivelling handle bar and detachable auxiliary grip. Suitable for preparing of small surfaces, surface treatment in narrow trenches, and working on stairs and balconies.

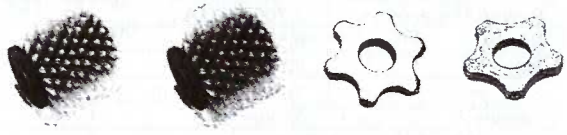
Unit Per Set

CODE	**59 22 01**	**59 22 02**
Model	VA 10 L	
Electric Power	AC 115V 60 Hz	AC 230V 50 Hz
Working Width	100 mm	
Distance to Wall	20 mm	
Standard Accessories	Drum with pentagonal cutters	
Dimensions	330 × 360 × 1,320 mm	
Weight	22 kgs	

Name of Mfr. : Von Arx AG

Tools for Electric Power Edger VA10L

59 22 03 | 59 22 04 | 59 22 05 | 59 22 06



59 22 07 | 59 22 08 | 59 22 11 | 59 22 12

59 22 09 59 22 10 59 22 13 59 22 14 59 22 15

Unit Per Pc.

CODE	Name	Size	PT/No.
59 22 03	Drum Complete	110 x 113 mm, W:100 mm	700998
59 22 04	Drum only	110 x 113 mm, W:100 mm, 1.3 kgs	700999
05	Shaft	10 x 108 mm (#4)	701001
06	Spacer	30 x 2.5 mm	701385
59 22 07	Brush, nylon	Fine, 840 grm	700983
08	"	Coarse, 674 grm	700984
09	Brush, steel wire	Fine, 2,093 grm	700981
10	"	Coarse, 2,654 grm	700982
59 22 11	Cutter, hexagonal	44 x 15 x 6 mm	706495
12	" , pentagonal	42 x 16 x 6 mm	700962
13	" , milling	40 x 15 x 11 mm	700967
14	" , milling	40 x 15 x 22 mm	700965
15	" , beam	42 x 15 x 2 mm	700063

Name of Mfr.: Von Arx AG

Electric Scaling Machines

A rugged but lightweight electric scaling machine for continuous heavy duty use. An ideal unit for derusting and descaling jobs. Portable, fitted with wheels.

Furnishable for use with a 110 volt or 220 volt AC power supply.

Specificatiions

Model	H.P.	kW	No Load Speed R.P.M.	Weight kgs	Name of Mfr.
KC-50	3/4	0.55	3,700	48	Kobe Cleaner
3M4	1	0.746	1,725	45	Arnessen

How to order : CODE

Scaling machine, electric, POWER SOURCE VOLTAGE, MODEL

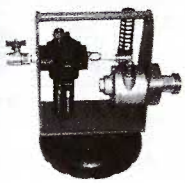
Unit Per Set

CODE	Voltage	Model	CODE	Voltage
59 12 17	AC 100V	KC-50	**59 12 18**	AC 220V
59 12 45	AC 115V	3M4	**59 12 46**	AC 230V

De-Scaling Machines

Original Trident Neptune Machine from Trelawny - Electric or Air Model

Electric



Air

Features and Benefits

- 25% lighter than other models
- Compact – easy to use

Machines supplied with electric motor on skid base with 3 mtr cable to overload protection on motor. OR machines supplied with air motor on swivel base.

All machines supplied with

- 3,000 rpm electric motor, skid mounted,
- 3 metres cable
- Flexible shaft, 3 mm (9") x 16 mm (5/8") diameter
- Heavy duty leaf scaling head
- 6-cutter scaling head
- 6" diameter power brush
- Spanner set
- Hand guard

Electric Powered

Unit Per Set

CODE	59 12 41	59 12 42
Voltage	AC 110V	AC 220V
H.P.	3/4	
Kw	0.55	
No Load Speed	3,000 R.P.M.	
Weight	31 kgs	

Name of Mfr. : Trelawny SPT Ltd.

Air Powered

Unit Per Set

CODE	Max. Air Consumption	No Load Speed	Weight
59 12 81	1.87 m³/min.	3,000 R.P.M.	30 kgs

Name of Mfr. : Trelawny SPT Ltd.

Accessories for Trident Neptune Scaling Machine

Hand Guard

Flexible Shaft

CODE	Description	Unit
59 12 98	Hand guard, durable rubber	Pc.
99	Flexible shaft	"

Name of Mfr. : Trelawny SPT Ltd.

Accessories for Trelawny Scaling Machine

Heavy Duty Scaling Head

CODE	59 12 75	59 12 76	59 12 77
Name	Heavy Duty Scaling Head	Side Plates (Set of 2)	Centre Bolt
Part No.	340.550	340.551/2	340.552
Unit	Set	Pc.	Pc.
Images			

CODE	59 12 78	59 12 79	59 12 80
Name	Spring Washer (Set of 50)	Chipping Leaf	Cutter Pin
Part No.	340.584/50	340.437	340.553
Unit	Pc.	Pc.	Pc.
Images			

(to be continued)

6 Cutter Scaling Head

CODE	59 12 86	59 12 87	59 12 88
Name	Six Cutter Scaling Head	Side Plates (Set of 2)	Centre Bolt
Part No.	340.581	340.575/2	340.581/A
Unit	Set	Pc.	Pc.
Images			

CODE	59 12 89	59 12 90
Name	Cutter Wheel	Cutter Pin
Part No.	340.332	340.583
Unit	Pc.	Pc.
Images		

Wire Brushes

CODE	59 12 91	59 12 93
Name	6" Twisted Knot Brush	6" Power Brush
Part No.	340.163	340.160
Unit	Pc.	Pc.
Images		

CODE	59 12 95	59 12 97
Name	Twisted Knot Cup Brush	Crimped Wire Cup Brush
Part No.	340.167	340.166
Unit	Pc.	Pc.
Images		

Brush Centre Bolts

CODE	59 12 92	59 12 94	59 12 96
Name	Centre Bolt for 6" Twisted Knot Brush	Centre Bolt for 6" Power Brush	Centre Bolt for Crimped or Twisted Cup Brush
Part No.	340.559	340.558	340.557
Unit	Pc.	Pc.	Pc.
Images			

Pneumatic Scaling Machines

A light and easy to handle, but rigidly constructed tool for efficient heavy duty scaling. Required air pressure is 0.59 MPa (6 kgf/cm²).

Unit Per Set

CODE	Model	Max. Air Con-sumption m³/min.	No Load Speed R.P.M.	Weight Kgs	Name of Mfr.
59 12 51	KC-60	0.8	5,000	40	Kobe Cleaner
59 12 83	AH 10	2.75	2,000	35	Arnessen

Accessories for Scaling Machine

These accessories differ from manufacturer to manufacturer. When ordering, it is necessary to provide information about the manufacturer and model of scaling machine you are currently using.

How to order : 59 12 -

NAME of PART, for SCALING MACHINE MODEL

For KC-50 Electric Scaling Machine or KC-60 Pneumatic Scaling Machine

Unit Per Pc.

CODE	59 12 55	59 12 56	59 12 57	59 12 58
Part No. Name	No.1 HD Tool	No.1-1 Cutter	No.1-2 Disc Pin	No.1-3 Center Bolt & Nut
Illustration		18 Pcs/Set	6 Pcs/Set	
Application	Heavy Rusting	For HD Tool	For HD Tool	For HD Tool

CODE	59 12 59	59 12 60	59 12 61	59 12 62
Part No. Name	No.1-4 Disc	No.2 LG Brush	No.2-1 LG Blade	No.2-2 Disc Pin
Illustration	2 Pcs/Set		72 Pcs/Set	6 Pcs/Set
Application	For HD Tool	Light Rusting	For LG Brush	For LG Brush

CODE	59 12 63	59 12 64	59 12 65	59 12 66
Part No. Name	No.2-3 Center Bolt & Nut	No.2-4 Disc	No.3 Cup Brush	No.4 Hammer Head
Illustration		2 Pcs/Set		
Application	For LG Brush	For LG Brush	Light Rusting	Wide Rusting

CODE	59 12 67	59 12 68	59 12 69	59 12 70
Part No. Name	No.4-1 Hammer Blade	No.4-2 Disc Pin	No.4-3 Center Bolt & Nut	No.4-4 Disc
Illustration	12 Pcs/Set	3 Pcs/Set		2 Pcs/Set
Application	For Hammer Head	For Hammer Head	For Hammer Head	For Hammer Head

(to be continued)

CODE	59 12 71	59 12 72	59 12 73	59 12 74
Part No. Name	No.4-5 Collar	No.4-6 Washer	No.5 Wire Wheel Brush	No.6 Grind Stone
Illustration		15 Pcs/Set		
Application	For Hammer Head	For Hammer Head	Finishing	Grinding

Flexible Shafts and Flexible Tubes
for Scaling Machine

When ordering, please specify the manufacturer's name and the model number of scaling machine.

Flexible Shaft & Tube

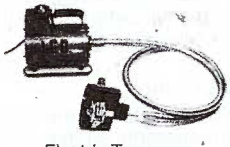
Flexible Shaft Only

How to order : 59 12 53 (for Shaft & Tube)
59 12 54 (for Shaft only)
for scaling mahine, MODEL

Chipping Hammers ICOFLEX

The main feature of this machine is scraping rust and paints from any metal surface. It can also be transformed into a versatile tool able to perforate, cut and grind. There are many kinds of tools, according to the type of work, all interchangeable on the flexible shaft.

Pneumatic Type



Electric Type

Pneumatic Type

Unit Per Set

CODE	59 12 82
Model	12550
Power	1.5 HP
Speed	3,000 grm/min.
Feeding Pressure	7 bar
Weight	28 kgs
Standard Accessories	1 of Pneumatic motor 1 of Flexible shaft 1 of Three-cutter chipping head 1 of Nine-hammer chipping head 6 of Pins for above 1 of Safety guard

Name of Mfr.: I.CO. s.r.l.

Electric Type

Unit Per Set

CODE	59 12 43	59 12 44	59 19 11	59 19 12
Model	2240-S1		2240-TRF-S1	
Voltage	AC 110V	AC 220V	AC 220V	AC 440V
Phase	Single		Three	
Hz	50/60			
Power HP	1			
Speed (g/min)	2,800			

(to be continued)

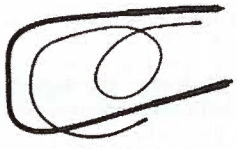
Unit Per Set

CODE	59 12 43	59 12 44	59 19 11	59 19 12
Weight kgs	15		14	
Standard Accessories	1 of Electric motor 1 of Flexible shaft 1 of Three-cutter chipping head 1 of Nine-hammer chipping head 6 of Pins for above 1 of Safety guard			

Name of Mfr.: I.CO. s.r.l.

Flexible Shafts and Spare Parts
for ICOFLEX Chipping Hammer

Flexible shaft made of either galvanized steel or rubber coated sheath, standard length 2.5 mtr – tool connection 5/8" W – special lengths and connections on request.



Flexible Shaft

Handle Spindle

Handle

CODE	Description	Model	Unit
59 19 21	Complete flexible shaft with galvanized steel sheathing	2220-ZN	Pc.
22	Complete flexible shaft with rubber sheathing	2220-SG	"
59 19 23	Handle spindle for flexible shaft	2220-3	Pc.
24	Handle for flexible shaft	2220MN	"

Unit Per Pc.

59 19 31	59 19 32	59 19 33	59 19 34
Six hammer head (2000-5M)	Nine hammer head (2000-2M)	Twelve hammer head (2000-1M)	Three cutters head (2000-5F)
59 19 35	**59 19 36**	**59 19 37**	**59 19 38**
Six cutters head (2000-4F)	Steel hammer (2000-19)	3 hole flange (2000-23)	6 hole flange (2000-28)
59 19 39	**59 19 40**	**59 19 41**	**59 19 42**
Steel cutter (2000-24)	Pivot for hammers (2000-26)	Pivot for cutters (2000-22)	Spindle for wire brush and cup wire brush (2000-29-C/T)
59 19 43	**59 19 44**	**59 19 45**	**59 19 46**
Spindle for three cutter head (2000-21)	Spindle for nine hammer head (2000-25)	Double spindle centre pin for 12 hammer & double wheel (2000-27)	Double wire brush twisted wire (2000-6/2R)
59 19 47	**59 19 48**	**59 19 49**	
Double wire brush single wire (2000-6/2S)	Wire cup brush twisted wire (2000-7R)	Wire cup brush single wire (2000-7S)	

(to be continued)

59 19 50	59 19 51	59 19 52
Wire wheel brush twisted wire (2000-6R)	Wire wheel brush single wire (2000-6S)	Emery wheel (2000-9)
59 19 53	**59 19 54**	**59 19 55**
Chuck (2000-8)	Safety guard (2000-11)	Circular saw (2000-10)

Handheld Deck Scalers

Aurand

For removing paint, rust and adhesives from iron, steel, brick, concrete and asphalt. A cutting teeth bite right through tough accumulations on any hard surface, and quickly peels off buildup paint, rust and scale. Adjustable depth shoe that the operator sets to limit the impact of the cutters. This not only protects the surface being cleaned but also insures uniform cleaning action and prevent excessive wear on the cutters.

Cast aluminium housings that offer the user a tough, durable tool that is still lightweight and easy to handle. Separate handle, safety guard, cutter bundles, motor housing, and front head assembly to make repair or replacement easier and less expensive.

Pneumatic Model:
Feature rotary type air motors, free from toggles, pistons or reciprocating parts to eliminate vibration. Tool operate on 70 to 100 p.s.i. air pressure.

Electrical Model:
Available in 115 and 230 volt models with AC/DC universal motors. 15 feet of three-conductor cable included.

Pneumatic

KP-5

MP-6

Unit Per Pc.

CODE	Model	Cleaning Area	Hose Power	Weight lbs
59 22 61	KP5	5" wide	3/4	6
62	KP5-E	8" wide	3/4	9
63	MP6	8" wide	2-1/2	17
64	MP6-E	12" wide	2-1/2	23

Name of Mfr.: Aurand Manufacturing & Equipment Co.
Remark: Model MP6-E is furnished with a 48" detachable aluminium handle.

Electrical

K7

M5

Unit Per Pc.

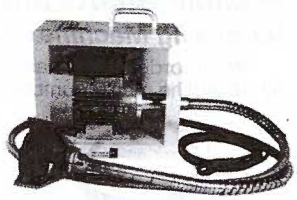
CODE	Model	Cleaning Area	Hose Power	Weight lbs
		AC 115V		
59 22 71	K7-1	5" wide	1/4	9
72	K7-1E	8" wide	1/4	11
73	M5-1	8" wide	1/2	21
74	M5-1E	12" wide	1/2	27
		AC 230V		
59 22 75	K7-2	5" wide	1/4	9
76	K7-2E	8" wide	1/4	11
77	M5-2	8" wide	1/2	21
78	M5-2E	12" wide	1/2	27

Name of Mfr.: Aurand Manufacturing & Equipment Co.
Remark: Model M5-1E and M5-2E are furnished with a 48" detachable aluminium handle.

(to be continued)

Rust Removal and Surface Cleaning Machines

Record



Rust removal machines for medium size surfaces, removing rust films and rust on plates, cleaning concrete and stone, removing slag and paint. Delivery includes : Motor with flexible shaft, connection, motor base, carrying handle, shaft protective case, switch, grease for flexible shaft, assembly tool, and 3 mtr cable (without plug).

Quality
The splash-proof, sturdy special motor is especially suited for rough operating conditions. Sturdy support spirals prevent the ends of the flexible shaft from bending. The open carrying handle with a rotary circuit breaker and cable or a TG coupling in the compressed air version allows the user to move around more freely.

Safety
The flexible shaft with a core diameter of 15 mm is designed for high speeds. The motor base prevents the tool from unintended tipping. It comes with four attachment holes for increased safety. The standard delivery package includes a light-weight protective case made of cast aluminium.

Efficiency
Alternative connections are available for various attachments so that the user can use the right tool required for a specific application. Hand pieces are available as 5/8" external thread and M14.

Electric Model

Unit Per Set

CODE	59 24 71	59 24 72	59 24 73
Model	Record "C" 115-5/8	Record "C" 230-5/8	Record "C" 400-5/8
Voltage	AC 115V Single Phase	AC 230V Single Phase	AC 440V 3 Phase
Frequency	50/60 Hz		
Speed min^{-1}	2,800		
Power	1.15 kW		1.4 kW

Name of Mfr.: Holger Clasen GmbH & Co. KG

Pneumatic Model

Unit Per Set

CODE	59 24 74
Model	851 10 000
Operating Pressure	6 bar
Speed min^{-1}	2,900
Power	1.5 kW

Name of Mfr.: Holger Clasen GmbH & Co. KG

Accessories for Rust Removal and Surface Cleaning Machine

RR 45
Milling Tool

RR 30
Milling Tool

RL 7/15
Impact Tool

RL 7/9
Impact Tool

EB 150
Round Brush

EBT 100
Cup Brush

EBTK 100
Cup Brush

RW
Tool Holder

Unit Per Pc.

CODE	Item	Item No.	Description
59 24 75	Complete flexible shaft	RNAG 15 / 5/8" / C	3,000 mm long, 15 mm core dia / Durable support spirals on both ends / Insulating coupling built-in on motor side / Hand piece with a 5/8" external thread or M14
76	Complete flexible shaft	RNAG 15 / M14 / C	
59 24 77	Milling tool	RR 45 / 5/8"	With 15 milling wheels / Used to remove heavy rust gently
78	Milling tool	RR 45 / M14	
59 24 79	Milling tool	RR 30 / 5/8"	With 10 milling wheels / Used to remove heavy rust gently, small version
80	Milling tool	RR 30 / M14	
59 24 81	Impact tool	RL 7/15 / 5/8"	With 15 curved impact hammers / Used to remove medium-thick rust
82	Impact tool	RL 7/15 / M14	
59 24 83	Impact tool	RL 7/9 / 5/8"	With 9 curved impact hammers / Used to remove medium-thick rust, small version
84	Impact tool	RL 7/9 / M14	
59 24 85	Round brush	EB 150	Special crimped wire, 150 mm dia.
59 24 86	Round brush	EBK 150	Extra strong, plaited for strong brushing effect, 150 mm dia.
59 24 87	Cup brush	EBT 100	Special crimped wire, 100 mm dia
59 24 88	Cup brush	EBTK 100	Plaited for strong brushing effect, 100 mm dia.
59 24 90	Tool holder chuck	RW M14 / 45	For attaching brushes
59 24 91	Tool holder chuck	RW 5/8" / 45	For attaching brushes
59 24 92	Protective cover	RSU	Made of cast aluminium (included in the delivery)
59 24 93	Wrench set	RS	For assembling and disassembling the flexible shaft
59 24 94	Grease for flexible shaft	RF	-
59 24 95	Tool set	WZGS-R	1 x RR 45 (5/8"), 1 x RL 7/15 (5/8"), 1 x EB 150 (5/8"), 1 x RW (5/8")
59 24 98	Tool set	WZGS-R-M14	1 x RR 45 (M14), 1 x RL 7/15 (M14), 1 x EB 150 (M14), 1 x RW (M14)
59 24 96	Spare part case	Record- ETK-5/8"	1 x RR45 (5/8"), 1 x RL 7/15 (5/8"), 1 x EB150 (5/8"), 1 x EBK150 (5/8"), Tools holder and wear parts for milling and impact tools
59 24 97	Spare part case	Record-ETK-M14	1 x RR45 (M14), 1 x RL 7/15 (M14), 1 x EB150 (M14), 1 x EBK150 (M14), Tools holder and wear parts for milling and impact tools

(to be continued)

3. Hand Scalers

Pneumatic Auto Files

An ultra-small, lightweight auto file. For use on filing, grinding, polishing and other jobs on steel, glass, brass, aluminium, wood and other materials without vibration or noise.

Required air pressure is 0.59 MPa (6 kgf/cm^2).

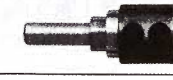
Unit Per Set

CODE	**59 04 21**
Model	SH-100A
Stroke	9 mm
Stroke Speed	3,700 min^{-1}
Length	177 mm
Weight	1.1 kgs
Name of Mfr	Nitto Kohki Co. Ltd

Spare Files for Pneumatic Auto File

These spare files differ from manufacturer to manufacturer. When ordering, it is necessary to provide information about the manufacturer and model of the auto file you are currently using.

Unit Per Pc.

CODE	Type	No.	Appearance
59 04 22	Flat bastard	SF-13	
59 04 23	Round	SF-10	
59 04 24	Triangle	SF-11	
59 04 25	Half round	SF-12	
59 04 26	Rubber pad ass'y		
59 03 97	Supporter ass'y		

Pneumatic Long Handle Scrapers

Long reach air driven auto scraper for derusting, etc. Required air pressure is 0.59 MPa (6 kgf/cm²). One 38 mm width bit is attached as a standard accessory.

S-500

No 2004

No 2003

Unit Per Set

CODE	Model	Blow/min.	Overall length	Weight kgs
59 04 41	S-250	2,500	630 mm	4.1
42	S-500		890	4.7
43	S-1000		1,470	6.1

Name of Mfr.: Nitto Kohki Co., Ltd.

Spare Chisels for Long Handle Scraper

Unit Per Pc.

CODE	Shape	Blade Width	No.
59 04 46	Flat	38 mm	2002
47	"	60	2001
48	Concave	60	2004
49	Blank	ø 16	2003

Long Reach Scalers Trelawny

Powerful pneumatic tools for the removal of salt water corrosion and marine growth on and off deck and chipping/ scaling in hard to reach areas. Supplied without chisel or scraper - the customer can choose from the selection listed. Fast interchangeability between chisels / scrapers / needle attachments. Aluminium light weight version make overhead work effortless.

Steel Body

Unit Per Set

CODE	59 04 51	59 04 52	59 04 53	59 04 54
Model	LR2	LR4	LR5	LR6
Part No.	136.3200	136.3400	136.3500	136.3600
BPM	2,200			
Air Consumption	2.1 ltr/sec (4.5 cfm)			
Noise Level LpA dB (A) LwA dB (A)	 81.3 94.3	 80.5 93.5	 103 116	 84.3 -
Vibration (AEQ)	10.5 m/s²	9.1 m/s²	13.6 m/s²	10.3 m/s²
Length	740 mm (29")	1,100 mm (43")	1,400 mm (55")	1,710 mm (67")
Weight	4.6 kgs (8.2 lbs)	5.2 kgs (11.51 lbs)	5.8 kgs (12.9 lbs)	6.3 kgs (13.9 lbs)

Name of Mfr. : Trelawny SPT Ltd.

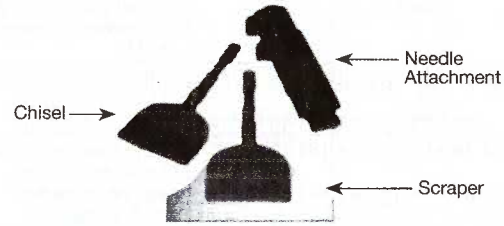
Light Weight - Aluminium Body

Unit Per Set

CODE	59 04 50	59 04 59	59 04 60
Model	LR4	LR5	LR6
Part No.	136.3498	136.3598	136.3698
BPM	2,200		
Air Consumption	2.1 ltr/sec (4.5 cfm)		
Noise Level LpA dB (A) LwA dB (A)	 85.8 98.8	 81.2 -	 84.2 -
Vibration (AEQ)	21.4 m/s²	20 m/s²	
Length	1,100 mm (43")	1,400 mm (55")	1,710 mm (67")
Weight	3.0 kgs (6.61 lbs)	3.4 kgs (7.5 lbs)	3.8 kgs (8.4 lbs)

Name of Mfr. : Trelawny SPT Ltd.

Spare Chisels/Scrapers/Needle Attachments
for Long Reach Scaler



Unit Per Pc.

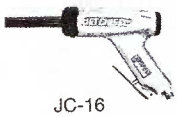
Chisels			Scrapers		
For removal of heavy corrosion and paint			Scraping loose rust and paint/removing coverings/ spillages/material build ups		
CODE	Blade Width	Part No.	CODE	Blade Width	Part No.
59 25 21	25 mm (1")	705.1101	**59 25 25**	102 mm (4") Bevelled	431.3904
59 04 55	50 mm (2")	705.1106	**59 25 26**	203 mm (8") Bevelled	431.3908
59 04 56	100 mm (4")	705.1102	**59 25 27**	305 mm (12") Bevelled	431.3912
Spark resistant aluminium bronze			**Needle attachment**		
59 04 30	100 mm (4")	705.1112	**59 04 85**	-	415.3532

Name of Mfr. : Trelawny SPT Ltd.

Pneumatic Jet Chisels

For chiseling or smoothing welds, castings and other materials. Never skip a blow, cleans and descales all jobs fast. Jet chisel needles adjust to the contour of any surface automatically.

The chisel can reach into corners, curvatures, and uneven surfaces, making it a tool no shop should be without. Thanks to the unprecedented original air operated needle return mechanism, no springs to break, no irregular power and the advantage of low air consumption. A normal short hose and quick coupler are attached as standard accessories.


JC-16

JT-20

JEX-24

JEX-66 (JEX-28)

AJC-16

JEX-2800A

Application

JC-16 : For light duty

JT-20 : For general duty

JEX-24 : For all purposes

JEX-66 : For heavy duty (JEX-28)

AJC-16 : Slim and light weight

JEX-2800A : Powerful and low vibration. Built-in shock absorbing system minimizes operator fatigue. No special tools are required for needle replacement.

Unit Per Set

CODE	Model	O.A. Length mm	Needles mm	Air		WT. kgs
				Inlet	Consumption m^3/min	
59 04 61	JC-16	158	2ø x 29 pcs.	3/8"	0.15	1.4
59 04 62	JT-20	245	2ø x 29 pcs. 3ø x 12 pcs.	3/8"	0.2	2.4
59 04 63	JEX-24	237	2ø x 53 pcs. 3ø x 23 pcs.	3/8"	0.27	2.7
59 04 64	JEX-66 (JEX-28)	264	2ø x 66 pcs. 3ø x 28 pcs. 4ø x 14 pcs.	3/8"	0.35	3.5
59 04 65	AJC-16	190	2ø x 7 pcs. 3ø x 3 pcs.	3/8"	0.07	0.98
59 04 70	JEX-2800A	247	2ø x 66 pcs. 3ø x 28 pcs. 4ø x 14 pcs.	3/8"	0.43	3.10

Name of Mfr. : Nitto Koki Co., Ltd.
Remark : JEX-66 is Japanese domestic model name of JEX-28.

Spare Needles for Jet Chisel

Unit Per Box

CODE	Needle Diam x Lgth mm	Per box	CODE	Needle Diam x Lgth mm	Per box
59 04 66	2ø x 150	100	**59 04 68**	3ø x 180	100
67	2ø x 180	100	**95**	3ø x 300	50
93	2ø x 300	50	**96**	3ø x 500	50
94	2ø x 500	50	**97**	3ø x 800	50
			59 04 69	4ø x 180	50
			98	4ø x 300	50
			99	4ø x 500	50

Spare Needle Supporters for Jet Chisel

Unit Per Pc.

CODE	P/N	Size	Model
59 04 71	TP00290	2 mm	JC-16
72	TP00338		JT-20
73	TP02244		JEX-24
74	TP01499		JEX-66 (JEX-28) / JEX-2800A
79	TQ05210		AJC-16
59 04 75	TP00337	3 mm	JT-20
76	TP02245		JEX-24
77	TP01461		JEX-66 (JEX-28)/ JEX-2800A
80	TQ04554		AJC-16
59 04 78	TP01462	4 mm	JEX-66 (JEX-28)/ JEX-2800A

Spare Throttle Anvils for Jet Chisel

Unit Per Pc.

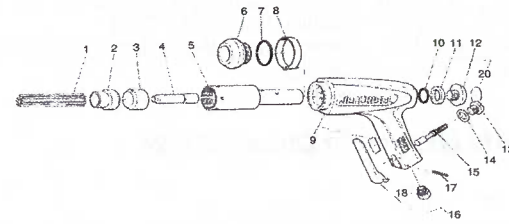
CODE	P/N	Model
59 05 20	TP00289	JC-16
32	TP00336	JT-20
39	TP02243	JEX-24
40	TP00399	JEX-66 (JEX-28) / JEX-2800A
50	TQ04562	AJC-16

Spare Pistons for Jet Chisel

Unit Per Pc.

CODE	P/N	Model
59 05 68	TP00288	JC-16
69	TP00332	JT-20
70	TP02242	JEX-24
72	TP00395	JEX-66 (JEX-28) / JEX-2800A
59 06 00	TQ03427	AJC-16

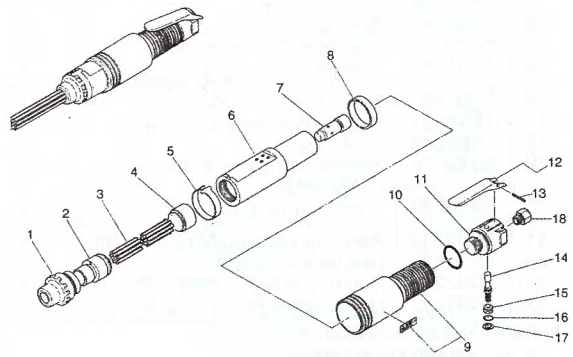
Parts List for Jet Chisel JC-16



No.	Parts No.	Parts Name	Quantity
1	59 04 66	Needle ø 2 x 150 mm	29
2	59 04 71	Needle supporter ø 2 mm (TP00290)	1
3	59 05 20	Throttle anvil (TP00289)	1
4	59 05 68	Piston (TP00288)	1
5	TP00287	Cylinder	1
6	TP00292	Lock ring	1
7	TP11987	O ring KS-24	1
8	TP00295	Safety band (Lock band)	1
9	TB08709	Housing sub ass'y	1
10	TP11986	O ring KS-19	1
11	TP03336	Rear washer	1
12	TA93271	Rear bolt ass'y	1
13	TP00389	Valve cap	1
14	TP00388	Valve packing	1
15	TA90037	Throttle valve ass'y	1
16	TP00328	Throttle lever	1
17	TQ00563	Spring pin 3 x 20	1
18	TQ02349	Reducer bushing M16 x Rc 3/8"	1
acc	TQ02350	Bushing R 3/8" x NPT 3/8"	1
acc	TQ03262	Hose nipple R 3/8" x 3/8"	1

Remark : acc denotes accessory

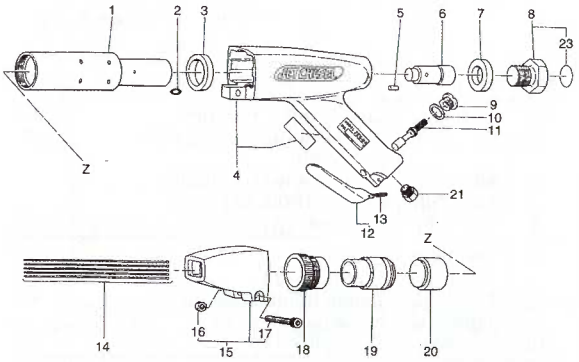
Parts List for Jet Chisel JT-20



No.	Parts No.	Parts Name	Quantity
1	TP14689	Lock ring	1
2	59 04 75	Needle supporter ø 3 mm (TP00337)	1
3	59 04 68	Needle ø 3 x 180 mm	12
4	59 05 32	Throttle anvil (TP00336)	1
5	TP14593	Safety band (Lock band)	1
6	TA99176	Cylinder ass'y	1
7	59 05 69	Piston (TP00332)	1
8	TQ14320	Stopper	1
9	TB08850	Cover ass'y	1
10	LP12795	O ring G-30	1
11	TP15230	Valve body	1
12	TP00328	Throttle lever	1
13	TP00327	Spring pin 3 x 25	1
14	TA98983	Throttle valve ass'y	1
15	TP14601	Spring seat (Valve cap)	1
16	TP14604	O ring S-10	1
17	TP03695	Retaining ring C-12	1
18	TQ02349	Reducer bushing M16 x Rc 3/8"	1
acc	TQ02350	Bushing R 3/8" x NPT 3/8"	1
acc	TQ03262	Hose nipple R 3/8" x 3/8"	1

Remark : acc denotes accessory

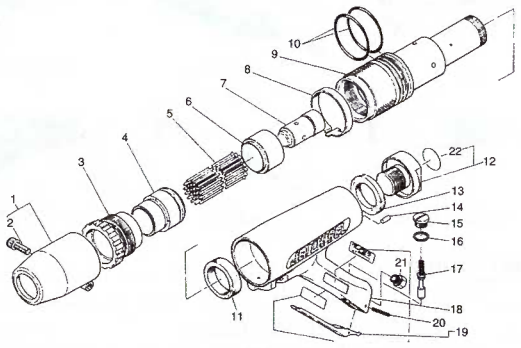
Parts List for Jet Chisel JEX-24



No.	Parts No.	Parts Name	Quantity
1	TP02241	Cylinder	1
2	TP11992	O ring KS-9	1
3	TP02250	Front washer	1
4	TB08714	Housing sub ass'y	1
5	TP01478	Cylinder lock pin	1
6	59 05 70	Piston (TP02242)	1
7	TP02249	Rear washer	1
8	TB08715	Rear bolt ass'y	1
9	TP00389	Valve cap	1
10	TP00388	Valve packing	1
11	TA90037	Throttle valve ass'y	1
12	TP01557	Throttle lever	1
13	TQ00563	Spring pin 3 x 20	1
14	59 04 68	Needle ø 3 x 180 mm	23
15	TA93189	Needle guide ass'y	1
16	(TQ01484)	Small hex. nut M8	1
17	(TP16284)	Hex socket head bolt 8 x 45	1
18	TP02246	Lock ring	1
19	59 04 76	Needle supporter ø 3 mm (TP02245)	1
20	59 05 39	Throttle anvil (TP02243)	1
21	TQ02349	Reducer bushing M16 x Rc 3/8"	1
acc	TP00170	Hex wrench key 6	1
acc	TQ02350	Bushing R 3/8" x NPT 3/8"	1
acc	TQ03262	Hose nipple R 3/8" x 3/8"	1

Remark : No.15 includes No.16 and 17.
acc denotes accessory

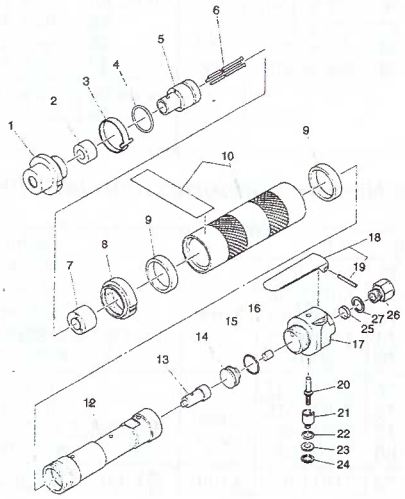
Parts List for Jet Chisel JEX-66 (JEX-28)



No.	Parts No.	Parts Name	Quantity
1	TA93365	Round needle guide ass'y	1
2	(TP00045)	Hex. socket head bolt 8 x 25	1
3	TP01464	Lock ring	1
4	59 04 77	Needle supporter ø 3 mm (TP01461)	1
5	59 04 68	Needle ø 3 x 180 mm	28
6	59 05 40	Throttle anvil (TP00399)	1
7	59 05 72	Piston (TP00395)	1
8	TP01466	Lock band	1
9	TP01463	Cylinder	1
10	TP11993	O ring	1
11	TP01474	Front washer	1
12	TB08717	Rear bolt ass'y	1
13	TP01475	Rear washer	1
14	TP01478	Cylinder lock pin	1
15	TP00389	Valve cap	1
16	TP00388	Valve packing	1
17	TA90037	Throttle valve ass'y	1
18	TB08716	Housing sub ass'y	1
19	TP01557	Throttle lever	1
20	TQ00563	Spring pin 3 x 20	1
21	TQ02349	Reducer bushing M16 x Rc 3/8"	1
acc	TP00170	Hex. wrench key 6	1
acc	59 04 69	Needle ø 4 x 180 mm	14
acc	59 04 78	Needle supporter ø 4 mm (TP01462)	1
acc	TQ02350	Bushing R 3/8" x NPT 3/8"	1
acc	TQ03262	Hose nipple R 3/8" x 3/8"	1

Remark : No.1 includes No.2
acc denotes accessory

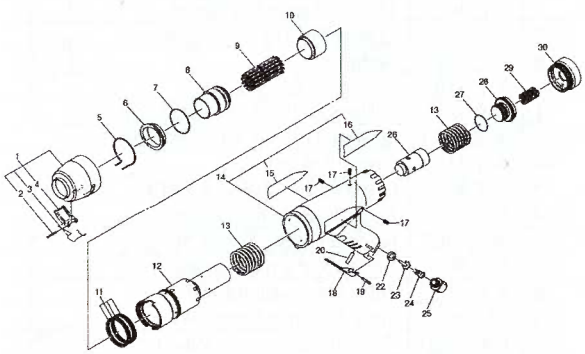
Parts List for Jet Chisel AJC-16



No.	Parts No.	Parts Name	Quantity
1	TQ04558	Lock ring	1
2	TQ04559	Muffler	1
3	TQ03429	Lock band	1
4	CP01453	O ring P-22A	1
5	59 04 80	Needle supporter ø 3 mm (TQ04554)	1
6	59 04 68	Needle ø 3 x 180 mm	3
7	59 05 50	Throttle anvil (TQ04562)	1
8	TQ04557	Lock nut	1
9	TQ04556	Urethane washer 30 x 34 x 6	2
10	TB08708	Cover ass'y	1
12	TQ04563	Cylinder	1
13	59 06 00	Piston (TQ03427)	1
14	TQ04553	End plate	1
15	TP13275	O ring P-16	1
16	TQ04564	Cushion	1
17	TQ04966	Valve body	1
18	TB03788	Lever ass'y	1
19	(TP00460)	Spring pin 3 x 22 AW	1
20	TA93070	Valve stem ass'y	1
21	TP06325	Adjust valve	1
22	TP11997	O ring KS-7	1
23	TP06326	Spacer 6 x 12 x 1.2	1
24	TP03695	Internal retaining ring C-12	1
25	TQ04929	Filter	1
26	TQ02349	Reducer bushing M16 x Rc 3/8"	1
27	TQ05564	Washer 16.2 x 21 x 1	1
acc	TQ02350	Bushing R 3/8" x NPT 3/8"	1
acc	TQ03262	Hose nipple R 3/8" x 3/8"	1

Remark : No.18 includes No.19.
acc denotes accessory

Parts List for Jet Chisel JEX-2800A



No.	Parts No.	Parts Name	Quantity
1	TB05957	Needle guide ass'y	1
2	(TP13893)	Spring pin 3 x 22	1
3	(TQ10583)	Clamp spring	1
4	(TQ10555)	Clamp lever	1
5	TQ10246	Snap ring	1
6	TQ10247	Lock ring	1
7	TQ10562	O ring	1
8	59 04 77	Needle supporter ø 3 mm (TP01461)	1
9	59 04 68	Needle ø 3 x 180 mm	28
10	59 05 40	Throttle anvil (TP00399)	1
11	TQ10241	Back up ring	4
12	TQ10240	Cylinder	1
13	TQ10239	Spring 3.5 x 44 x 38	2
14	TB08624	Housing ass'y A	1
17	TP08684	Hex. socket screw 4 x 8	3

(to be continued)

No.	Parts No.	Parts Name	Quantity
18	TP01557	Throttle lever	1
19	TP01802	Spring pin 3 x 28	1
20	TQ10450	Parallel pin 5 x 35	1
22	TQ04671	Seal sheet 9 x 13.9 x 2	1
23	TQ04664	Valve	1
24	TQ04665	Conical spring	1
25	TQ10236	Reducer bushing M16 x Rc 3/8"	1
26	59 05 72	Piston (TP00395)	1
27	CP21603	O ring	1
28	TQ11251	Rear bolt	1
29	TQ10238	Spring 2.6 x 14.3 x 24	1
30	TQ11250	Rear cap	1
acc	TQ02350	Bushing R 3/8" x NPT 3/8"	1
acc	TQ03262	Hose nipple R 3/8" x 3/8"	1
acc	59 04 69	Needle ø 4 x 180 mm	14
acc	59 04 78	Needle supporter ø 4 mm (TP01462)	1

Remark: No. 1 includes No. 2, 3, and 4.
acc denotes accessory.

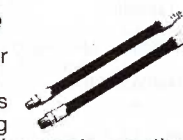
Conversion Table of Force

N	kgf	lbf
1	0.1020	0.2248
9.807	1	2.205
9.448	0.4536	1
0.1383	0.01410	0.03108

Conversion Table of Pressure

MPa	kgf/cm²	lbf/in² (PSI)
1	10.20	145.0
0.09807	1	14.22
0.006895	0.07031	1
0.1013	1.033	14.70
0.1333	1.360	19.34
0.003386	0.03453	0.4912
0.009806	0.1	1.422
0.022989	0.03048	0.4335

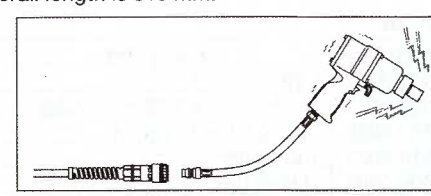
Anti-Vibration Plug Hose



Plug set with rubber hose for vibrating and impact pneumatic tools.

Stabilizes coupling life and prevents wear caused by vibration by absorbing strong shocks from vibration tools and prevents unnoticed flow restriction due to couplings wear from vibration.

Overall length is 310 mm.



Unit Per Pc.

CODE	Model	Size		Working Pressure MPa (kgf/cm²)
		Thread End	Plug End	
59 05 26	SHA-3-2R	R1/4 Male	30PH	1.5 (15)
27	SHA-3-3R	R3/8 Male		

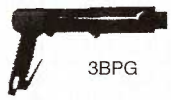
Name of Mfr. : Nitto Kohki Co.,Ltd.

Applicable socket type : 20 series : 20SH, 20SM, 20SF
30 series : 30SH, 30SM, 30SF
40 series : 40SH, 40SM, 40SF

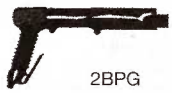
Pneumatic Needle Scalers
Trelawny

Also known as Needle Guns and De-rusting/De-scaling pistols for removing rust, corrosion and heavy scale from all metal surfaces - needles adjust to surface contours to descale all irregular surfaces. All tools can be converted into chisel scalers for maximum versatility - two tools in one.

2B



3BPG



2BPG

4B

Application

2B : For light duty	3BPG : For general duty
2BPG : For intermediate duty	4B : For very heavy duty

Unit Per Set

CODE	59 04 81	59 04 82	59 04 83	59 04 84
Model	2B	2BPG	3BPG	4B
Part No.	121.2000	123.2100	133.3100	141.4000
Type	Inline	Pistol grip		Back handle grip
BPM	3,000	3,000	2,200	1,800
Air Consumption (lps/sec)	2.6 (5.5 cfm)	2.6 (5.5 cfm)	3.8 (8 cfm)	4.0 (8.5 cfm)
Noise Level LpA dB(A) LwA dB(A)	100.3 113.3	100.3 113.3	101.5 114.5	104.4 117.4
Vibration (AEQ)	9.3 m/s²	12.3 m/s²	18.9 m/s²	23.5 m/s²
Air Inlet Size	BSP 1/4" or NPT 1/4"			
Length	375 mm (14.7")	315 mm (12.4")	342 mm (13.5")	482 mm (19")
Weight	2.6 kgs (5.8 lbs)	2.6 kgs (5.7 lbs)	3.7 kgs (8.2 lbs)	5.89 kgs (13 lbs)
Needles	51 x 2 mm 19 x 3 mm	51 x 2 mm 19 x 3 mm	65 x 2 mm 28 x 3 mm	49 x 3 mm 35 x 4 mm

Remark : LpA dB(A) – Sound Power Level
LwA dB(A) – Sound Pressure Level
Name of Mfr. : Trelawny SPT Ltd

Parts List
for Trelawny Pneumatic Needle Scaler

Model : 2B

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.2021	Valve S/A 2B	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.2001	Piston 2B & 2BPG	1
13	411.2002	2B Cylinder c/w Sleeve Ass'y	1
17	809.5179	O'Ring 36.3 x 1.78 2B	1
24	610.2001	Anvil 2B & 2BPG Scaler	1
25	601.2003	Needle Holder 3mm 2B	1
27	712.2001	Spring Return 2B Scaler	1
28	416.2032	Tube Intermediate 2B	1
29	417.2032	Tube Straight Front 2B	1
30	806.0830	Cap Head Screw - M8x30	1

(to be continued)

Model : 2BPG

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.2001	Piston 2B & 2BPG	1
10	613.2101	Cylinder 2BPG	1
11	809.0249	O'Ring 28.3 x 1.78 1B/2BPG	1
12	809.0269	O'Ring 31.5 x 1.78 2BPG/3B	1
14	425.2100	Cover S/A 2BPG	1
18	717.3101	Grip Rubber 2BPG & 3BPG	1
24	610.2001	Anvil 2B & 2BPG Scaler	1
25	601.2003	Needle Holder 3 mm 2B	1
27	712.2001	Spring Return 2B Scaler	1
28	416.2032	Tube Intermediate 2B	1
29	417.2032	Tube Straight Front 2B	1
30	806.0830	Cap Head Screw - M8x30	1

Model : 3BPG

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.3001	Piston 3B	1
10	613.3101	Cylinder 3BPG & 3BLR	1
11	809.0289	O'Ring 34.6 x 1.78 3BPG/3BLR	1
12	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
14	425.3100	Cover S/A 3BPG	1
18	717.3101	Grip Rubber 2BPG & 3BPG	1
24	610.3001	Anvil 3B & 3BPG Scaler	1
25	601.3003	Needle Holder 3 mm 3B	1
27	712.3001	Spring Return 3B Scaler	1
28	416.3132	Tube Intermediate 3BPG	1
29	417.3032	Tube Straight Front 3B	1
30	806.0830	Cap Head Screw - M8x30	1

Model : 4B

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.4001	Piston 4B	1
10	613.4001	Cylinder 4B	1
13	411.4002	4B Handle & Body S/A	1
15	615.4001	Cap End 4B	1
17	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
18	717.3011	Grip Rubber 3B/4B/LR	1

(to be continued)

No.	Part No.	Description	Quantity
20	624.3001	Tube Handle 3B & 4B&LR no Lite	1
21	623.3001	Tube Centre	1
22	625.3001	Locknut - 3B Handle	1
23	810.9000	Sealing Washer 3/8" BSP	1
24	610.3001	Anvil 3B & 3BPG Scaler	1
25	601.4004	Needle Holder 4 mm 4B	1
27	712.4031	Spring Return 4B Scaler	1
28	416.4032	Tube Intermediate 4B	1
29	417.4032	Tube Straight Front 4B	1
30	806.0835	Cap Head Screw - M8x35	1

Heavy Duty Needle Scalers

for Low Vibration

The heavy duty scaler for toughest applications, ideal for removing the hardest marine growth and corrosion.

VL223 VL203 VL303

Unit Per Set

CODE	59 05 18	59 05 00	59 05 10
Model	VL223	VL203	VL303
Part No.	196.2103	196.2003	196.3003
Type	In-line	Pistol Grip	
BPM	2,400	2,400	3,000
Air Consumption (lps/sec)	1.89 (4 cfm)	1.89 (4 cfm)	4.0 (8.5 cfm)
Noise Level LpA dB (A) LwA dB (A)	LwA 90.7	LwA 90.7	95.0 109.5
Vibration (AEQ)	2.56 m/s²	2.75 m/s²	2.3 m/s²
Air Inelt Size	BSP 1/4" or NPT 1/4"		
Length	370 mm (14.5")	340 mm (13.4")	370 mm (14.5")
Weight	2.35 kgs (5.18 lbs)	2.7 kgs (6.0 lbs)	3.5 kgs (7.7 lbs)
Needles	19 x 3 mm	19 x 3 mm	65 x 2 mm 28 x 3 mm 19 x 4 mm

Remark : LpA dB(A) – Sound Power Level
LwA dB(A) – Sound Pressure Level
Name of Mfr. : Trelawny SPT Ltd

Parts List

for Trelawny Heavy Duty Needle Scaler

(Low Vibration)

Model : VL223

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
10	423.2023	VL223 Valve Body/Cover	1
12	652.2003	Guide Plate VL203/223	1
13	829.2003	Guide Plate Seal	1
14	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
15	428.2003	Cylinder VL203	1
17	816.3003	6 mm dia Plastic Ball	1
18	809.0080	O'Ring 4.47 x 1.78 VR 3BPG	1
19	809.2004	Piston Cushion VL203/223 50 mm	1
22	622.2031	Intermediate Tube VL203/223	1
23	721.2003	Int/Tube Outer Sleeve (Black)	1
25	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
26	612.2003	Piston VL203/223	1
28	636.3003	Valve Pin	1
29	829.2002	Piston Ring VL203	1
30	601.2030	Needle Holder 3 mm VL203/223	1
32	712.2003	Front Spring VL203/223	1
33	620.2003	Front Tube Insert	1
33a	620.2003A	Front Tube Spacer	1
34	622.2030	Front Tube VL203/223	1
35	809.3005	Cylinder Stem Reaction Ring	1

(to be continued)

Model : VL203

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	717.3050	Grip 2/3BPG Trelawny Logo	1
10	425.2003	Cover Assembly VL203	1
12	652.2003	Guide Plate VL203/223	1
13	829.2003	Guide Plate Seal	1
14	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
15	428.2003	Cylinder VL203	1
17	816.3003	6mm dia Plastic Ball	1
18	809.0080	O'Ring 4.47 x 1.78 VR 3BPG	1
19	809.2004	Piston Cushion VL203/223 50 mm	1
22	622.2031	Intermediate Tube VL203/223	1
23	721.2003	Int/Tube Outer Sleeve (Black)	1
25	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
26	612.2003	Piston VL203/223	1
28	636.3003	Valve Pin	1
29	829.2002	Piston Ring VL203	1
30	601.2030	Needle Holder 3 mm VL203/223	1
32	712.2003	Front Spring VL203/223	1
33	620.2003	Front Tube Insert	1
33A	620.2003A	Front Tube Spacer	1
34	622.2030	Front Tube VL203/223	1
35	809.3005	Cylinder Stem Reaction Ring	1

Model : VL303

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	717.3050	Grip 2/3BPG Trelawny Logo	1
10	425.3003	Cover Assembly VL303	1
12	652.3003	Guide Plate	1
13	829.3003	Guide Plate Seal	1
14	809.0299	O'Ring 37.8 x 1.78 3BPG	1
15	428.3003A	VL303 Cyl Kit inc 729.3003	1
17	816.3003	6 mm dia Plastic Ball	1

(to be continued)

No.	Part No.	Description	Quantity
18	809.0080	O'Ring 4.47 x 1.78 VR 3BPG	1
19	809.3004	Piston Cushion 85 mm long	1
22	622.3031	Intermediate Tube	1
23	721.3003	Intermediate Tube Outer Sleeve	1
24	814.3003	Circlip (Spring Seat Location)	1
25	809.0299	O'Ring 37.8 x 1.78 3BPG	1
26	612.3003	Piston VL303	1
28	636.3003	Valve Pin	1
29	829.3002	Piston Ring	1
30	601.3030	Needle Holder 3 mm VL303	1
32	712.3003	Front Spring	1
33	620.3003	Front Tube Insert VL303	1
34	622.3030	Front Tube VL303	1
35	729.3003	Cylinder Stem Reaction Ring	1

Spare Needles
for Pneumatic Needle Scaler

Unit Per Pc.

CODE	Size	Shape of Tip
59 04 86	2 mm	Flat tip
59 04 87	3 mm	Chisel tip
88		Pointed tip
89		Flat tip
59 04 92	4 mm	Flat tip

Name of Mfr. : Trelawny SPT Ltd.

Needle Supporters
for Pneumatic Needle Scaler

Unit Per Pc.

CODE	Size	For Model	Part No.
59 05 01	2 mm	2 B	601/2002
02		2 BPG	601/2002
03		3 BPG	601/3002
59 05 04	3 mm	2 B	601/2003
05		2 BPG	601/2003
06		3 BPG	601/3003
07		4 B	601/4003
59 05 08	4 mm	3 BPG	601/3004
09		4 B	601/4004

Name of Mfr. : Trelawny SPT Ltd.

Fall Arresters
for Trelawny Needle Scaler and Chisel Scaler

Developed to prevent losing / damaging tools by clipped on the tool and then attached to belt or safety cable. Used in extreme condition, when you have to careful of not dropping the tools on the floor.

Shackle is not included.

Unit Per Pc.

CODE	For Needle/Chisel Scaler	Part No.
59 05 98	VL203 / VL223	720.2003
99	VL303	720.3003

Name of Mfr. : Trelawny SPT Limited.

Pneumatic Hand Scalers

Lightweight and ideal for removing rust, mill scale, old paint, etc. Please note that the tools for the pneumatic hand scaler listed below are included with model 59 05 12, but not included with model 59 05 11.

59 05 11

59 05 12

How to order : CODE

Hand scaler, pneumatic, NO LOAD SPEED R.P.M., MODEL

Unit Per Set

CODE	59 05 11	59 05 12
Model	YBD-2X	KC-20
Free Speed	3,000	5,000
No Load Air Consumption	0.7 m^3/min.	
Air Hose Size	12.7 mm	
Air Pressure	6 kgf/cm^2	
Overall Length	318 mm	400 mm
Weight	2.5 kgs	5 kgs
Standard Accessories	-	* 1 pc Wire wheel brush * 1 pc LG tool assembly * 1 pc HD tool assembly * 1 pc Hammer head * 1 pc Grind stone * 1 lgh Air hose 20 mtr * 1 set Spanner set
Name of Mfr.	Yokota	Kobe Cleaner mfg Co.,

Tools for Pneumatic Hand Scaler

Wire Wheel Brush

LG Tool Assembly

HD Tool Assembly

Hammer Head

Grind Stone

CODE	Description	Unit
	For Model YBD-2X (59 05 11)	
59 05 15	Wire wheel brush	Pc.
16	LG tool assembly	Set
17	HD tool assembly	"
	For Model KC-20 (59 05 12)	
59 05 21	Wire wheel brush	Pc.
22	LG tool assembly	Set
23	HD tool assembly	"
24	Hammer head	"
25	Grind stone	Pc.

Pneumatic Needle / Chisel Scalers Rustibus 20

This hand held, pneumatic de-scaling machine is ideal for use on those awkward hard to reach corners, pipe joints and those few other areas that the other scaling tools have difficulty reaching. Equipped with a 18 cm (7") Flat chisel and fitted with 13 cm (5") needles. Two machines in one.

Unit Per Set

CODE	59 05 28
Model	Rustibus 20
Stroke	2.85 cm (1-1/8")
BPM	4,600
Air Consumption	339.8 Cu.Ltr/min (12 CFM)
Bore	2.54 cm (1")
Inlet	0.635 NPT (1/4" NPT)
Min Hose Size	0.79 cmb (5/16")
Length	43 cm w/13 cm needles (17" w/5" needles) 48 cm w/18 cm needles (19" w/7" needles)
Weight	2.9 kgs (6.4 lbs)

Name of Mfr. : Dalseide Shipping Services

Vacuum Systems for Scaler

Rustibus 20

Available for the Rustibus 20 Needle / Chisel descaler has a flexible nose piece that allows the user to get into every corner. This vacuum system also allows the tool to exhaust into the vacuum stream. Requires only 87 CFM / 2.5 M^3 vacuum flow and 90 psi / 6.2 bar operating pressure.

N.B. To use this vacuum system, your Rustibus 20 needs to be fitted with 18 cm (7") needles. Includes : vacuum attachment, connection hoses and clamps.

59 05 29	Vacuum system, Rustibus 20, item no. 020-00VT for needle/chisel scaler	Set

Pneumatic Flux Chippers

For scaling and chipping rust and cleaning metal surfaces.

Unit Per Set

CODE	59 05 31
Model	CH-24
Stroke Speed	4,000/min
Rated Air Pressure	0.6 MPa (6 kgf/cm^2)
Air Consumption	0.2 m^3/min
Overall Length	184 mm
Weight	1.7 kgs
Standard Accessories	* 1 pc Bent flat chisel (59 05 33) * 1 pc Reducer R 3/8" × NPT3/8" * 1 pc Hose nipple R 3/8" × 3/8"

Name of Mfr.: Nitto Kohki Co.,Ltd.

Spare Chisels for Pneumatic Flux Chipper

Bent

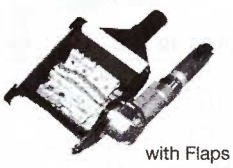
Flat

Unit Per Pc.

CODE	Type	Size Blade Width × Length
59 05 33	Bent flat chisel	25 × 155 mm
34	Flat chisel	12.7 × 165 mm
35	Flat chisel	25 × 155 mm

Hand-Held Deck Scalers

For removing paint, rust & coatings from steel, stone and concrete surfaces. Hardened steel star and beam cutters breakdown stubborn coatings or tungsten tipped 'C' flaps remove surface materials to a bright steel finish by way of 'captive blasting', leaving up to a 100 micron profile. Used in conjunction with Trelawny Vacuums, hazardous and nuisance dust can be removed quickly and efficiently at source. 2" (50 mm) & 4" (100 mm) wide tools, electric and pneumatic versions enable a wide variety of substrates to be cleaned at high productivity.



with Flaps

with Cutters

Unit Per Set

CODE	Model	Part No.	Production Rate/Hour M^2 (ft^2)	Average Cutter Life Hours	Weight kgs (lbs)
		Air Powered			
59 22 51	2" with flaps	194.0205	17.3 (186.3)	40	3.4 (7.5)
52	4"with flaps	194.0405	34.6 (372.6)	40	4.1 (9.0)
53	2" with cutters	194.C205	10.6 (113.9)	15	5.2 (11.5)
54	4" with cutters	194.C405	21.2 (227.8)	15	6.4 (14.0)
		Electric Powered			
59 22 55	2" with cutters	Specify power	17.3 (186.3)	40	4.4 (9.7)

Name of Mfr.: Trelawny SPT Ltd.

Replacement Hub Assemblies and Heads

Hubs

Hub for Cutters

Hub for C Flaps

Unit Per Pc.

CODE	For	Part No.
59 22 91	2" (50 mm) cutters	438.0209
92	4" (100 mm) cutters	438.0409
59 22 93	2" (50 mm) C flaps	438.0205
94	4" (100 mm) C flaps	438.0405

Heads

Star Cutter

Beam Cutter

C Flap

← Heavier Scaling Lighter Burnishing →

Unit Per Pc.

CODE	Item	Part No.	Applications
59 22 56	Star cutter	312.S200	Aggressive removal of thick coatings.
57	Beam cutter	312.R200	Removal of hard coatings, less aggressive than star.
58	C flap	312.MRPC	Removal of light paint and rust.

Name of mfr. : Trelawny SPT Ltd.

Pneumatic Belt Sanders

Compact and lightweight belt sander to be suitable for sanding jobs in narrow spaces, recessed corners or on curved surfaces. Available 3 models of belt width : 10 mm, 20 mm and 30 mm, and in addition to above models extra light model of 10 mm belt width is also available. Required air pressure is 0.59 MPa, but 0.63 MPa for extra light model.

Unit Per Set

CODE	59 03 92	59 03 93	59 03 94
Model	B-10CL	B-20CL	B-30CL
Belt Width	10 mm	20 mm	30 mm
Air Consumption m^3/min	0.4	0.48	0.82
Motor Free Speed min^{-1} (rpm)	17,000	18,000	15,000
Belt Speed m/min	1,120	2,770	2,310
Hose Size	1/4		
Rated Air Pressure MPa (kgf/cm^2)	0.6 (6)		
Weight kgs	0.9	1.6	2.4

Standard Accessories

Model B-10CL	2 pcs Abrasive Belt Z#60 × 10 mm 1 pc Abrasive Belt Z#80 × 10 mm 1 pc Abrasive Belt Z#100 × 10 mm 1 pc Abrasive Belt Z#120 × 10 mm 1 pc 1.5 mm Hex. Wrench Key 1 pc 4 mm Hex. Wrench Key 1 pc Bushing R 1/4 × NPT 1/4 1 pc Silencer
Model B-20CL	2 pcs Abrasive Belt Z#60 × 20 mm 1 pc Abrasive Belt Z#80 × 20 mm 1 pc Abrasive Belt Z#100 × 20 mm 1 pc Abrasive Belt Z#120 × 20 mm 1 pc 2.5 mm Hex. Wrench Key 1 pc 4 mm Hex. Wrench Key 1 pc Bushing R 1/4 × NPT 1/4 1 pc Convex Shoe 1 pc Silencer
Model B-30CL	2 pcs Abrasive Belt Z#60 × 30 mm 1 pc Abrasive Belt Z#80 × 30 mm 1 pc Abrasive Belt Z#100 × 30 mm 1 pc 5 mm Hex. Wrench Key 1 pc Bushing R 1/4 × NPT 1/4 1 pc Sub Handle Ass'y 1 pc Silencer

Unit Per Set

CODE	59 03 91	59 03 90
Model	BB-10A	BB-20
Belt Width	10 mm	20 mm
Air Consumption m^3/min	0.25	0.43
Motor Free Speed min^{-1} (rpm)	16,000	16,000
Belt Speed m/min	1,000	1,100
Hose Size	1/4	
Rated Air Pressure MPa (kgf/cm^2)	0.6 (6)	
Weight kgs	0.6	0.8

Standard Accessories

Model BB-10A	1 pc Abrasive Belt Z#100 x 10 mm 1 pc Abrasive Belt Z#120 x 10 mm 1 pc Abrasive Belt Z#180 x 10 mm 1 pc Abrasive Belt Z#240 x 10 mm 1 pc 1.5 mm Hex. Wrench Key 1 pc Cupla HA-65SN
Model BB-20	1 pc Abrasive Belt Z#60 x 20 mm 1 pc Abrasive Belt Z#120 x 20 mm 1 pc Abrasive Belt Z#240 x 20 mm 1 pc 2.5 mm Hex. Wrench Key 1 pc 3 mm Hex. Wrench Key 1 pc Cupla HA-65SN 1 pc Shoe 1 pc Dust Cover

(to be continued)

Pneumatic Orbital Sanders

Lightweight and handy palm sander makes working easy in corners and other tight spots.

Unit Per Set

CODE	59 05 41	59 05 42
Model	FS-50A	FS-100C
Pad Size	75 × 82 mm	110 × 100 mm
Sand Paper Size	70 × 114 mm	114 × 140 mm
Rated Air Pressure	0.6 MPa (6 kgf/cm^2)	
Motor Free Speed	15,000 min^{-1} (rpm)	20,000 min^{-1} (rpm)
Air Consumption (No load)	0.14 m^3/min	0.2 m^3/min
Operating Pressure	1 to 3 kgf	2 to 5 kgf
Weight	0.5 kgs	
Standard Accessories	- 5 sheets each Sanding paper #180, #240 - 1 set Air hose assembly - 1 pc Bushing R 1/4 x NPT 1/4	

Name of Mfr.: Nitto Kohki Co.,Ltd.

Sanding Paper for Pneumatic Orbital Sander

Unit Per Pkt.

CODE	Grit	Sht/Pkt	CODE	Grit	Sht/Pkt
59 05 43	100	200's	**59 05 47**	240	200's
44	120		**48**	280	
45	150		**49**	320	
46	180				

Pneumatic Needle Scalers

Unique needle scaler with integrated anti-vibration system in order to protect the operators hands and arms but not the rust. Optimal weight distribution and fully insulated handle and pistol body.

Unit Per Pc.

CODE	59 05 51
Model	NP23K (#700722)
Air Hose Size	1/4" and 3/8" (by attaching reducing nipple)
Air Consumption	100 l/min. (3.5 cfm)
Air Pressure (Max.)	7 bar (100 psi)
Air Pressure Level	99 dB (A)
Acoustic Power Level	109 dB (A)
Weighted Effective Acceleration on Handle	4.79 m/s^2 (Latest tests according to ISO 8862-14)
Needles	ø2 mm × 51 pcs ø3 mm × 19 pcs ø4 mm × 10 pcs
Weight	2.2 kgs (4.9 lbs)

Name of Mfr.: Von Arx AG

Standard Accessories

Needles, flat, 3 mm dia. x 19 pcs (#706188) including needle holder, o-ring and grease	1 set
Set of yellow plastic cap(#706353)	"
Set of springs, front and rear(#706355)	"

Pneumatic Chisel Hammers

Low vibration, but high power pneumatic chisel hammer. Various types of spare chisel are available in separate order.

Unit Per Pc.

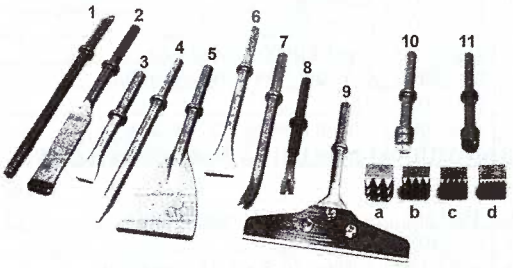
CODE	59 05 52
Model	MH23K (#706092)
Air Hose Size	1/4" and 3/8" (by attaching reducing nipple)
Air Consumption	100 l/min. (3.5 cfm)
Air Pressure (Max.)	7 bar (100 psi)
Air Pressure Level	99 dB (A)
Acoustic Power Level	109 dB (A)
Weighted Effective Acceleration on Handle	4.79 m/s² (Latest tests according to ISO 8862-14)
Chisel (flat)	1 pc. (W: 24 mm)
Weight	2.3 kgs (5.1 lbs)

Name of Mfr.: Von Arx AG

Standard Accessories

Set of springs, front and rear (#706356)	1 set
Set of rubber chisel holder (#706354) including chisel holder, o-ring and grease	"
Valve complete (#700720)	1 pc.

Spare Chisels for Pneumatic Chisel Hammer MH23K



Unit Per Pc.

CODE	Description	Photo No.
59 05 53	Untreated chisel	1
54	Joint chisel	2
55	Flat chisel W : 24 mm short	3
56	Pointed chisel	4
57	Flat chisel W : 100 mm	5
59 05 58	Flat chisel W : 35 mm long	6
59	Flat chisel 24 mm cranked	7
60	Metal sheet cutting chisel	8
61	Carpet removal chisel	9
62	Pitching tool holder, hexagonal shaft	10
59 05 63	Pitching tool holder, round shaft	11
64	Pitching tool 3x3 for holder 10 & 11	a
65	Pitching tool 4x4 for holder 10 & 11	b
66	Pitching tool 5x5 for holder 10 & 11	c
67	Pitching tool 7x7 for holder 10 & 11	d

Name of Mfr.: Von Arx AG

Pneumatic Chisel Scalers

Trelawny

Provides a thorough and effective means of removing coatings, corrosion and other accumulated materials. These scalers will work on almost any surface, especially irregular ones that are otherwise hard to prepare.

Application

2B : For light duty	3BPG : For general duty
2BPG : For intermediate duty	4B : For very heavy duty

Unit Per Set

CODE	59 05 81	59 05 82	59 05 83	59 05 84
Model	2B	2BPG	3BPG	4B
Part No.	124.2200	125.2300	135.3300	144.4200
Type	Inline	Pistol grip		Back handle grip
BPM	3,000	3,000	2,200	1,800
Air Consumption (lps/sec)	2.6 (5.5 cfm)	2.6 (5.5 cfm)	3.8 (8 cfm)	4.0 (8.5 cfm)
Noise Level LpA dB (A) LwA dB (A)	85.6 98.9	85.6 98.9	92.1 105.1	86.7 99.7
Vibration (AEQ)	17.4 m/s²	22.4 m/s²	25.6 m/s²	45.1 m/s²
Air Inelt Size	BSP 1/4" or NPT 1/4"			
Length	343 mm (13.5")	260 mm (10.2")	339 mm (13.4")	440 mm (17.3")
Weight	2.0 kgs (4.4 lbs)	2.0 kgs (4.4 lbs)	2.6 kgs (5.8 lbs)	4.0 kgs (8.8 lbs)

Remark : LpA dB(A) – Sound Power Level
LwA dB(A) – Sound Pressure Level
Name of Mfr. : Trelawny SPT Ltd

Model : 2B

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8x1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.2021	Valve S/A 2B	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.2001	Piston 2B & 2BPG	1
13	411.2002	2B Cylinder c/w Sleeve Assy	1
17	809.5179	O'Ring 36.3 x 1.78 2B	1
30	806.0830	Cap Head Screw - M8x30	1
31	419.2241	Chisel Holder 1/2" Square	1
32	704.1101	Chisel 1/2" Square 7" Long x 3/4" Blade	1

Model : 2BPG

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1

(to be continued)

No.	Part No.	Description	Quantity
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.2001	Piston 2B & 2BPG	1
10	613.2101	Cylinder 2BPG	1
11	809.0249	O'Ring 28.3 x 1.78 1B/2BPG	1
12	809.0269	O'Ring 31.5 x 1.78 2BPG/3B	1
14	425.2100	Cover S/A 2BPG	1
18	717.3101	Grip Rubber 2BPG & 3BPG	1
30	806.0830	Cap Head Screw - M8x30	1
31	419.2241	Chisel Holder 1/2" Square	1
32	704.1101	Chisel 1/2" Square 7" Long x 3/4" Blade	1

Model : 3BPG

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.3001	Piston 3B	1
10	613.3101	Cylinder 3BPG & 3BLR	1
11	809.0289	O'Ring 34.6 x 1.78 3BPG/3BLR	1
12	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
14	425.3100	Cover S/A 3BPG	1
18	717.3101	Grip Rubber 2BPG & 3BPG	1
30	806.0830	Cap Head Screw - M8 x 30	1
31	419.3341	Chisel Holder 1/2" Square	1
32	704.1101	Chisel 1/2" Square 7" Long x 3/4" Blade	1

Model : 4B

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	612.4001	Piston 4B	1
10	613.4001	Cylinder 4B	1
13	411.4002	4B Handle & Body S/A	1
15	615.4001	Cap End 4B	1
17	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
18	717.3011	Grip Rubber 3B/4B/LR	1
20	624.3001	Tube Handle 3B & 4B & LR no Lite	1
21	623.3001	Tube Centre	1
22	625.3001	Locknut - 3B Handle	1
23	810.9000	Sealing Washer 3/8" BSP	1
30	806.0835	Cap Head Screw-M8 x 35	1
31	419.4241	Chisel Holder 1/2" Square	1
32	704.1101	Chisel 1/2" Square 7" Long x 3/4" Blade	1

Heavy Duty Chisel Scalers

The heavy duty scaler for toughest applications, ideal for removing the hardest marine growth and corrosion.

VL223 VL203 VL303

Unit Per Set

CODE	59 05 19	59 05 13	59 05 14
Model	VL223	VL203	VL303

(to be continued)

Unit Per Set

CODE	59 05 19	59 05 13	59 05 14
Part No.	196.2213	196.2203	196.3203
Type	In-line	Pistol Grip	
BPM	2,400	2,400	3,000
Air Consumption (lps/sec)	1.89 (4 cfm)	1.89 (4 cfm)	2.6 (5.5 cfm)
Noise Level LpA dB (A) LwA dB (A)	LwA: 76.3	LwA: 76.3	86.7 78.2
Vibration (AEQ)	3.69 m/s²	3.33 m/s²	3.7 m/s²
Air Inelt Size	BSP 1/4" or NPT 1/4"		
Length	435 mm (17.1")	395 mm (15.5")	440 mm (17.3")
Weight	2.95 kgs (6.5 lbs)	3.2 kgs (7.05 lbs)	4.0 kgs (8.8 lbs)

Remark : LpA dB(A) – Sound Power Level
LwA dB(A) – Sound Pressure Level
Name of Mfr. : Trelawny SPT Ltd

Model : VL223

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
10	423.2023	VL223 Valve Body/Cover	1
12	652.2003	Guide Plate VL203/223	1
13	829.2003	Guide Plate Seal	1
14	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
15	428.2003	Cylinder VL203	1
17	816.3003	6mm dia Plastic Ball	1
18	809.0080	O'Ring 4.47 x 1.78 VR 3BPG	1
19	809.2004	Piston Cushion VL203/223 50 mm	1
22	622.2031	Intermediate Tube VL203/223	1
23	721.2003	Int/Tube Outer Sleeve (Black)	1
26	612.2003	Piston VL203/223	1
28	636.3003	Valve Pin	1
29	829.2002	Piston Ring VL203	1
32	712.2003	Front Spring VL203/223	1
35	809.3005	Cylinder Stem Reaction Ring	1
36	610.2003	Anvil	1
37	419.2003	Chisel Holder 1/2" Square	1
38	704.3101	Chisel 1/2" Sq Shank 7" x 3/4" Blade	1

Model : VL203

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	717.3050	Grip 2/3BPG Trelawny Logo	1
10	425.2003	Cover Assembly VL203	1
12	652.2003	Guide Plate VL203/223	1
13	829.2003	Guide Plate Seal	1
14	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
15	428.2003	Cylinder VL203	1
17	816.3003	6mm dia Plastic Ball	1
18	809.0080	O'Ring 4.47 x 1.78 VR 3BPG	1
19	809.2004	Piston Cushion VL203/223 50 mm	1
22	622.2031	Intermediate Tube VL203/223	1

(to be continued)

No.	Part No.	Description	Quantity
23	721.2003	Int/Tube Outer Sleeve (Black)	1
25	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
26	612.2003	Piston VL203/223	1
28	636.3003	Valve Pin	1
29	829.2002	Piston Ring VL203	1
32	712.2003	Front Spring VL203/223	1
35	809.3005	Cylinder Stem Reaction Ring	1
36	610.2003	Anvil	1
37	419.2003	Chisel Holder 1/2" Square	1
38	704.3101	Chisel 1/2" Sq Shank 7" x 3/4" Blade	1

Model : VL303

No.	Part No.	Description	Quantity
1	615.3021	Cap Valve	1
2	809.0139	O'Ring 10.8 x 1.78 Valve Cap	1
3	712.3022	Spring Valve Universal	1
4	618.3022	Valve Stem	1
5	809.0089	O'Ring Square Section V/Seat	1
6	423.3021	Valve S/A 3B/4B & all PG range	1
7	716.3000	Throttle Lever Universal	1
8	813.0108	Spring Pin 1/8" x 1" Long	1
9	717.3050	Grip 2/3BPG Trelawny Logo	1
10	425.3003	Cover Assembly VL303	1
12	652.3003	Guide Plate	1
13	829.3003	Guide Plate Seal	1
14	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
15	428.3003A	VL303 Cyl Kit inc 729.3003	1
17	816.3003	6mm dia Plastic Ball	1
18	809.0080	O'Ring 4.47 x 1.78 VR 3BPG	1
19	809.3004	Piston Cushion 85 mm long	1
22	622.3031	Intermediate Tube	1
23	721.3003	Intermediate Tube Outer Sleeve	1
24	814.3003	Circlip (Spring Seat Location)	1
25	809.0299	O'Ring 37.8 x 1.78 3BPG/3BLR	1
26	612.3003	Piston VL303	1
28	636.3003	Valve Pin	1
29	829.3002	Piston Ring	1
32	712.3003	Front Spring	1
35	729.3003	Cylinder Stem Reaction Ring	1
36	610.3003	Anvil	1
37	419.3003	Chisel Holder 1/2" Square	1
38	704.3101	Chisel 1/2" Sq Shank 7" x 3/4" Blade	1

Spare Chisels for Pneumatic Chisel Scaler

Common to all models when fitted with the standard (12 mm) 1/2" sq chisel holder.

Unit Per Pc.

CODE	Blade Size mm		Type	Part No.
	Width	Length		
59 05 91	19 (3/4")	175 (7")	Flat	704.1101
92	19 (3/4")	254 (10")	"	704.1107
93	62 (2-1/2")	175 (7")	"	704.1103
94	62 (2-1/2")	250 (10")	"	704.1105
59 05 95	34 (1-3/8")	175 (7")	Cranked	704.2105
97	50 (2")	175 (7")	*Flat	704.1110
59 19 01	19 (3/4")	175 (7")	1/2" Square	704.3101
02	62 (2-1/2")	175 (7")		704.3103
59 19 03	50 (2")	175 (7")	*1/2" Square	704.3110
04	34 (1-3/8")	175 (7")	1/2" Square cranked	704.3205
05	19 (3/4")	254 (10")	Square - flat	704.3107

Note : * marked is spark-resistant for use in hazard areas.
59 19 01 to 59 19 04 are common to all VL models.
Name of Mfr.: Trelawny SPT Ltd.

Dust Shrouds

for Trelawny Needle Scaler and Chisel Scaler

Where control of dust is necessary, Trelawny's range of needle and chisel scalers can be fitted with vacuum shrouded front tubes (look for the 'D' symbol for applicable models).

Standard Range

Shroud only

Unit Per Pc.

CODE	59 25 01		59 25 02
Shroud Part no.	418.2200		418.3040
For Scaler	2B	2BPG	3BPG

Complete Needle Scaler fitted with shroud

Unit Per Set

CODE	59 25 03	59 25 04	59 25 05
Set Part No.	139.2000	139.2107	139.3107
Needle Scaler	2B	2BPG	3BPG

Low Vibration Range

Shroud only

Unit Per Pc.

CODE	59 25 06		59 25 07
Shroud Part no.	418.2003		418.3003
For Scaler	VL223	VL203	VL303

Complete Needle Scaler fitted with shroud

Unit Per Set

CODE	59 25 08	59 25 09	59 25 10
Set Part No.	139.2103	139.2003	139.3003
Needle Scaler	VL223	VL203	VL303

Name of Mfr.: Trelawny SPT Limited.

Pneumatic Rattling Needle Chisels

Equipment suitable for chipping rust, old paints, welding, casting scales and various fouling from irregular, angular or bent surfaces. Each needle is independent from the other, thus permitting a perfect adherence to all irregular surfaces, with guarantee of very accurate cleaning. Due to the possibility of using spark proof needles, the machine is suitable for use in environments with risk of explosion.

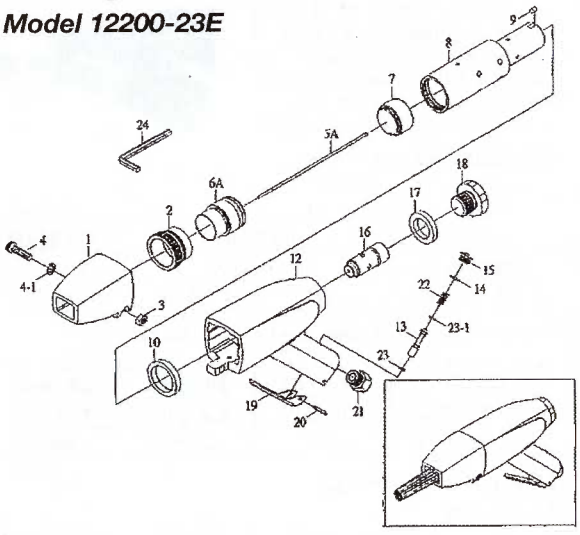
Unit Per Set

CODE	59 05 36	59 05 37	59 05 38
Model	12200-23E	12200-28E	12200-L
Handle Type	Pistol		Straight
Blow per Min. rpm	3,500		4,600
Air Consumption m^3/min.	0.22	025	0.25
Air Pressure bar	6		
Connection inch	3/8" gas		1/4" gas
No. of Needles	2 mm dia × 53 pcs 3 mm dia × 23 pcs	2 mm dia × 66 pcs 3 mm dia × 28 pcs 4 mm dia × 14 pcs	3 mm dia × 19 pcs
Needle Length	180 mm		
Overall Length mm	348	360	457
Weight kgs	2.7	3.5	2.8

Name of Mfr.: I.CO. s.r.l.

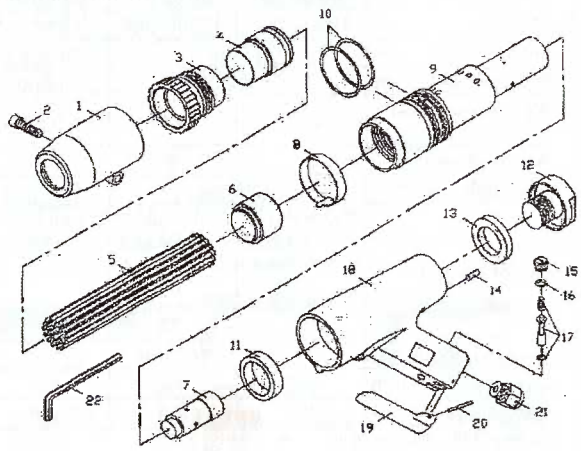
Spare Parts for ICO Pneumatic Rattling Needle Chisel

Model 12200-23E



No.	Part Name	Q'ty	No.	Part Name	Q'ty
1	Needle guide ass'y	1 set	13	Throttle valve	1
2	Lock ring	1	14	O ring (d8.8 x W1.9)	1
3	Nut (5/16)	1	15	Valve cap	1
4	Cap Head Screw	1	16	Piston	1
4-1	Washer	1	17	Rear washer	1
5	Needle set dia 3 x 180 mm	23	18	Rear plug	1
6	Needle supporter dia 3 mm	1	19	Throttle lever	1
7	Throttle anvil	1	20	Spring pin	1
8	Cylinder	1	21	Air inlet	1
9	Cylinder lock pin	1	22	Throttle spring	1
10	Front washer	1	23	O ring	1
12	Housing Sub Ass'y	1 set	24	Hex. Wrench (6 mm)	1

Model 12200-28E



No.	Part Name	Q'ty	No.	Part Name	Q'ty
1	Round needle guide ass'y	1 set	12	Rear bolt ass'y	1 set
2	Hexagon socket head bolt 8 x 25	1	13	Rear washer	1
3	Stop ring	1	14	Cylinder lock pin	1
4	Needle supporter diam 3 mm	1	15	Valve cap	1
5	Needle diam 3 x 180 mm	28	16	Valve packing	1
6	Throttle anvil	1	17	Throttle valve ass'y	1 set
7	Piston	1	18	Housing sub ass'y	1 set
8	Safety band	1	19	Throttle lever	1
9	Cylinder	1	20	Spring pin 3 x 28 mm	1
10	O ring W-4	2	21	Air inlet	1
11	Front washer	1	22	Hex wrench (6 mm)	1

Pneumatic Universal Chisels & Chippers

Powerful hammers for general chipping and caulking weld line, paint and rust removing in limited space. Compact chippers in light weight pistol handle or straight handle, supplied with flat chisel.

850-0 850-00 850-L

Unit Per Set

CODE	59 24 21	59 24 22	59 24 23
Model	850-0	850-00	850-L
Handle	Pistol	Pistol	Straight
Blow per Min.	2,000	2,000	2,100
Piston Stroke	30 mm	30 mm	89 mm
Piston Dimension	24.5 mm dia x 69.5 mm	24.5 mm dia x 69.5 mm	19 mm dia x 60 mm
Hose Connection	1/2" gas	1/2" gas	1/2" gas
Air Hose Diam	13 mm	13 mm	13 mm
Air Pressure	6 bar	6 bar	6 bar
Air Consumption	300 ltr/min	300 ltr/min	200 ltr/min
Overall Length	450 mm	400 mm	350 mm
Weight	2.5 kgs	2.5 kgs	2.0 kgs

Name of Mfr.: I.CO. s.r.l.

Interchangeable Tools

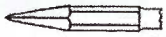
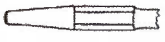
for Pneumatic Universal Chisel & Chipper

Unit Per Pc.

CODE	Drawing	ICO No.	Use
59 24 26		850-26	Normal chisel 50mm: suitable to eliminate foundry & welding burrs, devel edges & light jobs.

(to be continued)

Unit Per Pc.

CODE	Drawing	ICO No.	Use
59 24 27		850-27A	Sheet sharing chisel; suitable for cutting rolled sheets 1.5mm – 2mm thick.
59 24 28		850-27B	Triangle cross cut chisel: suitable to eliminate fusion & welding blowholes & to prepare triangle grooves for welding.
59 24 29		850-27C	Mason's point: suitable for drilling concrete or brick walls.
59 24 30		850-27E	Nail punch: suitable to punch flat head nails against the plate to obtain better tightness.
59 24 31		850-27D	Rammer: suitable to caulk plates.
59 24 32		850-27F	Wails: suitable for rivetting.

Pneumatic Pipe Scalers

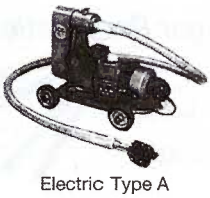
Designed for de-scaling and cleaning outer pipe surfaces – 360 degrees in one operation. Simple to operate and no extra tools or skilled labour are required. The cleaning process is executed when rotating hammers with a cemented carbide unit attached, is hammering and scraping off the paint and corrosion. The centrifugal power is the driveforce to the cleaning process of the carbide units. Made of stainless steel and aluminium. Rustibus pipe series is produced to order.

Unit Per Set

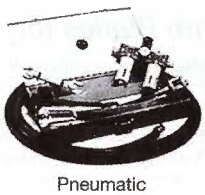
CODE	59 06 31	59 06 32	59 06 33
Model	PS-S3000	PS-M3000	PS-L3000
Working Dia	55 – 180 mm outer pipe size	150 – 250 mm outer pipe size	240 – 330 mm outer pipe size
Air Consumption	648 ltr / min.	648 ltr / min.	648 ltr / min.
Length x Width	450 x 200 mm	560 x 330 mm	560 x 380 mm
Weight	11 kgs	17 kgs	20 kgs
Name of Mfr.	Dalseide Shipping Services		

Pipe Cleaning Equipment

Equipment designed for proper maintenance and internal cleaning of pipes of boilers, exchangers, refrigerators, condensers, as well as pipes from chemical and food plants, and many other uses. Available with motors in several tensions, in versions with or without speed variator. Suitable to clean pipes from 10 to 50 mm diameter.



Electric Type A

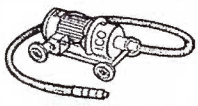


Pneumatic

Unit Per Set

CODE	59 23 31	59 23 32	59 23 35
Model	1660-00-2F(A)	1660-00-2F(A)	4000
Power Source	AC 110V	AC 220V	Pneumatic
With Variable Speed	300 – 2,800 rpm		
Internal Diameter of Pipes to be cleaned	10 – 50 mm		

Name of Mfr.: I. CO. s.r.l.



Electric Type B

Equipment designed for proper maintenance and internal cleaning of pipes of boilers, exchangers, refrigerators, condensers, pipes of chemical and food plants, and various other uses.

Equipment available in ten versions suitable to clean pipes from 50 to 160 mm diameter, and complete with special tools for specific applications.

Unit Per Set

CODE	59 23 33	59 23 34
Model	1660-00-2F(B)	1660-00-2F(B)
Voltage	AC 110V	AC 220 V
Single Speed	Either 1,400 or 2,800 rpm	
Internal Diameter of Pipes to be cleaned	50 – 160 mm	

Name of Mfr.: I. CO. s.r.l.

Flexible Shaft for ICO Pipe Cleaning Equipment Model: 200-FR-00

59 23 36	Flexible shaft, 200-FR-00, for ICO pipe cleaning equipment	Pc.

Replacement Heads

The Types of tool to be used is chosen and selected according to :
- Inner diameter of pipe to be cleaned
- Structure of pipe – straight or with elbows
- Type and nature of scaling

Unit Per Pc.

59 23 41	**59 23 42**	**59 23 43**
Spindle Type Cutter (ICO #21)	Conical Cutter (ICO #22)	Expanding Blade Cleaner (ICO #23)
59 23 44	**59 23 45**	**59 23 46**
Eccentric Cutter (ICO #24)	Expanding Brush Cleaner (ICO #25)	Single Spiral Cylindric Brush (ICO #26)
59 23 47	**59 23 48**	**59 23 49**
Expanding Cutter Head (ICO #27)	Oscillating Cutter Head (ICO #28)	Twin Spiral Cylindric Brush (ICO #29)

59 23 50	**59 23 51**	**59 23 52**	**59 23 53**
Wheel Cutter Scaler (ICO #30)	Twin Blade Tungsten Carbide Cutter (ICO #31)	Three Blade Tungsten Carbide Cutter (ICO #32)	Four Blade Tungsten Carbide Cutter (ICO #33)

Name of Mfr.: I. CO. s.r.l.

Rod Type Pneumatic Scaling Equipment

For cleaning the clogged condenser pipes. The rods are perforated to allow the passage of water, air or chemicals in order to facilitate cooling of the equipment and elimination of residue. Normally Tungsten Carbide cutters with holes for liquid passage are fitted on the equipment.

Unit Per Set

CODE	59 23 61	59 23 62
Model	3800	12100
Scaling Range Indise Diam.	8- 25 mm	26 – 45 mm
Power	1 HP	1.2 HP
Road Diam.(Length mt l)	6 – 16 mm	20 -25 mm
Max. Scaling Length	5 – 10 mtr	10 -12 mtr
Weight	6 kgs	8 kgs

Name of Mfr.: I. CO. s.r.l.

4. Pneumatic Saws

Pneumatic Hacksaws

Light duty air operated hand hacksaw. Maximum cutting capacity is up to 3 mm thickness of steel plate. Special hacksaw blade is to be used.

Unit Per Set

CODE	59 05 71
Model	SSW-110
Stroke Speed (No Load)	7,000 min^{-1}
Stroke Length	11 mm
Cutting Capacity	Max. plate thickness 3 mm (for mild steel SS400)
Rated Air Pressure	0.6 MPa (6 kgf/cm^2)
Air Consumption (No load)	0.29 m^3/min
Weight	0.62 kgs
Standard Accessories	- 2 pcs Hacksaw blade 32 teeth - 1pc 3 mm Hex Socket Screw Key - 1pc Bushing R 1/4 x NPT 1/4

Name of Mfr.: Nitto Kohki Co.,Ltd.

Spare Blades for Pneumatic Hacksaw

Sold by 10 pieces per package.

Unit Per Pkt

CODE	Tooth/Inch	Pcs/Pkt	CODE	Tooth/Inch	Pcs/Pkt
59 05 73	9		**59 05 76**	18	
74	12	10's	**77**	24	10's
75	14		**78**	32	

Pneumatic Saws

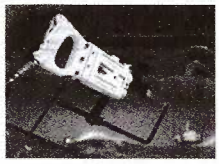
Fast cutting, reliable, low weight, noise and vibration exposure. Use under 6 C.f.m. of air to operate. All of them are ATEX certified for use in dangerous environments. Ideal for cutting all types of Metal, up to 300 mm dia Steel Pipe, Conduit, Rusty Bolts etc and GRP up to 50 mm thick.

CL and PL Saws available with inside trigger.

CL 50 or CL 75

PL 905

JP 901



JSZ

Unit Per Set

CODE	59 05 79	59 05 80
Model	CL50	CL75
Blade Width mm	12	19
Blade Type	Bi-Metal hand hacksaw or Cengar MC	Cengar Blue MB 150 to 300mm long
Speed Stroke Per Minute	1,200	
Stroke mm	45	
Air Consumption $M^3/min.$	0.168	
Air Pressure Bar	5 - 6	
L x H x W mm	400 x 135 x 40.6	
Weight Kgs	2.5	
Application	All metals up to 150 mm dia. Steel Pipe. Use freehand or Clamp mounted	
Name of Mfr.	Cengar Ltd.	

Unit Per Set

CODE	59 05 88	59 05 89	59 05 90
Model	PL 905	JP 901	JSZ
Blade Width mm	12	12	25
Blade Type	Bi-Metal Cengar MC, MNY and MYT or Hand Hacksaw		Cengar MJ Bi-Metal
Speed Stroke Per Minute	2,000	10,000	400/600
Stroke mm	22	9	57
Air Consumption $M^3/min.$	0.116	0.116	0.168
Air Pressure Bar	5-6		
L x H x W mm	300 x 135 x 40.6	270 x 70 x 40	448 x 141 x 54
Weight Kgs	2.4	1.6	5.5
Application	All metals and GRP up to 50 mm thick. Use freehand	Sheet Steel to 3 mm and GRP to 6 mm thick. Use freehand	Steel sections and pipe up to 300 mm dia. Use Clamp Mounted
Name of Mfr.	Cengar Ltd.		

Spare Blades for Cengar Pneumatic Saw

Made of special quality European steel which allows them to be bent during use without shattering. Long life, smooth cutting and safe.

A wide range of sizes and tpi's to suit every application.

Blades

Unit Per Pc.

CODE	Type	Length mm	T.P.I.	Ref. No.	For Model
12 mm (1/2") Wide Bi-Metal					
59 06 14	Hand	305	18	HB300/18	CL50, PL905, JP901
15			24	HB300/24	
59 06 16	Machine	220	18	MC220/18	
17		260	24	MC260/24	
59 06 18	Notched Yellow	152	18	MYN150/18	PL905, JP901
19	Tapered Yellow			MYT150/18	
19 mm (3/4") Wide Blue Bi-Metal					
59 06 92	Machine	152	10/14	MB150	CL75
93			18		
94			24		
59 06 95		203	10/14	MB200	
96			18		
97			24		
59 06 98		254	10/14	MB250	
99			18		
59 07 00			24		
59 07 05		305	8	MB300	
06			10/14		
07			14		
08			18		
25 mm (1") Bi-Metal					
59 07 15	Machine	305	6	MJ300	JSZ
16			8		
17			10/14		
18			14		
59 07 25		457	6	MJ450	
26			8		
27			10/14		
28			14		

Pneumatic Saws

Equipped with a damper to minimize vibration,stroke regulator and blade cooling device, and can cut in any direction.

FRF-4-2

FRS-45

Unit Per Set

CODE	59 05 85	59 05 86
Model	FRF-4-2	FRS-45
Stroke/Min.	1,600	1,200
Blade Stroke	12 mm	45 mm
Air Consumption Nm^3/min.	0.28	0.40
Air Inlet Thread	PT 1/4	
Air Hose Size	6.3 mm	9.5 mm
Overall Length	233 mm	419 mm
Mass Weight	0.8 kgs	2.9 kgs

Name of Mfr. : Fuji Air Tools Co., Ltd.

Explosion-Proof Air Saws

A unique and most ideal all-purpose pneumatic hacksaw. Its reciprocating blade is designed to cut any sawable material of any shape.

ITI-45

Its automatic lubricating system will not produce either heat or sparks on the blade and material to be cut.

This safety saw can be used even in places where flammables are prohibited such as tankers, chemical plants, and petroleum refineries. This pneumatic saw is rust-proof and water-proof. Thus it can also be used for under water work.

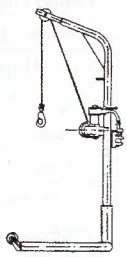
Unit Per Set

CODE	59 05 87
Model	ITI-45
Stroke/Min.	0 - 1,200
Blade Stroke	45 mm
Air Consumption	0.17 m^3/min.
Dimensions L x W x H	415 x 40 x 135 mm
Weight	2.65 kgs
Blade	Standard hacksaw blade, Broken hacksaw blade, Band saw blade, etc.
Standard Accessories	* 1 pc Metal case * 1 can Air saw oil * 1 pr Air coupler * 1 pc Blade

5. Pneumatic Winches

Pneumatic Driven Winches

Pneumatic driven mucking winch specially designed for tank cleaning purposes. Pipe frame pole and suspension available with or without wheels. For further details, please ask your local manufacturers.



Unit Per Set

CODE	Lifting Capacity Kgs	Lifting Speed (Mtr/Min)	Wire Rope Diam. mm	Wire Rope Length mtr	Air Hose Diam. mm	Weight kgs
59 06 01	50	35	3	33	15	47
02	75	35	3	33	15	50
03	100	30	4	33	15	70
04	150	25	6	33	19	75
05	200	30	5	40	12	75
06	250	20	6	33	25	120
07	300	30	5	40	12	80

Electric Driven Winches

Electric driven winch specially designed for lifting goods from ship tank, ship bottom. Frame equipped with winding wheel for easy removal. Available from 100 - 400 kgs capacity, 110–220 Voltage.

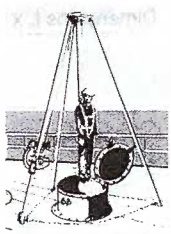
Unit Per Set

CODE	Lifting Capacity Kgs	Lifting Speed (Mtr/Min)	Wire Rope		Voltage	Weight kgs
			Diam. mm	Length mtr		
59 06 08 10	100	30	5	42	110V 220V	66
59 06 13 24	150	26	5	42	110V 220V	68
59 06 30 36	200	24	5	40	110V 220V	70
59 06 38 39	250	22	5	35	110V 220V	80
59 06 40 50	300	20	6	30	110V 220V	80
59 06 58 59	400	18	6	30	110V 220V	85

Pneumatic Casualty Winches

Built in galvanized steel. Frame equipped with winding wheel and handles to allow quick and easy removal. Tested by the most important classification international registers.

Areas of use : Tankers and Freighters/For hoisting injured men and various materials from tanks, holds, etc.



Unit Per Set

CODE	59 06 09
Model	1500-MW7
Lifting Capacity	250 kgs
Lift from Deck Level	15 – 20 mtr
Steel Rope Breaking Point	1,500 kgs
Diam. of Sparkless Steel Rope	5 mm
Power	1 HP
Speed	20 mtr/min.
Air Pressure	6 – 7 atm.
Air Consumption	1.2 cbm/min
Air Inlet	3/4" × 19mm diam.
Overall Dimensions	500 × 500 × 4,000 mm
Weight	60 kgs

Name of Mfr.: I.CO. s.r.l.

6. Neoprene Rubber Buckets

Neoprene Rubber Buckets

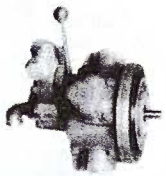
Specially developed spark proof buckets for use when cleaning tanks with chemical or petroleum cargo. Made of hard neoprene. When ordering, please specify the liter capacity required referring to the list below.

Unit Per Pc.

CODE	Capacity ltr	Dimension mm	
		Upper Diam	Height
59 06 11	10	260	335
12	20	360	350

7. Air Motors

Air Motors



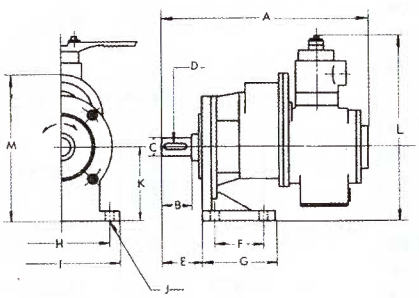
This air motor is free from explosion because it is equipped with a non-spark mechanism. It has a wide range of applications where an electric motor can not be used because of severe working conditions such as high temperature, high humidity, or problems with sparking.

Required air pressure for this motor is 0.59 MPa (6 kgf/cm²).

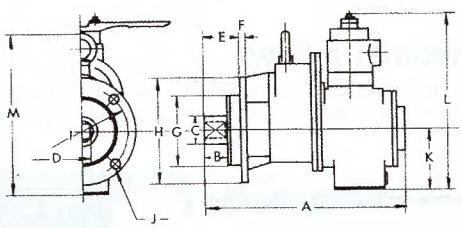
How to order : 59 - 06 - 20

Air motor, with the following specifications:

1) Mounting system	Base type (Horizontal) Flange type (Vertical)
2) Shaft connecting system	Key type Socket type
3) Operation system	Manual operation Remote operation
4) Load torque	kg-m
5) Free speed	R.P.M.
6) Maximum power	P.S.
7) Application	For opening and closing hatches. For lifting and lowering life boats or ladders.



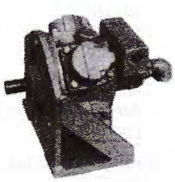
Mounting System : Base Type
Shaft Connecting System : Key Type



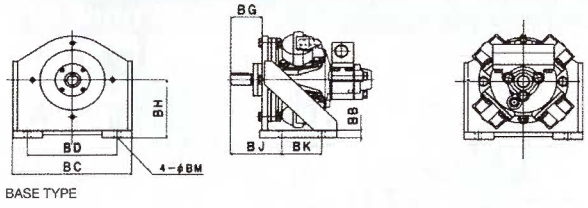
Mounting System : Flange Type
Shaft Connecting System : Socket Type

Air Motors

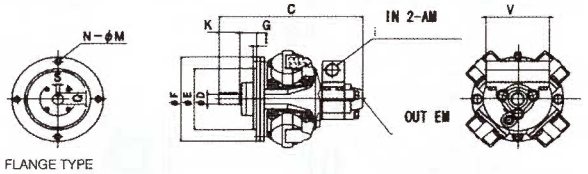
PADIA PISTON MOTOR (DM)



This is the most popular Radial Piston type air motor. The quality of this motor is high torque and low speed. So it may use with compact reducer and in low noise area. Generally, used for air hoists and air winches. The method of air motor operation is direct pipe connecting. The way of motor mounting are base mount or flange mount. And the optional accessories can be available as air brake, reduction gear, pneumatic equipment etc.



BASE TYPE



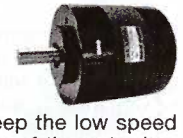
FLANGE TYPE

Unit Per Pc.

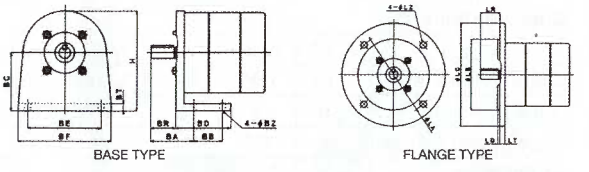
CODE	Output kW	Model	CODE	Output kW	Model
Base Mount					
59 09 31	0.86	DM1	**59 09 34**	7.15	DM220
32	1.73	DM3	**35**	11.99	DM36
33	3.90	DM9	**36**	17.62	DM45
Flange Mount					
59 09 37	0.86	DM1	**59 09 40**	7.15	DM220
38	1.73	DM3	**41**	11.99	DM36
39	3.90	DM9	**42**	17.62	DM45

Name of Mfr. : San-ei Seiki Seisakusho Co., Ltd.

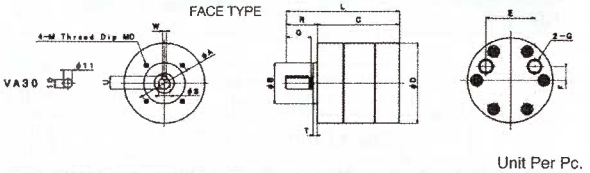
VANE MOTOR (VA) – One Way Rotation



A compact and light-weight motors by the high quality machining and finishing. It is the most popular model and it is used to various fields widely. The motor speed is middle and high range. The unique system makes to keep the low speed torque and high starting torque. In case of the extra low speed or the extra high torque, the optional reducer can be available. The way of motor mounting are base mount, flange mount or face mount, and it can be applied to various site requirement.



BASE TYPE FLANGE TYPE



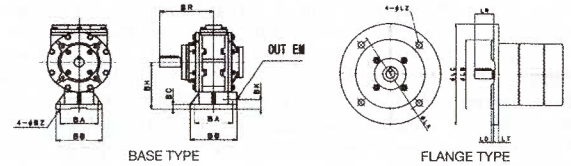
Unit Per Pc.

CODE	Output kW	Model	CODE	Output kW	Model
Base Mount					
59 09 51	0.14	VA15	**59 09 53**	0.45	VA50
52	0.27	VA30	**54**	0.90	VA100
Flange Mount					
59 09 55	0.14	VA15	**59 09 57**	0.45	VA50
56	0.27	VA30	**58**	0.90	VA100
Face Mount					
59 09 59	0.14	VA15	**59 09 61**	0.45	VA50
60	0.27	VA30	**62**	0.90	VA100

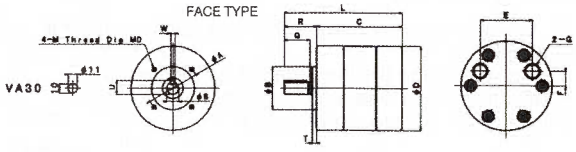
Name of Mfr. : San-ei Seiki Seisakusho Co., Ltd.

VANE MOTOR (VF) – Two Way Rotation

A compact and light-weight motors by the high quality machining and finishing. The motor speed is middle and high range, which keeps the low speed torque and high starting torque. In case of the extra low speed or the extra high torque, the optional reducer can be available. The way of motor mounting are base mount, flange mount or face mount, and it can be applied to various site requirement.



BASE TYPE FLANGE TYPE



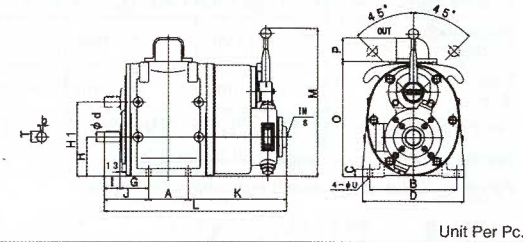
Unit Per Pc.

CODE	Output kW	Model	CODE	Output kW	Model
Base Mount					
59 09 65	0.38	VF05	**59 09 68**	2.25	VA30
66	0.75	VF10	**69**	3.76	VA50
67	1.50	VF20	**70**	5.71	VA70
Flange Mount					
59 09 71	0.38	VF05	**59 09 74**	2.25	VA30
72	0.75	VF10	**75**	3.76	VA50
73	1.50	VF20	**76**	5.71	VA70
Face Mount					
59 09 77	0.38	VF05	**59 09 80**	2.25	VA30
78	0.75	VF10	**81**	3.76	VA50
79	1.50	VF20	**82**	5.71	VA70

Name of Mfr. : San-ei Seiki Seisakusho Co., Ltd.

GEAR TURBINE MOTOR (AGM)

The construction of this motor is the same as gear pump. Because of no sliding parts inside, it rotates without friction heat-up. This motor is equipped on the speed governor, and the rotating speed is always fixed against the alternation of the driving load. The way of motor control is handle type, and remote type is available by optional request.



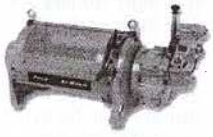
Unit Per Pc.

CODE	Output kW	Model	CODE	Output kW	Model
Handle Type					
59 09 85	5.65	AGM6	**59 09 88**	22.46	AGM23
86	8.95	AGM10	**89**	37.70	AGM40
87	14.14	AGM15			

Name of Mfr. : San-ei Seiki Seisakusho Co., Ltd.

8. Air Winches

Air Winches



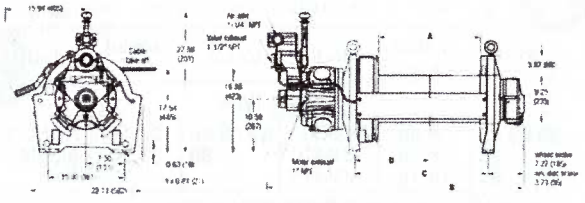
Simple, rugged, reliable source of enormous lifting, lowering and tensioning with variable speed control for precise load handling for their weight. Air winches are well-suited for applications in hot, cold, dusty, dirty, explosive and wet conditions. They pose no electric shock hazard, require no special enclosures, and there are no high pressure hydraulic lines to leak. Air winches are easy to service, maintain, and repair. The most common models are described below for your reference. Please ask for further information and brochures of various manufacturers and models available from local suppliers when required. Wire rope is to be ordered separately.

Guidance to choose the correct utility winch for your applications ;
1. How much is to be lifted, pulled, or tensioned?
2. How fast is the load to be moved (if at all)?
3. How much wire rope is needed?

Unit Per Set

CODE		59 06 21	59 06 22	59 06 23
Model		FA2B	FA2.5A	FA5A
Capacity lbs (kgs)				
Lift Rating per ANSI / ASME B30.16 at 5:1	First	5,000 (2.273)	5,000 (2.273)	11,400 (5,182)
	Mid	4,000 (1,818)	5,000 (2.273)	10,000 (4,545)
	Top	3,200 (1,455)	4,100 (1,864)	8,000 (3,636)
Pull Rating ANSI / ASME B30.7 at 3.5:1	First	5,100 (2,138)	7,100 (3,227)	13,100 (5,955)
	Mid	4,000 (1,818)	6,400 (2,909)	10,000 (4,545)
	Top	3,200 (1,455)	5,400 (2,455)	8,000 (3,636)
Speed fpm (mpm)				
Lift Rating per ANSI / ASME B30.16 at 5:1	First	79 (24)	119 (36)	40 (12)
	Mid	96 (29)	114 (35)	50 (15)
	Top	122 (37)	141 (43)	62 (19)
Pull Rating ANSI / ASME B30.7 at 3.5:1	First	76 (23)	67 (20)	26 (8)
	Mid	96 (29)	42 (13)	50 (15)
	Top	122 (37)	45 (14)	62 (19)
Standard Drum Length*		20"	20"	27"
Drum Root Diameter		9.25" (235 mm)	9.25" (235 mm)	12.75" (324 mm)
Stall lbs (kgs)		6,800 (3,084)	10,400 (4,727)	17,000 (7,727)
Average Air Consumption cfm (m^3/min)		350 (10)	700 (20)	700 (20)
Motor HP		16	25	25
Air Inlet - NPT Size		1-1/4" (32 mm)	1-1/4" (32 mm)	1-1/4" (32 mm)
Rope Anchor Diameter		1/2" (13 mm)	5/8" (16 mm)	3/4" (19 mm)
Recommended Rope Size		1/2" (13 mm)	5/8" (16 mm)	3/4" (19 mm)
Weight lbs (kgs)		738 (335)	818 (372)	1,251 (569)
Name of Mfr.		Ingersoll Rand		

Remark : *Other drum length is available on request.



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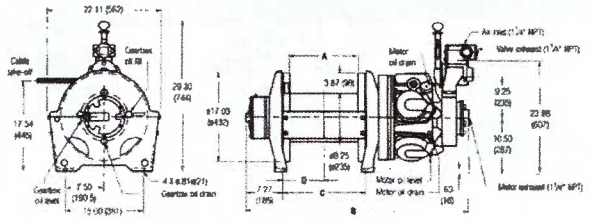

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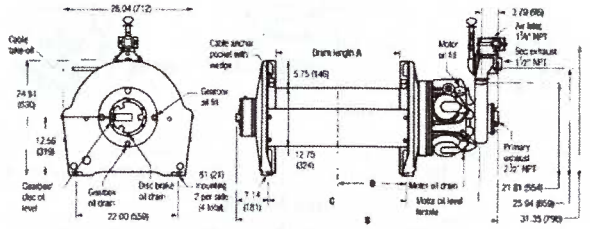
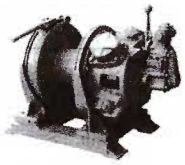


FA5A

Air Winches



This is the multi-purpose air winch and it is attached standard radial piston type air motor, and control valve. The handling of this winch can be easily and safety. DNV-GL's type approved.

- Easy operation [control Lever only] and safe mechanism [Brake] are designed.
- Compact light weight can be moved quickly from one location to another.
- Dusty environment is acceptable for use.
- No sparks are generated.
- No damage with overheat occurs even for overload.
- Continuous operation at full capacity is available.
- Drum diameter is large enough to prolong life of rope.

Guidance to choose the correct utility winch for your applications;
1. How much is to be lifted, pulled, or tensioned?
2. How fast is the load to be moved (if at all)?
3. How much wire rope is needed?

Specifications

Model	W-05	W-10	W-20	W-30	W-50
Motor Output (kW)	1.73	7.15	7.15	12.00	12.00
Rope Pull (Ton)	0.5	1	2	3	5
Rope Speed (m/min)	19	37	19	19	11
Air Consumption (Nm^3/min)	2.0	5.4	5.4	9.0	9.0

Unit Per Set

CODE	Model	Drum Capacity (dia × m)		Weight (kgs)	
		Short Drum	Long Drum	Short Drum	Long Drum
Manual Brake					
59 13 71	W-05	8 × 45	8 × 90	55	60
72	W-10	10.0 × 175	10.0 × 350	257	276
		12.5 × 115	12.5 × 230		
73	W-20	12.5 × 115	12.5 × 230	266	287
74	W-30	16 × 160	16 × 320	470	513
75	W-50	22.4 × 115	22.4 × 230	-	850
Automatic Brake					
59 13 76	W-05	8 × 45	8 × 90	59	64
77	W-10	10.0 × 175	10.0 × 350	267	288
		12.5 × 115	12.5 × 230		
78	W-20	12.5 × 115	12.5 × 230	276	297
79	W-30	16 × 160	16 × 320	513	527
80	W-50	22.4 × 115	22.4 × 230	780	873

Name of Mfr.: San-ei Seiki Seisakusho Co.

9. Sand Blasters

Portable Sand Blasters

Abrasive Recycle Type

Lightweight, portable abrasive blasting tool with an integral abrasive recovery system. During blasting, the sand is continuously recycled, while dust and other debris is collected in a slip-on dust filter.

This item is effective for conserving the amount of abrasive necessary for large jobs.

Specifications

Model	Required Air Pressure kgf/cm²	Air Hose Size	Abrasive Capacity kgs	Weight kgs
Educt-0-Matic	6.3 - 7	19 mm	0.5 - 1.9	3.2

59 06 37	Portable sand blaster, abrasive recycle type, "Educt-0-Matic"	Set

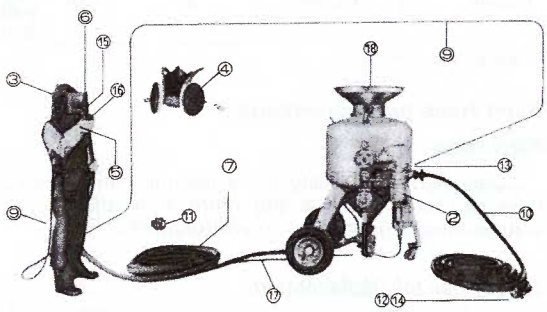
Name of Mfr.: Clemco Industries Corp.

Pneumatic Sand Blasters

Removes rust, scale, corrosion and paint, etc.

For use on metal, plastic, concrete, brick and glass. Has a compressed air sandjet with a compact and large volume tank which is suitable for continuous operation.

Cleans any hard surface quickly and leaves it in an ideal condition for repainting without further preparation.



Specifications

Model		AC(R)-1P	AC(R)-2P	AC(R)-3P
Tank Capacity	Net (Ltr)	88	134	275
	Sand (kgs)	90	150	300
	Grits (kgs)	240	400	800
Diam of Tank (mm)		500	600	750
Height of Tank (mm)		1,181	1,328	1,525
Weight of Tank (kgs)		130 (145)	160 (175)	210 (225)
Air Pressure		6 kgf/cm²	6 kgf/cm²	6 kgf/cm²
Diam of Standard Nozzle		6 mm	6 mm	6 mm
Blasting Area (m²/Hr)		6	6	6
Silica Amount for Blasting Blasting 1 m²		Approx. 37.3 kgs		

Name of Mfr. : Atsuji Tekko

Standard Accessories

No.	Item	Q 'ty	No.	Item	Q' ty
2	Big Filter	1 Pc	11	Blast Hose Joint (25 mm)	1 Pc
3	Hood	1 Pc			
4	Respirator	1 Pc	12	Air Hose Joint (32 mm)	2 Pc
5	Gloves	1 Pr	13	Hood Hose Joint (9 mm)	1 Pc
6	Nozzle	1 Pc	14	Hose Clamp (32 mm)	2 Pc
7	Blast Hose (25 mm)	20 M	15	Holder Set (25 mm)	1 Pc
9	Hose for Hood (9 mm)	25 M	(16)	Remote Control Lever	1 Pc
			(17)	Remote Control Hose	1 Pc
10	Air Hose (32 mm)	20 M	18	Wire Net	1 Pc

Note: No. 16 & 17 will be furnished in case of Model ACR-P series, additionally.

Specifications

Model	SCW 1640	SCWB 1648	SCWB 2452
Sand Capacity	200 lbs	300 lbs	600 lbs
Height	40"	48"	52"
Diam of Pressure Vessel	16"	16"	24"
Piping Size	1"	1-1/4"	1-1/4"

Name of Mfr. : Clemco Industries Corp.

How to order : CODE

Sand blaster, pneumatic, TYPE, MODEL

Unit Per Set

CODE	Model	Type	Name of Mfr.
59 06 41	AC - 1P	Portable	Atsuji-Tekko
42	AC - 2P		
43	AC - 3P		
59 06 44	ACR - 1P	Portable and Remote Control	
45	ACR - 2P		
46	ACR - 3P		
59 06 47	SCW 1640		Clemco Industries Corp.
48	SCWB 1648		
49	SCWB 2452		

Pneumatic Sandblasters ICO

Suitable for removal of rust, dirt, corrosion, old paint, etc. from metal, plastic, concrete, stone, brick and glass surfaces. Ideal for efficient and continuous work – cleaning any hard surface quickly and preparing it perfectly for reprinting without further preparation. Available in a wide variety models.

25 ltr Sandblaster

60 ltr Sandblaster

Versions listed below are standard, with usual accessories. Air compressors are to be ordered separately.

Unit Per Set

CODE	**59 08 94**	**59 08 95**	**59 08 96**
Model	300-00	300-60	300-120
Capacity ltr	25	60	120
Rated Pressure bar	6	8	
Overall D×H mm	300 × 850	450 × 980	510 × 1,220
Weight kgs	46	72	100

Name of Mfr.: I.CO. s.r.l.

Unit Per Set

CODE	**59 08 97**	**59 08 98**	**59 08 99**
Model	300-200	300-220	300-280
Capacity ltr	200	220	280
Rated Pressure bar	8	12	
Overall D×H mm	600 × 1,380	600 × 1,500	640 × 1,600
Weight kgs	130	180	215

Name of Mfr.: I.CO. s.r.l.

Vapor Abrasive Blast Equipment

EcoQuip 2

Used for coating repair, coating removal, steel surface preparation and anti-fouling removal, and designed to accept any media heavier than water and has a blast rating of up to 12 bar (175 PSI).

Vapor Abrasive blasting is similar to dry blasting, except that the blast media is moistened prior to impacting the surface and creates up to 92% less dust than traditional dry blasting. Because dust is minimized, less containment may be required and media clean-up time can be reduced. The EcoQuip2 blasters use less water than slurry or other water-based blasting technologies, so no pools of water are left behind, and less need to worry about toxic runoff. The end result is a cleaner, more effectively contained process. The EcoQuip2 blasting units are designed for years of safe and solid onboard maintenance.

Determining the pressure setting for your application

1.8 - 3.8 Bar (25-55 psi)
Cleaning Soft Metals, Wood, Aluminium, Efflorescence Removal, Graffiti Removal, Parts Cleaning

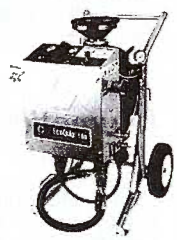
3.9 - 6.2 Bar (56 - 90 psi)
Line Stripe Removal, Pitted Paint Removal, Rust Removal

6.2 - 8.3 Bar (91 - 120 psi)
Steel Surface Prep and Coating Removal

8.3 - 12 Bar (121-175 psi)
White Metal Blast to Near White Metal Blast, Removal of Layered Coatings and Polyurea Removal

EcoQuip 2 EQp

A portable, powerful machine with 55 ltr water capacity, weight is only 99.8 kgs at empty. It can blast for up to 90 minutes between refills, works well with coarse, fine or non-destructive media. Low water usage, less mess - Only uses 1/2 to 1 qt./min. of water. Fast removal rates compared to other cleaning methods - Blast pressures up 150 psi (10 bar).



Unit Per Set

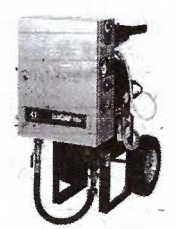
CODE	Description	Item No.
59 08 16	EQp 1/2" x 15 m (50 ft) blast hose, #4 nozzle	278861
17	EQp 1" x 15 m (50 ft) blast hose, #5 nozzle	278862

Name of Mfr. : Graco

EcoQuip 2 EQm

A compact, fully portable entry-level unit. The built-in hand truck with over-sized wheels makes the EQm easy to move around. Mobile units have a coated enclosure and water inlet regulator for the hose connection.

*Packages include 15 m (50 ft) blast hose with electric or pneumatic blast controls (machine accepts either type of hose), #7 standard nozzle and tool kit.



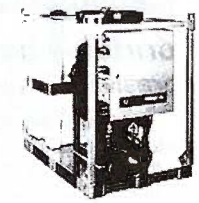
Unit Per Set

CODE	Blast Control	Conformed to	Item No.
59 08 18	Pneumatic	-	262952
19	Electric	-	262953
20	Pneumatic	ATEX	262954

Name of Mfr. : Graco

EcoQuip 2 EQs

A high production, entry-level skid unit. Designed to tackle most typical blasting applications. The EQs is built according to extremely strict standards and can be stacked safely on a platform or a ship deck. Standard models have a coated crash frame and enclosure.



*Packages include 15 m (50 ft) blast hose with electric or pneumatic blast controls (machine accepts either type of hose), #8 HP nozzle and tool kit.

Unit Per Set

CODE	Blast Control	Conformed to	Item No.
59 08 26	Pneumatic	-	262962
27	Electric	-	262963
28	Pneumatic	ATEX	262964

Name of Mfr. : Graco

Specifications

Model	EcoQuip 2 EQp	EcoQuip 2 EQm	EcoQuip 2 EQs	
Pot Coating	A-Coat/Powder			
Pot Capacity	55 ltr (1.9 cubic ft)	100 ltr (3.5 cubic ft)	185 ltr (6.5 cubic ft)	
Water Tank	none	Polyethylene (Accessory only)	Polyethylene	
Enclosure	Coated			
Blast Circuit	25.4 mm (1")		38.1 mm (1.5")	
Frame	Coated	None	Coated	
Max. Compressed Air	10.6 m³/min (375 cfm)	14 m³/min (500 cfm)	25 m³/min (900 cfm)	
Max. Blast Pressure	10.3 bar (150 psi)	12.1 bar (175 psi)		
Nozzle	#4, #5	#7	#8	#8 high performance

Name of Mfr. : Graco

Blast Hose and Accessories

Blast Hose

Designed for flexibility and ergonomics, the Graco blast hose can reduce fatigue and improve job efficiency while withstanding rugged blasting environments.

Blast Hose for Replacement

Unit Per Lgh.

CODE	Description	Item No.	CODE	Description	Item No.
Electric Control			**Pneumatic Control**		
59 08 29	1" x 15 mtr	26A074	**59 08 30**	1/2" ID x 15 mtr	24Z140
			36	1" x 15 mtr	26A075

Blast Hose for Extension

Unit Per Lgh.

CODE	Description	Item No.	CODE	Description	Item No.
Electric Control			**Pneumatic Control**		
59 08 37	1" x 15 mtr	26A076	**59 08 38**	1/2" ID x 15 mtr	24Z141
			39	1" x 15 mtr	26A077

CODE	Description	Item No.	Unit
59 08 40	Blast control switch, pneumatic	17D788	Pc.
41	Blast control switch, electric	17L331	Pc.

10. Tank Cleaning Machines

Tank Cleaning Machines

Equipped with a unique, self start, hydraulic turbine which cleans effectively using the least amount of water. These machines are capable of rotating 360° horizontally and vertically to reach any tank surface.

The movement of the nozzle can be programmed to make a controlled pass suitable to the areas of the tank being cleaned. The gear box is enclosed with the bearings fully lubricated to preserve the long life of the workings. The gears are built into the lower part of the body for easy inspection and replacement.

Tank cleaning machines are available from a variety of manufacturers internationally. Because models, gearbox design, and wash patterns differ, it is advisable to ask your supplier or local dealer for detailed information about each machine and its features. A few of the major manufacturers are listed below as a reference. When ordering, select a representative code for the nozzle size you require and specify the name of the manufacturer from whom you wish to order.

Name of Mfr. : Exeno Yamamizu
Toftejorg

Unit Per Set

CODE	59 06 51	59 06 52	59 06 53
Model	Mu-301	Mu-302	Mu-303
Nozzle Diam	11 mm	12 mm	13 mm
Water Consumption	29 m³/Hr	34 m³/Hr	39 m³/Hr
Jet Length	11.5 mtr	12.5 mtr	14.5 mtr
Washing Cycle	3.7 min./cycle		
Working Pressure	10 kgf/cm²		
Weight	18 kgs		
Name of Mfr.	Exeno-Yamamizu		

Unit Per Set

CODE	59 06 56	59 06 57
Model	TZ-82P	TZ-75
Nozzle Diam	6-10 mm	8-15 mm
Water Consumption	8-23 m³/Hr	18-48 m³/Hr
Jet Length	15-31 mtr	22-36 mtr
Washing Cycle min./Cycle	4-15	3-12
Working Pressure	5 -12 bar	
Weight	6.6 kgs	11.3 kgs
Name of Mfr.	Toftejorg A / S	

Tank Cleaning Hose

The hoses are made of a suitable rubber specially compounded for attaining high durability. There is no elongation or expansion of the outer diameter when pressure is exerted on the inside of the hose. Stainless wires (two spiral wires) are incorporated for discharging any static electricity. They are lightweight and have excellent flexibility.

Hoses are available from a variety of manufacturers internationally. Hoses from a few of the major manufacturers are listed below as a reference. When ordering, select a representative code for the size of the hose required and specify the name of the manufacturer from whom you wish to order.

Hoses for: MU Series : Exeno Yamamizu
TZ Series : Toftejorg

Unit Per Lgh.

CODE	Nom. Dia x Lgh	Out Diam mm	Working Pressure kgf/cm²	Bursting Pressure kgf/cm²	Applicable Temp.	Weight kgs
For Mu Series						
59 06 61	2-1/2 x 10 mtr	70	13	26	140°C	28
62	2-1/2 x 15 mtr					39
63	2-1/2 x 20 mtr					50
64	2-1/2 x 25 mtr					61
For TZ Series						
59 06 65	1-1/2 x 10 mtr	54	18 bar	70 bar	95°C	20
66	1-1/2 x 15 mtr					22.5
67	1-1/2 x 20 mtr					30
68	2 x 20 mtr					50
69	2 x 25 mtr					62.5
70	2 x 30 mtr					75

Tank Cleaning Hose Accessories for MU Series

59 06 71

59 06 72

59 06 73

59 06 76

59 06 74

59 06 75

59 06 77

For MU Series

Unit Per Pc.

CODE	Name	Size			Material	Weight
59 06 71	Coupling	ASA 2-1/2" 7.5 thread			Cast Bronze	3.3 kgs
59 06 72	Y. Piece For Connecting Hose	"			"	4.9 kgs
59 06 73	Double Male Coupling	"			"	1.3 kgs
59 06 74	Coupling Spanner				Cast Alum-Bronze	0.9 kgs
59 06 75	Combined Spanner				"	0.8 kgs
59 06 76	Hose Packing	O.D.	I.D.	t	Neoprene	
		73	51	6		
59 06 77	Y. Piece Packing	78	62	4	"	

Tank Cleaning Hose Saddles

For the protection and easy lifting of tank cleaning hoses.

Unit Per Set

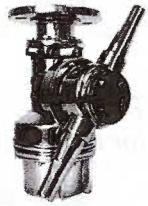
CODE	Type	Material	Weight
For Mu Series			
59 06 81	300 N	Corrosion-proof Aluminium alloy	6.7 kgs
82	400 N		8.3
For TZ Series			
59 06 83	for 1-1/2" hose	Bronze	5.2 kgs
84	for 2" hose		5.9

Tank Washing Machines, Twin Nozzle VP Major & VP Minor, Stainless Steel

The VP Major & VP Minor are pre-programmed twin nozzle tank washing machines available in 316 Stainless Steel.

Both use an orbital progressive intensity wash pattern to meet IMO Annex II pre-wash requirement standard. Automatic 'slip-clutch' to prevent accidental damage in use. Simple to service, with use of hi-performance long life gears, and fully Type Approved by Class Societies worldwide. Ancillary equipment available i.e. rigid hoses, adaptors, hose saddle, lifting tripod and downtubes.

VP Major



Suitable for use on both medium and large crude oil, chemical and product tankers, and can be supplied as a fixed or portable application.

Key Features

* Nozzle sizes range from 12 mm to 18 mm (18 mm Fixed machines only).
* Offered with 'media lubricated' drive.
* Alternative flange (up to 180 mm diameter) and fixings available.

Technical Specification

Wash Pattern: pre-programmable rotary 360°
Operating Pressure: Maximum 12 kg/cm² (190 psi)
Operating Temperature: Maximum 95°C (203°F)
Installation: Portable 2" NST male thread, Fixed Flanged Std DIN 50 NP16
Weight: Portable 19.5 kgs (43 lbs), Fixed Flanged 21 kgs (46 lbs)
Minimum Deck Opening : Φ 245 mm (9.6 inches)

Unit Per Set

CODE	Nozzle Diam.	Supply Pressure kg/cm²								
		8	10	12	8	10	12	8	10	12
		Flow m³/hour			Jet Length mtr			Cycle Time mins.		
59 07 62	2 × 12 mm	32	35	40	19	20.5	21.5	39	36	34
63	2 × 14 mm	42	45	51	20	23	24	43	39	37
64	2 × 16 mm	50	55	61	22	24	25	42	39	37
65	2 × 18 mm	57	64	70	23	25	26	49	46	44

Name of Mfr. : Victor Marine Ltd.

VP Minor

Suitable for use on both small and medium crude oil, chemical and product tankers, and can be supplied as a fixed or portable application.

The VP Minor is also available as a "sealed for life" machine which has been specifically designed to operate with aggressive / abrasive types of drive media. The "sealed for life machines" are also the perfect choice when considering the cleaning of mud / slop tanks: this is due to the nature of the sealed gearbox design.

Key Features

* Nozzle sizes range from 7 mm to 11 mm (portable or flanged);
* Offered with either "sealed for life" (mud machine) or "media lubricated" drive to ensure no cargo contamination;
* Alternative flange (up to 160 mm diameter) and fixings available:
* Sealed unit available for use in corrosive mud tanks;

Technical Specification

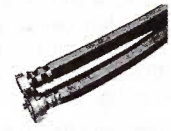
Wash Pattern: Pre-programmable rotary 360°
Operating Pressure: Maximum 12 kg/cm² (190 psi)
Operating Temperature: Maximum 95°C (203°F)
Installation: Portable 1½" BSP male thread, Fixed Flanged Std DIN 40 NP10
Weight: Portable 8.2 kgs (18.1 lbs), Fixed Flanged 10.2. kgs (22.5 lbs)
Minimum Deck Opening : Φ 200 mm (8.0 inches)

Unit Per Set

CODE	Nozzle Diam.	Supply Pressure kg/cm²											
		6	8	10	12	6	8	10	12	6	8	10	12
		Flow m³/hour				Jet Length mtr				Cycle Time mins.			
59 07 66	2 × 7 mm	7.3	8	8.5	9.2	9.1	10.5	11	11.6	27	21	18.5	18
67	2 × 8 mm	10	11.3	12.2	13	9.5	11.3	12	12.5	26	20	18	17
68	2 × 9 mm	10.4	11.6	12.6	13.7	10.6	11.6	12.5	13	27	23	19	16
69	2 × 10 mm	13	14.2	16	17.6	11.6	14.2	14.8	15.5	26	22	20	18
70	2 × 11 mm	15	16.2	17.7	19.3	14	12.2	16	17	24	20	18	17

Name of Mfr. : Victor Marine Ltd.

Tank Cleaning Hose & Accessories for VP Major and VP Minor



Used for delivery of sea water, detergent solutions and for cleaning fuel and oil tanks, road tankers and ships' tanks. Made from superior quality Neoprene with Styrene Butadine Rubber (SBR) liner and cover. Reinforced with multiple rayon braids for long life. Anti-scuff cover, weather and ozone resistant, with anti-friction lining. Earthed with two stainless steel braided wires, spirally wound, embedded in hose wall and connected to couplings. All hoses continuity tested (to under 6 Ohms per/mtr) and certified prior to dispatch.

Tankwash Hose (Black/Yellow with Logo) for VP Major Twin Nozzle Tank Washing Machine

2" (50 mm) nominal bore. Standard lengths are 10, 15, 25, 30, 40 and 50 metres. Fitted with standard 2½" NST (7.5 TPI) BW couplings. Couplings : Bronze swivel couplings. Clamp bands for safety. Fully earthed. Other connections are available upon request including Stainless Steel.

Unit Per Lgh.

CODE	Nom. Dia × Lgh	Working Pressure Bar (psi)	Min. Burst Pressure Bar (psi)	Temp. Range	Weight kgs per mtr
59 07 74	50 mm × 10 mtr	20 bar (290 psi)	60 bar (870 psi)	- 30°C to 85°C	1.96
71	50 mm × 15 mtr				
72	50 mm × 25 mtr				
73	50 mm × 30 mtr				
80	50 mm × 40 mtr				
82	50 mm × 50 mtr				

Name of Mfr.: Victor Marine Ltd.

Tankwash Hose (Black/Yellow with Logo) for VP Minor Twin Nozzle Tank Washing Machine

1½" (38 mm) nominal bore. Standard lengths are 10, 15, 25, 30, 40 and 50 mtrs. Fitted with standard 1½" BSP couplings. Couplings : Bronze swivel couplings. Clamp bands for safety. Fully earthed. Other connections are available upon request including Stainless Steel.

Unit Per Lgh.

CODE	Nom. Dia × Lgh	Working Pressure Bar (psi)	Min. Burst Pressure Bar (psi)	Temp. Range	Weight kgs per mtr
59 07 75	38 mm × 10 mtr	20 bar (290 psi)	60 bar (870 psi)	- 30°C to 85°C	1.51
76	38 mm × 15 mtr				
77	38 mm × 25 mtr				
78	38 mm × 30 mtr				
84	38 mm × 40 mtr				
86	38 mm × 50 mtr				

Name of Mfr.: Victor Marine Ltd.

Hose Saddle

Lightweight LM6 Aluminium alloy comprising of saddle, deck plate, hose guide and positioning clamp. Suitable for 38 mm nominal bore or 50 mm nominal bore (1½" or 2") hoses. Deck base plate for standard 318 mm deck opening or other sizes to special order. Weight 5.5 kgs.

CODE	Items	Remarks	Unit
59 07 91	Hose saddle	For 38 mm bore or 50 mm bore hoses. Weight 5.5 kgs.	Pc.

Name of Mfr.: Victor Marine Ltd.

Tank Cleaning Machines
Junior Jetstream - Bronze

Light weight and easy to handle as a portable unit, this machine has been used to clean road tankers. It can also be used as part of a fixed system on tankers up to 30,000 dwt.

Unit Per Set

CODE	**59 21 01**	**59 21 02**
Nozzle Diameter	6 mm	12.5 mm
Flow m^3/hr	7.8 - 10.2	12.6 - 16.2
Jet Length/mtr	11.6 - 14.5	12.9 - 15.2
Supply Pressure	6-10 kgf/cm^2	
Operating Temp. Range	Up to 100°C	
Inlet Connection	1-1-1/2" BSP male	
Min. Deck Opening	180 mm	
Weight	13.5 kgs	

Name of Mfr.: Dasic Marine Ltd.

Tank Cleaning Machines
Junior Jetstream - Stainless Steel

Light weight but robust construction. Lubrication by the wash media alone removes the possibility of cargo contamination by gearbox lubricants.

Unit Per Set

CODE	**59 21 05**	**59 21 06**
Nozzle Diameter	6 mm	12.5 mm
Flow m^3/hr	7.8 - 10.2	12.6 - 16.2
Jet Length/mtr	11.6 - 14.5	12.9 - 15.2
Supply Pressure	6-10 kgf/cm^2	
Operating Temp. Range	Up to 100°C	
Inlet Connection	1-1-1/2" BSP male	
Min. Deck Opening	190 mm	
Weight	8 kgs	

Name of Mfr.: Dasic Marine Ltd.

Tank Cleaning Machines
Jetstream Mini A - Bronze

An effective and reliable unit for portable or fixed mounted operation in larger tonnage vessels up to 1,000,000 dwt. A full range of nozzle sizes are available.

Unit Per Set

CODE	**59 21 08**	**59 21 09**
Nozzle Diameter	10 mm	20 mm
Flow m^3/hr	28 - 38	75 - 94
Jet Length/mtr	13 - 16	22 - 27
Supply Pressure	6-12 kgf/cm^2	
Operating Temp. Range	Up to 100°C	
Inlet Connection	2" 7-1/2 TPI (ASA B26)	
Min. Deck Opening	280 mm	
Weight	28 kgs	

Name of Mfr.: Dasic Marine Ltd.

Tank Cleaning Hose
for Jetstream Tank Cleaning Machine

Manufactured with a fully woven polyester reinforcement and completely encapsulated with a thermoplastic elastomer (polyurethane), the hose provides high pressure capabilities together with excellent resistance to attack by fuels, chemicals, abrasion, weathering and ozone/u.v..

Two low resistance stainless steel bonding wires are incorporated against the build up of static electricity. Standard hose length will be available up to 30mtr. Please specify length when ordering. Also available in 50mm diameter.

Unit Per Mtr.

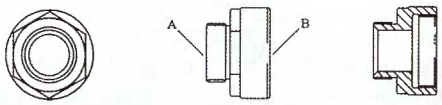
CODE	Dia	Working Pressure	Min. Burst Pressure	Temp. Range	Weight per Mtre
59 21 11	38 mm	20.5 bar (300 psi)	41 bar (600 psi)	- 48°C to 98°C	0.3 kgs

Name of Mfr.: Dasic Marine Ltd.

Ancillary Tankwashing Equipment
for Jetstream Tank Cleaning Machine

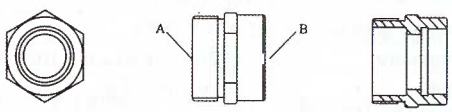
Hot Water Line Adaptors

Made of high quality cast gunmetal and to provide connection between a tankwashing hose and a ship's connection.



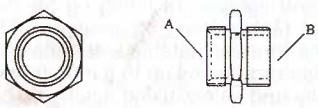
Machine Adaptors

Made of high quality cast gunmetal and to provide connection between a tankwashing machine and tankwashing hose.

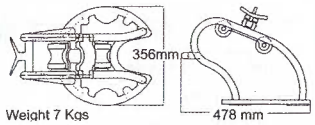


Double Ended Adaptors

Made of high quality cast gunmetal and to provide connection between tankwashing hoses to extend their workable length.

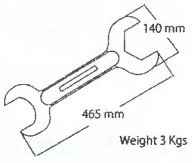


Hose Saddles



Designed to ensure a smooth passage through the deck opening for the supply hose during a tankcleaning operation. The hose will be guided over two sets of rollers and allowing it to gently curve in through the deck opening removing any risk of kinking or abrasion to the hose.

Hose Spanners

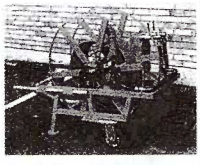


Made of cast gunmetal for ensuring a secure fitting when attaching hoses to tankwashing machines or adaptors.

CODE	Items	Remarks	Unit
59 21 31	Hot water line adaptor	1-1/2" BSP & C Stortz instantaneous connection	Pc.
59 21 33	Machine adaptor	2-1/2" 7-1/2 tpi & 1-1/2" BSP connection	Pc.
59 21 35	Double ended adaptor	Both end 1-1/2" BSP	Pc.
59 21 37	Hose saddle	Flange dia : 356 mm Weight : 7 kgs	Pc.
38	"	Flange dia : 450 mm Weight : 9 kgs	"
59 21 39	Hose spanner	Length 465 mm Weight 3 kgs	Pc.

Name of Mfr.: Dasic Marine Ltd.

Automatic Hose Reels
for Junior Jetstream Tank Cleaning Machine



Water powered hose reel capable of stowing up to 35 mtrs of tankcleaning hose. The tankcleaning machine will be connected to the supply hose which is coiled on the drum and a feed hose connects the hoist to the ships' tankcleaning line.

Unit Per Set

CODE	59 21 41
Model	Hydra Hoist 700
Drive Media	Water Turbine
Operating Pressure	5 - 12 bar (50 - 125 psi)
Inlet Connection	2.5" x 7.5 tpi (2.5" ANF) male
Capacity	35 mtr (115 ft) x 38 mm (1.5 ins) rigid wall tankcleaning hose
Lifting Speed	6 mtr/min. (20 ft/min.) at 10 bar (Average)
Lowering Speed	3 mtr/min. (10 ft/min.) at 10 bar (Average)
Stowage area of unit	0.83 m^2 (9 ft^2)
Dimensions	L1,220 x W680 x H1,109 mm
Weight	140 kgs (308 lbs)

Name of Mfr.: Dasic Marine Ltd.

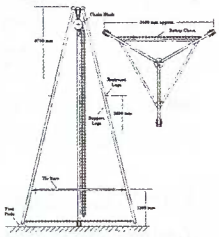
Jet-Lift Tripod
for Junior Jetstream Tank Cleaning Machine

Robust and lightweight lifting rig for the removal and installation of tankwashing equipment. The stable base formed by the three adjustable feet coupled with the unit's height enables drop pipes up to 5 mtrs long to be raised or lowered easily and safely, using a fail-safe chain block and endless chain. Easily handled and erected and because the legs are constructed from tubular aluminium the framework offers a high strength/weight ratio. The feet automatically adjust to accommodate deck cambers, and are fitted with rubber seating pads for firm grip. Important : It is essential to keep all safety chains and retaining pins in position, as directed, at all times.

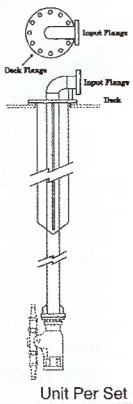
Unit Per Set

CODE	59 21 51
Model	Jet-Lift Tripod
Max. Load	500 kgs
Lifting Head	6.5 mtrs
Weight	70 kgs
Chain & Shackle Working Limit	1.5 tonnes in straight tension

Name of Mfr.: Dasic Marine Ltd.



Free Standing Unit
for Junior Jetstream Tank Cleaning Machine



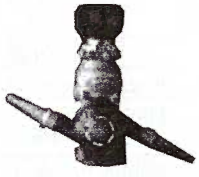
The unit offers a fixed installation facility for crude oil washing machines. Basically a fixed downpipe, stiffened for strength and rigidity, to which a flanged tank washing machine can be mounted at various depths below the deck level. The materials conform to BS 4360 grade 43A steel for the flanges and stiffening webs, and APL 5L tube for the downpipe. The deck flange is to suit a standard deck opening.

Unit Per Set

CODE	Length	Standard Input Flange	Down pipe
59 21 61	1 mtr	165 O/D 4 holes x 18 mm dia. 125 PCD (PN 16-50)	50 (2") N.B. Schedule 40 tube
62	2 mtr		
63	3 mtr		

Name of Mfr.: Dasic Marine Ltd.

Tank Cleaning Machines
Butterworth K / SK / SSK Series Machine



They are used portably for water washing, or fixed-in-place crude oil washing of small and medium size tanks and for cleaning hard-to-reach surfaces in large tanks.

They can operate in any position by the Full-sphere with 360° coverage washing pattern.

K Machines

Features rotating twin nozzles and a wash head revolving in panes 90° apart. Small, low-cost and weighing less than 28 kilograms (62 pounds), the K machine has a cleaning range of 10 meters (33 feet) and fluid capacity up to 32 cubic meters (377 cubic feet) per hour. Wash cycle times range from 50 to 23 minutes for inlet pressures of 3.5 to 12 kilograms per square centimeter (50 to 175 psi).

SK and SSK Machines

The SK and SSK machines both weight 30 kilograms (66 pounds) and are identical except for the SSK's larger nozzle and great capacity. The SSK (only used for fixed-in place installations) has a maximum capacity of 75 cubic meters per hour and a cleaning range of 25 meters (82 feet).

The SK has a maximum capacity of 53 cubic meters per hour and a cleaning range of 21 meters (69 feet). The wash cycle times for both units run from 17 to 32 minutes with inlet pressure of 5.25 to 12 kilograms per square centimeter (75 to 175 psi).

Specification

Model	K	SK	SSK
Cleaning Range	10 meters (33 feet)	21 meters (69 feet)	25 meters (82 feet)
Fluid Capacity	Up to 32 m^3 (377 $feet^3$)	Up to 53 m^3	Up to 32 m^3
Pressure Range	Maximum : 250 psi (17.3 bar) Nominal Range : 85-150 psi (5.9-103 bar)		
Jet-Length Radius	Maximum : 125' (38 meters) @ 250 psi (12 bar)		
Application	Portable		Fixed-in-place
Inlet Pipe	50 mm to 65 mm (2" to 2.5")		75 mm (3")
Inlet Connection Type	2.50" ASA - B - 26 (NST) - Male		
Thread Connection	American national 2" x 7-1/2 TPI male		
Minimum Tank Opening Requirement	9.00" (228.6 mm)		
Material	Bronze Alloy		
Weight	48 lbs (21.77 kgs)	58 lbs (26.31 kgs)	

Unit Per Pc.

CODE	Nozzle Size	Type
59 23 01	9.5 mm (0.375")	K
02	11 mm (0.437")	
03	14 mm (0.562")	
04	22 mm (0.866")	
59 23 05	9.5 mm (0.375")	SK
06	11 mm (0.437")	
07	14 mm (0.562")	
08	22 mm (0.866")	
59 23 09	9.5 mm (0.375")	SSK
10	11 mm (0.437")	
11	14 mm (0.562")	
12	22 mm (0.866")	

Accessories for Tank Cleaning Machine Butterworth K / SK / SSK Series

2" tank Cleaning Hose

Quadrant Deck Plate (Hose Saddle)

Branch Connector

Double Male Coupling

Coupling Spanner

CODE	Description	Unit
59 23 21	Tank cleaning hose 2" x 50 feet	Lgh
22	" 2" x 75 feet	"
23	" 2" x 100 feet	"
59 23 24	Quadrant deck plate (Hose Saddle)	Pc.
59 23 25	Branch connector 2-1/2" (3 male threads)	Pc.
26	" 2-1/2" (2 male & 1 female thread)	"
59 23 27	Double male coupling 2-1/2"	Pc.
28	Coupling spanner	Pc.

(to be continued)

Tank Cleaning Machines
Butterworth LT & LT-FT

An automated portable or fixed-in-place tank cleaning machine provides 360° impact indexed coverage for the cleaning of the inside of tanks of Chemical and Product Tankers. A highly versatile machine and is applicable in most all types of tanks for process, storage, and transportation. Tank capacities range from 500 – 150,000 gallons (2 – 570 m^3) for one machine per tank and larger tanks where multiple machines are installed.

LT machine creates a pattern matrix similar to a ball of twine, and a complete pattern is established when 65 axial revolutions of the body have been completed. During the process of this pattern build out, 4 cycles are established with each cycle increasing the density of the pattern matrix.

Specification

Pressure Range	0 – 300 PSI (21 Bar)
Jet Length Radius	0 – 58' (17.68 mtr)
Inlet Connection Type	1-1/2" NPT (F), 1-1/2" BSP (F)
Minimum Tank Operating Requirement	5.613" (142.56 mm)
Material	316 Stainless steel / CD4-MCU Duplex S/S
Weight	15 lbs (6.8 kgs)

NPT Inlet Type

Unit Per Pc.

CODE	Nozzles	Inlet	Max. Rotational PSIG	Model
	Female Threaded			
59 23 71	2 × 6.0 mm	1-1/2" NPT	150	LT6Z33NOFT
72	2 × 8.0 mm		300	LT8Z21NOFT
73	2 × 10 mm		300	LT10Z11NOFT
74	2 × 10 mm		150	LT10Z21NOFT
75	2 × 12 mm		300	LT12Z11NOFT
	Male Threaded			
59 23 76	2 × 6.0 mm	1-1/2" NPT	150	LT6Z33NMOFT
77	2 × 8.0 mm		300	LT8Z21NMOFT
78	2 × 10 mm		300	LT10Z11NMOFT
79	2 × 10 mm		150	LT10Z21NMOFT
80	2 × 12 mm		300	LT12Z11NMOFT

BSP Inlet Type

Unit Per Pc.

CODE	Nozzles	Inlet	Max. Rotational PSIG	Model
	Female Threaded			
59 23 81	2 × 6.0 mm	1-1/2" BSP	150	LT6Z33BOFT
82	2 × 8.0 mm		300	LT8Z21BOFT
83	2 × 10 mm		300	LT10Z11BOFT
84	2 × 10 mm		150	LT10Z21BOFT
85	2 × 12 mm		300	LT12Z11BOFT
	Male Threaded			
59 23 86	2 × 6.0 mm	1-1/2" BSP	150	LT6Z33BMOFT
87	2 × 8.0 mm		300	LT8Z21BMOFT
88	2 × 10 mm		300	LT10Z11BMOFT
89	2 × 10 mm		150	LT10Z21BMOFT
90	2 × 12 mm		300	LT12Z11BMOFT

Name of Mfr. : Butterworth

11. Vacuum Cleaners

Vacuum Cleaner, Industrial Pneumatic

Compressed air driven type vacuum cleaner. Safe operation even in an explosive gas atmosphere.

A wide range of models are available, and the listed specifications are for your reference. When ordering, ask your supplier for more details about the capacity of the machine or ask for catalogues and any further information.

A-250
(wet and dry)

AX-1
(wet and dry)

AX-2
(wet and dry)

Unit Per Set

CODE	59 07 03	59 07 01	59 07 02
Model	A-250	AX-1	AX-2
Tank Capacity (ltr)	18	50	60
Suction Air Pressure (KPa)	15.0	29.5	
Working Air Pressure (kgf/cm²)	5.0 - 6.0		
Air Hose	1/4" or 3/8"	1/2"	
Reduction	32-32	50-38	
Suction Hose I.D. (mm)	32	38	
Size (W x D x H mm)	315 x 315 x 500	465 x 560 x 890	
Weight (kgs)	7.5	16	22
Working Air Quantity (L/min)	800	1,500	

Remark: A-250 model replaceable your own 18L (300) pail-cans
Name of Mfr. : Sanritsu-Kiki (Japan)

A-15

VHC200

Unit Per Set

CODE	59 07 04	59 07 09
Model	A-15	VHC200
Tank Capacity (ltr)	25	100
Suction Air Pressure (KPa)	39.0	
Working Air Pressure (kgf/cm²)	4.0 - 9.0	6.0 - 9.0
Air Hose	1/2"	
Reduction	50 - 40	70 - 50
Suction Hose I.D. (mm)	40	50
Size (W x D x H mm)	510 x 500 x 950	600 x 600 x 1,590
Weight (kgs)	32	67

Name of Mfr. : Nilfisk Pte Ltd

Vacuum Cleaners, Industrial Electric

Electric driven, powerful, heavy duty vacuum cleaners for the removal of dust, metal particles, powder, or liquid. A wide range of models are available, and the listed specifications are for your reference. When ordering, ask your supplier for more details about the machine or for catalogues from the dealer.

How to order : CODE:

Vacuum cleaner, industrial, electric, CAPACITY ltr, POWER SOURCE VOLTAGE

JE-250-3D (wet and dry)

JX-4530 (wet and dry)

Unit Per Set

CODE	59 07 10	59 07 19
Model	JE-250-3D	
Voltage	100V or 110V	200V
Tank Capacity (ltr)	18	
Motor Output (kW)	1.0	
Suction Pressure (KPa)	21.6	
Inlet (mm)	38	
Reduction	38 - 38	
Suction Hose I.D. (mm)	38	
Size (WxDxH mm)	315 x 315 x 660	
Weight (kgs)	9.2	

Remark: Model JE250-3D replaceable your own 18L (ø300) pail-cans
Name of Mfr.: Sanritsu-Kiki

Unit Per Set

CODE	59 07 11	59 07 12
Model	JX-4530	
Voltage	100V or 110V	200V
Tank Capacity (ltr)	60	
Motor Output (kW)	1.1	
Suction Pressure (KPa)	31.4	
Inlet (mm)	50	
Reduction	50-38	
Suction Hose I.D. (mm)	38	
Size (WxDxH mm)	465 x 560 x 890	
Weight (kgs)	26.0	

Name of Mfr.: Sanritsu-Kiki

cfm S2 L40

cfm S2B L50 FM

cfm S3 L50

Unit Per Set

CODE	59 07 20	59 07 23	59 07 24
Model	cfm S2 L40	cfm S2B L50 FM	cfm S3 L50
Voltage	100 / 110V	100 / 110V	200 / 220V
Tank Capacity (ltr)	40	50	

(to be continued)

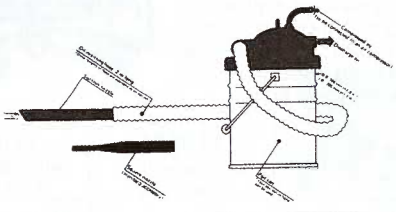
Unit Per Set

CODE	59 07 20	59 07 23	59 07 24
Motor Output (kW)	1.6	2.0	3.0
IP Protection Class	43	43	
Suction Pressure (KPa)	18.6	23	
Inlet (mm)	70	70	
Reduction	70-40	70-40	
Suction Hose I.D. (mm)	40	40	
Size (W×D×H mm)	630 × 825 × 1,230	600 × 800 × 1,270	630 × 815 × 1,300
Weight (kgs)	66	62	71

Name of Mfr. : Nilfisk Pte Ltd

Pneumatic Vacuum Cleaners "BLOVAC CLEANER"

A compact and lightweight industrial vacuum cleaner which works on compressed air. Capable of cleaning off water, oil, and bottom sludge as well as dust and metal chippings. It will even vacuum explosive materials as long as the machine is properly grounded from electrical current. Made of a unique design permitting the use of an ordinary pail can with an outside diameter of 300 mm to collect the dust and waste. Furnished with a pail can, 2 meters of oil resistant hose, and an oil stopper which automatically stops suction when the receiver becomes full.



Unit Per Set

CODE	Type	Hose	Suction nozzle	Air consumption at 5kgf/cm²	Vacuum (in water column) at 5kgf/cm²	Suction capacity at 5kgf/cm²
59 07 21	V-300 (for 3 HP)	ø25 mm x 2 m (oil-resisting)	ø25 mm w 30 cm 2 types available	350 Ltr/ min	2,600 mm/H_2O	1.1 m^3
59 07 22	V-500 (for 5 HP)	ø32 mm x 2 m (oil-resisting)	ø32 mm w 30 cm 2 types available	500 Ltr/ min	2,600 mm/H_2O	1.8 m^3

Name of Mfr.: Blovac Co. Ltd.

Optional hoses of other lengths are also available on request.

Air Polishers

Best choice to shampoo the floor and deck board of hazardous area. This air polisher can be used without any electricity nor battery.

* With safety handle.
* Air filter, regulator and lubricator equipped.
* Exhaust muffler/cleaner equipped.
* Various type of pad & brush available to choose.

Pad and brush is optional.

Unit Per Set

CODE		59 07 30	
Model		AFP-140AP	
Air Pressure (MPa)		0.5	0.4
Pad/Brush r.p.m.		260	200
Air Consumption (Nm^3/min)		0.98	0.73
Air Inlet		Rc 1/2 (PT 1/2)	
Size	Width	390 mm	
	Height	1,175 mm	
	Pad/ Brush	15 inch / 14 inch	

Name of Mfr.: San-ei Seiki Seisakusho Co., Ltd.

12. High Pressure Cleaners

High Pressure Cleaners

High performance, excellent ergonomics, low noise levels and easy servicing make this an efficient pressure washer. For more efficient cleaning with reduced chemical consumption the unit can be fed with hot water up to 60 - 85 degrees. HPC 54/1 ideal for 3-4 hours and HPC 67/1 for 6-7 hours continuously operations.

Unit Per Set

CODE	59 07 36	59 07 35	59 07 37
Model	HPC 54/1	HPC 67/1	HD10/22 S
Working Pressure	200 bar	195 bar	3-22 MPa
Water Flow	1,000 ltr/hour	1,280 ltr/hour	450-900 L/H
Max. Water Inlet Temp.	60°C	85°C	60°C
Rotation Speed	1,750 rpm		-
IP Protection	X5		-
Water Inlet Connection	3/4" male		-
Voltage	3-440 / 60 Hz / 11.4 A		3-200V, 50/60 Hz
Dimensions L x W x H mm	735 x 570 x 1,020	775 x 570 x 1,020	560 x 500 x 1,090
Weight kgs	71 kgs	90 kgs	62 kgs
Name of Mfr.	Wilhelmsen Ships Service		Karcher

Air-Operated Pressure Washers

Hydra-Clean

High Pressure Washer which can be used safe in hazardous locations. Efficient cleaning with water, detergent or chemical solutions. Supports multiple guns. Designed to use with cold or hot water up to 200°F (93°C). Includes everything needed to use with open-head universal drums. Fits most pressure, flow and material requirements. Available with an accumulator and chemical injector.

Unit Per Set

CODE	59 07 38	59 07 39	59 07 34
Model	247551	247553	258664
Pump Package	23:1	30:1	40:1
Pump Construction	Stainless Steel		
Mount Type	Cart Mount		

(to be continued)

Unit Per Set

CODE	59 07 38	59 07 39	59 07 34
Max. Working Pressure	2,275 psi (157 bar, 15.7 MPa)	3,065 psi (211 bar, 21.1 MPa)	4,000 psi (276 bar, 27.6 MPa)
Max. Air Input Pressure	100 psi (7 bar, 0.7 MPa)		
Fluid Flow at 60 cpm	9.2 gpm (34.7 lpm)	6.8 gpm (25.9 lpm)	4.6 gpm (17,4 lpm)
Volume per Cycle	19.6 oz (580 cc)	14.5 oz (430 cc)	9.8 oz (290 cc)
Air Inlet Size	3/4" npt (f)		
Fluid Inlet Size	1"		
Fluid Outlet Size	3/8"		

Name of Mfr. : Graco

High Pressure Cleaners

Air Powered Heavy Duty

Designed for heavy duty use in hazardous areas where combustible gases and liquids may be present, ensuring safety and effective cleaning. It is ideal for removing stubborn dirt, stains and other debris.

Non corrosive materials are used in pump, fittings and pipes.

Unit Per Set

CODE	59 08 51
Model	C-200AIR
Power Consumption	9.0 HP (6.6 KW)
Motor Speed	1,500 r.p.m.
Working Pressure	200 bar (2,900 psi)
Flow Capacity	15.0 ltr/min.
Max. Air Consumption	150 m3 /hour (330 Cf/min)
Dimensions	L850 x W550 x H900 mm
Weight	70 kgs

Name of Mfr. : Nilfisk Pte Ltd - Den-Sin Division

Electric Powered

Designed for general purpose cleaning tasks in multiple industries. These high pressure cleaners are used for daily cleaning of machinery, vehicles, and buildings, for the removal of stubborn dirt, stains and other debris from multiple surfaces. Available 3 types of power supply, AC110V, AC220V or AC440V. All pump materials, fittings and pipes in contact with water are non-corrosive.

C-110E

Unit Per Set

CODE	59 08 57	59 08 52
Power Supply	AC 110V 1 ph 60Hz	AC 220V 1 ph 60Hz
Model	C-110E	
Power Consumption	3.0 HP (2.2 KW)	
Motor Speed	1,750 r.p.m.	
Working Pressure	110 bar (1,600 psi)	
Flow Capacity	11.7 ltr/min.	
Dimensions	L720 x W480 x H900 mm	
Weight	45 kgs	

Name of Mfr. : Nilfisk Pte Ltd - Den-Sin Division

C-170E

Unit Per Set

CODE	59 08 53	59 08 54
Power Supply	AC 220V 3 ph 60Hz	AC 440V 3 ph 60Hz
Model	C-170E	
Power Consumption	6.0 HP (4.4 KW)	
Motor Speed	1,750 r.p.m.	
Working Pressure	170 bar (2,465 psi)	
Flow Capacity	15.2 ltr/min.	
Dimensions	L720 x W480 x H900 mm	
Weight	46 kgs	

Name of Mfr. : Nilfisk Pte Ltd - Den-Sin Division

C-200E

Unit Per Set

CODE	59 08 55	59 08 56
Power Supply	AC 220V 3 ph 60Hz	AC 440V 3 ph 60Hz
Model	C-200E	
Power Consumption	7.5 HP (5.5 KW)	
Motor Speed	1,750 r.p.m.	
Working Pressure	200 bar (2,900 psi)	
Flow Capacity	16.5 ltr/min.	
Dimensions	L720 x W480 x H900 mm	
Weight	56 kgs	

Name of Mfr. : Nilfisk Pte Ltd - Den-Sin Division

Combijet Model JE60-500

500 bar compact unit with a pressure regulator valve as standard.

Suitable for removal of hard dirt, grease oil, embedded crystallized salt, barnacles and marine growth, soil and clay, rust flakes and corroded paint. Available in 50 and 60 Hz.

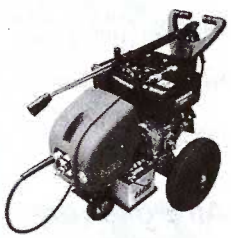
Unit Per Set

CODE	59 08 64	59 08 65
Power Supply	AC 380-440V/ 3 ph 50Hz	AC 380-440V/ 3 ph 60Hz
Model	JE60-500	
Power Consumption	20 HP (15 KW)	
Motor Speed	1,450 rpm @50 Hz / 1,750 rpm @60 Hz	
Working Pressure	500 bar (7,250 psi)	
Flow Capacity	16.5 ltr/min.	19 ltr/min.
Dimensions	L100 x W63 x H93 mm	
Weight	265 kgs	

Name of Mfr. : Combijet Manufacturing Ltd

Engine Powered

The petrol and diesel powered series of High-Pressure Cleaners offers total independence of external power supply giving the user a higher degree of mobility. For effective removal of stubborn dirt, stains and other debris. Non corrosive materials are used in pump, fittings and pipes.



Diesel Engine (Gas Oil)

C-150D/C-200D

Unit Per Set

CODE	59 08 60	59 08 61
Model	C-150D	C-200D
Fuel Oil	Diesel (Gas Oil)	
Power Consumption	6 HP (4.4 kW)	10 HP (7.5 kW)
Pump Speed	1,550 r.p.m.	

(to be continued)

Unit Per Set

CODE	59 08 60	59 08 61
Working Pressure	150 bar (2,175 psi)	200 bar (2,900 psi)
Flow Capacity	15.2 ltr/min.	18.5 ltr/min.
Fuel Tank Capacty	3.5 ltr	5.5 ltr
Dimensions LxWxH	850 x 600 x 900 mm	
Weight	60 kgs	95 kgs

Name of Mfr. : Nilfisk Pte Ltd - Den-Sin Division

Petrol Engine (Gasoline)
C-160P/C-200P

Unit Per Set

CODE	59 08 63	59 08 62
Model	C-160P	C-200P
Fuel Oil	Petrol (Gasoline)	
Power Consumption	5 HP (3.6 kW)	11 HP (8.0 kW)
Pump Speed	1,550 r.p.m.	
Working Pressure	160 bar (2,320 psi)	200 bar (2,900 psi)
Flow Capacity	14.0 ltr min.	18.5 ltr/min.
Fuel Tank Capacty	3.5 ltr	5.5 ltr
Dimensions LxWxH	720 x 480 x 900 mm	720 x 550 x 900 mm
Weight	50 kgs	75 kgs

Name of Mfr. : Nilfisk Pte Ltd - Den-Sin Division

Combijet JP Series 200-250 bar

Unit Per Set

CODE	59 08 78	59 08 79
Model	JP 9-200	JP 13-250
Pressure	200 bar (2,900 psi)	250 bar (3,625 psi)
Power (Petrol Motor)	9 HP (6.6 KW)	13 HP (9.7 KW)
Flow Rate	13 ltr/min.	17 ltr/min.
Electric Supply	Petrol Engine	Petrol Engine
Motor Speed	3,400 rpm	1,700 rpm
Dimensions LxWxH mm	1,030 x 500 x 670	1,000 x 660 x 920
Weight	45 kgs	61 kgs

Name of Mfr. : Combijet Manufacturing Ltd

High Pressure Water Blasters

Merlion Plus Heavy Duty

Powerful & cost efficient cleaning for MARINE users.

Applications: General cleaning, washing of salt spray, removal of lose paint & rust. Cleaning in holds & transfer pipes. Cleaning scaffolding material. Removal of lime scale deposits and marine growth. Removal of oil & grease from decks & machinery. Dust free wet abrasive sand blasting & pipe cleaning with accessories.

Unit Per Set

CODE	59 08 70	59 08 58	59 08 59
Model	Merlion Plus E-250	Merlion Plus E-350	Merlion Plus E-500
Pressure	250 bar (3,625 psi)	350 bar (5,075 psi)	500 bar (7,250 psi)
Power (Elec. Motor)	24 HP (17.9 KW)		
Flow Rate	26 ltr/min.	21 ltr/min	16 ltr/min.
Electric Supply	AC 440V 3 ph 60 Hz		
Motor Speed	1,750 rpm		
Dimensions LxWxH	1,060 x 730 x 970 mm		
Weight	235 kgs		240 kgs

Name of Mfr. : Nilfisk Pte Ltd - Den-Sin Division

Ultra High Pressure Water Blasters

Water blasting of decks, tanks, ballast tanks to remove all surface particles & corrosion to a superior standard without the use of abrasives.

Applications: Removal of paint, rust from steel & concrete surfaces. Removal of lime scale deposits & marine growth. Deck cleaning & cargo hold cleaning. Dust free wet abrasive sand blasting & pipe cleaning with rotating nozzle accessories.

Electric Powered

Unit Per Set

CODE	59 08 71	59 08 72
Model	Mermaid E-500/30	Mermaid E-800/20
Pressure	500 bar (7,250 psi)	800 bar (11,600 psi)
Power Consumption	40 HP (30 KW)	40 HP (30 KW)
Flow Rate	30 ltr/min.	20 ltr/min.
Electric Supply	AC 440V 3 ph 60 Hz	
Motor Speed	1,750 rpm	1,200 rpm
Current Consumption	54 amps	54 amps
Dimensions LxWxH	1,495 x 980 x 1,263 mm	
Weight	440 kgs	530 kgs

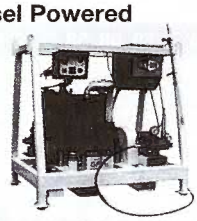
Name of Mfr. : Nilfisk Pte Ltd

Unit Per Set

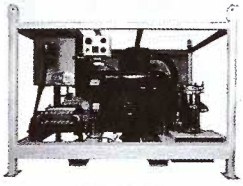
CODE	59 08 74	59 08 73
Model	Mermaid E-1100/16	Mermaid C-2500/25E
Pressure	1,100 bar (16,500 psi)	2,500 bar (36,000 psi)
Power Consumption	40 HP (30 KW)	150 HP (113 KW)
Flow Rate	16 ltr/min.	25 ltr/min.
Electric Supply	AC 440V 3 ph 60 Hz	
Motor Speed	1,200 rpm	1,800 rpm
Current Consumption	54 amps	125 amps
Dimensions LxWxH	1,495 x 980 x 1,263 mm	2,300 x 1,400 x 1,800 mm
Weight	570 kgs	1,700 kgs

Name of Mfr. : Nilfisk Pte Ltd

Diesel Powered



C-500/30D & C-800/20D



C2500/25D

Unit Per Set

CODE	59 08 75	59 08 76
Model	C-500/30D	C-800/20D
Pressure	500 bar (7,500 psi)	800 bar (11,600 psi)
Power (Diesel Engine)	50 HP (36.7 KW)	50 HP (36.7 KW)
Flow Rate	30 ltr/min.	20 ltr/min.
Fuel Tank Capacity	124 ltr	124 ltr
Dimensions LxWxH mm	1,800 x 1,200 x 1,850	
Weight	970 kgs	

Name of Mfr. : Nilfisk Pte Ltd

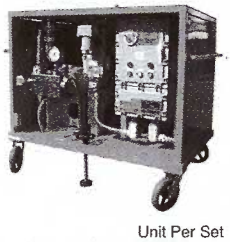
Unit Per Set

CODE	59 08 80	59 08 77
Model	C-1100/18D	C-2500/25D
Pressure	1,100 bar (15,950 psi)	2,500 bar (36,000 psi)
Power (Diesel Engine)	50 HP (36.7 KW)	150 HP (113 KW)
Flow Rate	18 ltr/min.	25 ltr/min.
Fuel Tank Capacity	124 ltr	140 ltr
Dimensions LxWxH mm	1,800 x 1,200 x 1,850	2,600 x 1,450 x 1,800
Weight	970 kgs	1,950 kgs

Name of Mfr. : Nilfisk Pte Ltd

Explosion Proof Type

Electric devices enclosed in a solid cabinet type is also available as explosion proof for tankers & chemical carriers.



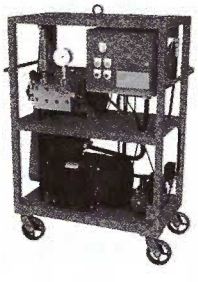
Unit Per Set

CODE	59 08 50	59 08 82
Model	EXP20-14KEMC	EXP30-22KEMC
Pressure	1,100 bar (16,500 psi)	1,500 bar (21,750 psi)
Power Rating	20 HP (15 KW)	30 HP (22 KW)
Flow Rate	8 ltr/min.	
Electrical Supply	3-440V/60Hz/27A	3-440V/60Hz/32A
EP Grade	Ex d IIB T4	Ex d IIB T4
Dimensions L x W x H mm	1,250 x 880 x 1,270	
Weight	630 kgs	670 kgs

Name of Mfr. : BC Taechang Corp.

Vertical type

Designed to use for any narrow passage, suitable on Container Vessels.



Unit Per Set

CODE	59 08 90	59 09 00
Model	MJ20-14KEV	HJ30-22KEV
Pressure	1,100 bar (16,500 psi)	1,500 bar (21,750 psi)
Power Rating	20 HP (15 KW)	30 HP (22 KW)
Flow Rate	8 ltr/min.	
Electrical Supply	3-440V/60Hz/27A	3-440V/60Hz/32A
IP Protection	54	
Dimensions L x W x H mm	950 x 550 x 1,400	
Weight	486 kgs	526 kgs

Name of Mfr. : BC Taechang Corp.

Gasoline Pressure Washers

G-Force II

The G-Force II pressure washers provide you with enough power and performance to tackle even the most challenging of cleaning and preparation jobs. Surface preparation, cleaning agent, horizontal cleaning, etc. Easy loading and maneuverability – thanks to its compact, durable, lightweight design.

G-Force II 3027 DD

G-Force II 3032 DD

G-Force II 4040 DD

G-Force II 4040 BDC

Unit Per Set

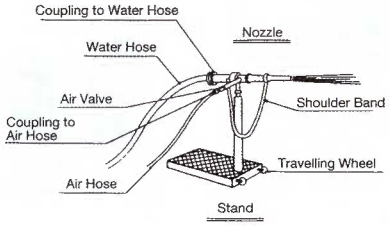
CODE	59 08 66	59 08 67	59 08 68	59 08 69
Model	G-Force II 3027 Direct-Drive	G-Force II 3032 Direct-Drive	G-Force II 4040 Direct-Drive	G-Force II 4040 Belt-Drive
Part Number	24U986	24U987	24U988	24U991
Operating Pressure	2,700 psi (185 bar)	3,200 psi (220 bar)	4,000 psi (275 bar)	4,000 psi (275 bar)
Water Pump Flow Rate	3 gpm (11.36 lpm)		4.0 gpm (15.14 lpm)	4.0 gpm (15.14 lpm)
Pump Type	GP Brass Triplex			
Tips	0° - 15° - 25° - chemical tip included			
Weight	129 lbs (58.5 kgs)	113 lbs (51.2 kgs)	129 lbs (58.5 kgs)	133 lbs (60.3 kgs)

Name of Mfr. : Graco

13. Hold Cleaning Guns

Hold Cleaning Guns

For cleaning of bulk carrier holds by a high pressure water stream. A strong stream of water can be projected a distance of up to 25 mtrs for the removal of any loose rust, flaking paint, or cargo residue. Supplied complete with a tripod stand, the lightweight design is ideal for a one-man operation. Please specify type and size of water hose coupling to be connected, when ordering.



59 07 41

59 07 43

Unit Per Set

CODE	59 07 41	59 07 43
Model	Water Tobey	VP Water Gun & Tripod
Effective Jet Reach	20 - 25 mtr	25 mtr
Working Pressure	5 - 7 kgf/cm²	5 - 6 kgf/cm²
Water Consumption	28 ton/hour	12 - 28 m³/hr
Water Hose	50 mm or 65 mm	50 mm BSP male connection
Hose Coupling	Nakajima type	BSP Plus Any other type
Air Hose	15 mm	3/4" / 1" claw coupling or 1" BSP female
Weight	Gun : 4.7 kgs Stand : 18 kgs	Gun with tipod 10.5 kgs
Name of Mfr.	Exeno Yamamizu	Victor Marine Ltd.

Hold Cleaners

Trelawny Hydraflex

Specifically designed for hold cleaning on bulk carriers and cargo vessels of all sizes. Operated by a combination of water and compressed air, the gun throws a solid, tightly compressed jet of water of up to 30 mtr (100 ft).

Features and Benefits

- Stainless steel construction
- Compact design
- Low maintenance

Unit Per Set

CODE	59 07 42	59 07 40
Type	Standard kit Without Base	Complete kit With Base
Model	342.HY50	342.HY50T
Effective Jet Reach	30 mtr	
Recommended Water Pressure	6 kgf/cm²	
Recommended Air Pressure	7 kgf/cm²	
Water Consumption	300 gal/min.	
Water Hose	2"	
Hose Coupling	Instantaneous	
Air Hose	3/4"	
Weight	15 kgs (Gun & Tripod)	
Including	Gun, Tripod, Water hose coupling (2-1/2"x 2-1/2" and 1-1/2"x 2"), and Instantaneous water hose adapter	Gun, Tripod, Ball valve, and Base assembly

Name of Mfr. : Trelawny SPT Ltd.

Accessories for Hydraflex Hold Cleaning Gun

Unit Per Pc.

CODE	Description	Part No.	Weight Kgs. (lb)
59 07 46	Water hose coupling 2-1/2"x2-1/2"	342.HY03	1.70 (4.3)
47	Water hose coupling 2-1/2"x2"	342.HY04	1.95 (0.75)
48	Instantaneous water hose adapter	342.HY05	0.30 (0.66)
49	Ball valve	342.HY07	1.40 (3.10)
50	Base assembly	342.HY60A	7 (14.4)

Hold Cleaning Gun

Maxi-Gun

It consists of a uniquely designed series of air and water nozzles with 2 special swivel units in the vertical and horizontal planes. It is designed to give the highest and strongest solid water jet possible up to about 80 meters with a water pressure of 11 kgf/cm². It can be easily operated by one man using the normal service mains available on most Bulk carriers and OBO type vessels.

It requires a water pressure of 4 kgf/cm² or more and air pressures of 6 to 8 kgf/cm² and can simply be connected to the normal water-on-deck line and the service air line. For the toughest cleaning jobs, a water pressure of 11 kgf/cm² will enable the Maxi-Gun to reach a jet length of about 80 meters, but even at 7 kgf/cm² the reach is about 60 meters.

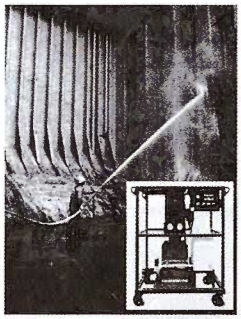
For safety, the Maxi-Gun incorporates 3 easily mounted water ballast tanks. These form a weighted, self-supporting stand for the nozzle and swivel units. With the ballast tanks full one man can easily and safely operate the equipment from a standing position, controlling jet direction and cleaning pattern from the nozzle handle.

Unit Per Set

CODE	59 07 45
Recommended Air Pressure	6 - 8 kg/cm²
Minimum Air Supply	3 - 5 m³/min.
Estimated Water Consumption	20 - 100 m³/hr.
Recommended Water Pressure	7 - 12 kg/cm²
Effective Washing Height	40 - 50 meters
Air Hose	Minimum 1"
Water Hose	Minimum 2-1/2"
Accessories	Twin waterhose inlet, Water-filled ballast tank x 3
Total Weight	180 kgs
Name of Mfr.	Stromme Ships Service

Hold Cleaner Guns

VULCAN



Designed for cleaning cargo holds, operated by combination of water and electric motor which makes working condition more steady. Due to high flow, water can reach at high position on the cargo holds easily.

Unit Per Set

CODE	59 07 79
Type	Standard kit With Cleaning Stand & Nozzle
Medium	Seawater (or Fresh Water)
Effective Jet Reach	25 mtr
Water Pressure	17-19 Bar
Water Consumption	400 ltr/min.
Hose Connection	Inlet 65A / Outlet 40A hydrant nipple
Weight	Pump unit : 390 kgs / Stand : 50 kgs
Size L x W x H mm	Pump Unit : 1,300 x 650 x 1,500 Stand : 900 x 500 x 1,200.

Name of Mfr. : BC Taechang Corp.

Cargo Hold Application Set

For applying all kinds of protective coatings, as well as for the application of chemical solutions for cleaning of cargo holds. Suitable for all kinds of chemicals (acids, alkaline, solvent, polymer, chlorine base). The lightweight telescopic applicator lance, made by Carbon Fiber, Glass Fiber, allows for reaching up to 20m height, with a bare pole weight of less than 4 kg. An air-operated double diaphragm pump made by GFR + PP (Glass Fiber + Polypropylene) material is also included, as well as an 50 m delivery hose roll and a 5 m suction hose.

Unit Per Set

CODE	59 07 90	59 07 92	59 07 95	59 07 96
Model	M36	M42	L42	L57
Consist of:				
Double Diaphragm Pump	1/2 inch		1 inch	
Telescopic Lance	35 ft	42 ft	42 ft	57 ft
Others	165 ft (50 m) Delivery hose, 16.5 ft (5 m) Suction hose, 2 pieces Spray nozzles, 1-unit Lance holder with belt, 3 pieces Respirator mask, 3 pairs Protective goggles, Instruction Videos, Manual, Specifications.			

Name of Mfr.. Chemo Marine Chemicals

Application Set Repair kit

Consists of: Spray nozzles, Spraying head, Hose connectors set, Tap connector and Extension joint.

59 07 97	Repair kit for cargo hold application set, Chemo marine	Set

14. Air Line Filters

Air Line Filters

Designed for cleaning of compressed air and draining water drips.

The standard filtration is 5 μW and the maximum working pressure is 9.9 kgf/cm². The maximum working temperature is 60 C. The filter case is made of a polycarbonate material and reinforced by a guard. A bracket and auto drain are also available on request.

Unit Per Pc

CODE	Connection	Bowl Capacity (cm³)	Weight kgs
59 08 01	PT 1/4	45	0.55
02	PT 3/8		
03	PT 1/2		
59 08 04	PT 3/4	45	1.08
05	PT 1		

Air Line Lubricators

For use in adding lubricant into pressurized air. Maximum working pressure is 9.9 kgf/cm² and maximum working temperature is 60 C. The filter case is made of a polycarbonate material and reinforced by a guard. The recommended lubricant is turbine oil (ISO VG32). A bracket is also available on request.

Unit Per Pc

CODE	Connection Thread	Minimum Operating Flow (ltr / Min)	Bowl Capacity (cm³)	Weight kgs
59 08 11	PT 1/4	30	130	0.52
12	PT 3/8	40		
13	PT 1/2	50		
59 08 14	PT 3/4	190	130	1.08
15	PT 1			

Air Line Pressure Regulators

Non relief valve type regulator for use on airlines to maintain constant pressure. The maximum operating pressure is 9.9 kgf/cm² and the maximum operating temperature is 60 C. A pressure gauge is included as a standard accessory with the unit.

Unit Per Pc

CODE	Connection Thread	Set Pressure Range	Weight kgs
59 08 21	PT 1/4	0.05 - 0.85 MPa	0.84
22	PT 3/8		
23	PT 1/2		
59 08 24	PT 3/4		1.19
25	PT 1		

Air Line F.R.L. Combinations

Comprised of an air filter, regulator with pressure gauge, a lubricator, and intermediate connectors. For use in compressed air filtration, regulation and lubrication. The maximum operating pressure is 9.9 kgf/cm² and the maximum operating temperature is 60 C. The standard filtration is 5 μW.

Unit Per Pc

CODE	Connection Thread	Max.Flow (ltr/min)	Set Pressure Range	Weight kgs
59 08 31	PT 1/4	4.000	0.05 - 0.85 MPa	2.14
32	PT 3/8			
33	PT 1/2			
59 08 34	PT 3/4	5,000		3.82
35	PT 1			

Mobile Air Filter Lubricators

Rustibus Air Pro

Designed for easy use and operation. The counter balance system makes the filter-lubricator unit remain ideally positioned as the operator moves around while working. A regulator is used to maintain the pressure at a level suitable for the equipment in use.

It can be used with any pneumatic hand tool, giving a safe, more flexible and efficient working position.

Unit Per Set

CODE	59 08 45
Model	Air-Pro
Air Pressure	6 – 8 bar
Dimensions L x H x W	300 x 400 x 300 mm
Weight	5.8 kgs
Name of Mfr.	Dalseide Shipping Services

In-Line Lubricators

Heavy duty in-line lubricators to be installed 1.5 – 2 meters from the tool. Designed for use with tools that are in use too far away from the compressor to be lubricated but a permanently mounted unit. This units can be used on everything from an air scribe to a paving breaker.

Technical features:
- Meter valve for adjusting oil flow.
- Slight disk in housing for visual oil inspection.
- Heavy duty and robust.
- Repair kits available.

Unit Per Pc.

CODE	Model	Capacity ltr	Hose Size cm	Weight kgs	Max. Working Press. bar	Air Flow Cap. at 4.8 bar m³/min
59 08 46	TX-0L	0.04	1.27	0.681	34.47	0.849
47	TX-1L	0.11	1.9	0.704	17.93	1.982
48	TX-2L	0.33	1.9	1 090	17.24	1.982
49	TX-3L	0.47	2 54	1.977	20.68	4.247

Name of Mfr. : TXP Dalseide Shipping Services

15. Air Distributors

Four-Way Air Distributor

Constructed of carbon steel pipe. Permits the simultaneous connection of 4 pneumatic tools at to a single air line while maintaining constant feed pressure. Equipped with carrying handle, support skids, and safety valve pressure gauge. Air inlet and outlets are fitted with bronze ball valves and variable universal couplers. Maximum pressure : 10 bar (140 psi), Unit weight : 17 kgs.

59 08 91	Distributor, air, 4-way	Set

Name of mfr : Skatool Marine

Tank Style Air Manifolds

Keep your work site uncluttered by having only one hose going to the work area. Both sizes can be used in tandem to provide as many outlets as needed. With ASME approved tanks and POP-OFF safety valves; pressure gauge and brass draining valve to vent droplets, both models meet OSHA guidelines.

TX-3AMF

TX-2AMF

Unit Per Set

CODE	59 08 92	59 08 93
Model	TX-3AMF	TX-2AMF
Capacity	9.46 ltr	56.77 ltr
No. of Outlet	4	8
Working Pressure	13.79 bar	
Test Pressure	20.68 bar	
Inlet Size	2.54 cm (1")	5.08 cm (2")
Tank Diameter	20.3 cm	30 cm
Size L x W x H cm	58.4 x 35.5 x 25.4	87.6 x 55.8 x 45.7
Weight	10.4 kgs	28.6 kgs

Name of Mfr. : TXP / Dalseide Shipping Services

16. Electric Hand Tools

Cordless Drill Drivers

Designed for continuous use and easy service. Compact and lightweight for increased maneuverability. Battery charger and plastic case are included as standard accessories.

How to order : CODE

Cordless drill driver, NOMINAL CAPACITY, MODEL

Unit Per Set

CODE		59 09 01	59 09 02	59 09 05	59 09 06
Power Source		110V	220V	110V	220V
Nominal Capacity		6.5 mm (1/4")		10 mm (3/8")	
Drilling Capacity mm	Steel	6.5		10	
	Wood	9		15	
Chuck Size		UNF 3/8		UNF 3/8	
No Load Speed R.P.M.		500		1,100 / 320	
Voltage		4.8		9.6	
Weight kgs		1.0		1.5	

Cordless Impact Wrenches

For fast tightening or loosening of bolts. Compact and well-balanced design for positive control. Battery charger and plastic case are prepared as standard accessories.

How to order : CODE

Cordless impact wrench, SQUARE DRIVE, MODEL

Unit Per Set

CODE	59 09 21	59 09 22	59 09 25	59 09 26
Power Source	110V	220V	110V	220V
Square Drive	3/8"		1/2"	
Bolt Size	M5 - M12		M6 - M14	
Torque kg. m	700		1,200	
No Load Speed R.P.M.	2,200		0 - 1,500	
Stroke	2,900		0 - 2,300	
Voltage	9.6		12	
Weight kgs	1.5		2.3	

Portable Electric Drills

Designed for precision and reliability for marine and industrial use. To be used for all conventional drilling of steel or wood. Furnished for a 110 volt power supply or 220 volt power supply. Further detailed data on the complete line of the drills, ask your local distributor.

The specifications listed here are for your reference. If you wish to order electric drills from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-62.

For 6.5 – 10.0 mm

For 13.0 – 32.0 mm

Specifications

Drilling Capacity mm		Chuck Size mm	Spindle	Motor	No Load Speed R.P.M.	Weight kgs
Steel	Wood					
6.5	13	0.5 - 6.5	3/8"-24UNF	305 W	2,700	1.5
10.0	21	0.8 - 10.0	1/2"-20UNF	390 W	1,700	1.8
13.0	30	1.2 - 13.0	J.T.#6	620 W	780	4.4
16.0	36	3.2 - 16.0	J.T.#3	670 W	700	4.6
20.0	-	-	M.T.#2	730 W	500	5.7
25.0	-	-	M.T.#3	1,300 W	370	12.0
32.0	-	-	M.T.#3	1,600 W	330	12.5

Note: J.T. denotes Jacobs Taper.
M.T. denotes Morse Taper.

How to order : CODE

Drill, electric portable, DRILLING CAPACITY, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

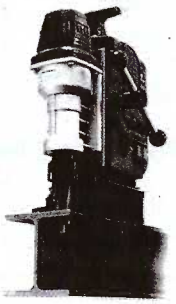
AC 110V Single Phase		AC 220V Single Phase	
CODE	Drilling Capacity mm	CODE	Drilling Capacity mm
59 10 01	6.5	**59 10 11**	6.5
02	10.0	**12**	10.0
03	13.0	**13**	13.0
04	16.0	**14**	16.0
05	20.0	**15**	20.0
59 10 06	25.0	**59 10 16**	25.0
07	32.0	**17**	32.0

Portable Magnetic Base Drill Machines

A portable drilling machine with a magnet base, geared to drilling mild steel (or equivalent) , using one-touch type "JETBROACH" or "HI-BROACH" cutter. The machine will be mounted on the workpiece to be drilled with the magnet securely fastening the machine onto the workpiece while drilling takes place. Pilot pins and broach cutters are sold separately.

Cordless Type and Cord type are available

Model CLA-2720 - Cordless Type



Suitable for high or narrow or hard to access areas, thanks to its characteristic of cordless and compact body. Designed to use Jetbroach and Hi-broach annular cutters.

Highly sensitive sensors are equipped for detecting side slip and inclination for safety drilling work. The high luminance LED lamp will give you a warning of the battery level and the load on the motor. Hole cutting capacity : 12 to 27 mm hole diameter.

Specifications

CODE		59 10 10	
Model		CLA-2720	
Voltage		18 V DC	
Battery Pack (Lithium-ion Battery)		NBL18006 (18V 4.0 Ah)	
No Load Speed min^{-1}		430	
Hole Capacity	Cutters	Hole Diameter	Plate Thickness
	One-touch type Jetbroach 25L	12 to 17 mm	6 to 12 mm
	One-touch type Jetbroach 35L	17.5 to 27 mm	6 to 20 mm
	One-touch type Hi-Broach 25L	12 to 15 mm	6 to12 mm
		16 to 27 mm	6 to 20 mm
Cutter Position Adjustment	Pivot side to side mm	10	
	Straight front to back mm	10	
Battery Charger		Model NC14435	
		Power source : 220 – 240 V AC	
		Charging time : 90 min.	
Weight		7 kgs	

Accessories included ;
- Carry case
- Cutting oil, 0.5 ltr
- Jet oiler No.3013
- Tube, 4 x 7 mm, 1 mtr long
- Battery charger
- 2 pcs of battery pack
- Guard
- Lashing belt BLC002R-015
- Handle
- Blade
- Hex. Socket head cap screw, 5 x 12
- Hex. Socket set screw, 8 x 28
- Socket screw key, 3 mm hex.
- Ditto, 4 mm hex.
- Spanner, 8 x 10

Name of Mfr. : Nitto Kohki Co., Ltd.

Model WOJ-3200 - Cord Type

Designed to use Jetbroach cutters or twist drill. Loosening the pillar clamp allows the complete frame to be lifted up to a maximum of 60 mm for specific drilling. The use of Jet-broach cutters require the frame to be at the lowest position, while twist bit drilling required the appropriate amount of elevation to be adjusted for safe operation. The pillar clamp is required to be tightened before drilling safely. Feed handles can be positioned on the right or left hand side for ease of drilling and mounting in confined spaces.
Note: Always engage the magnet before adjusting the body height.

Unit Per Set

CODE		59 10 08	59 10 09
Power Source (Single Phase)		110-120V AC, 50/60 Hz	220-240V AC, 50/60 Hz
Model		WOJ-3200	
Electric Drill	Rated power consumption (W)	950	
	Rated current (A)	8.6	4.3
	No-load speed min^{-1} (rpm)	870	
Magnet Power Consumption (W)		38	30

(to be continued)

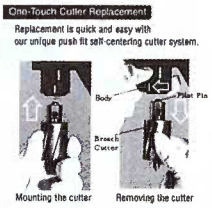
Unit Per Set

CODE		59 10 08		59 10 09	
Hole Capacity (mm)	One-touch type JETBROACH				
		Hole Dia.	Plate Thick	Hole Dia	Plate Thick
	25L	12 to 17	9 to 25	12 to 17	9 to 25
	35L	17.5 to 32	9 to 35	17.5 to 32	9 to 35
	50L	12 to 32	9 to 50	12 to 32	9 to 50
	Twist drill	Max. 13 mm dia.			
Max Stroke (mm)		130			
Magnet Holding Power N(kgf)		9,000 (918)			
Magnet Dimensions (mm)		99 x 177			
Mass (Weight) (kgs)		13			
Accessories included		*Carry case *Oil tank a'ssy *Pilot pin 08035 *Sub handle *2 pieces of hex. socket head bolt 5 x 10 mm	*Hex. socket screw keys ; 3 mm / 4 mm / 6 mm *8 x 10 mm spanner *Guard *Safety strap		
Optional		Optional one-touch adapter allows the use of up to 13 mm twist drills to be used in the original arbor.			

Name of Mfr. : Nitto Kohki Co., Ltd.

Replacement Cutters

Replacement is quick and easy with unique push fit self-centering cutter system by pilot pins and broach cutters. Pilot pins and broach cutters are sold separately.



Pilot pins ;

Hi-Broach cutter : 06025 (C1) or 08025 (A1)

JETBROACH cutter : 06025 (C1), 08035 (A2), 06050 (C2), 08050 (A3) *for Model WOJ3200

Broach cutters ;

HI-BROACH : 12 mm (TK00698) – 17 mm (TK00703) diameter
17.5 mm (TK00335) – 27 mm (TK00351) diameter

JETBROACH : 12 mm (TK01148/TK01154) – 17 mm (TK01153 / TK01159) diameter
17.5 mm (TK00301 / TK00380) – 32 mm (TK00324 / TK00402) diameter

Combination of Pilot Pins and Broach Cutters

Pilot pins	06025 (C1)	08025 (A1)	06025 (C1)	08035 (A2)	06050 (C2)	08050 (A3)
	P/N. TK01167	P/N. TJ12696	P/N. TK01167	P/N. TJ15859	P/N. TK01166	P/N. TJ16019
Broach cutters	One-touch type HI-BROACH (High speed steel)		One-touch type JETBROACH (Tungsten carbide tip)			
Diameter	Depth 25 mm		Depth 25 mm	Depth 35 mm	Depth 50 mm	
12	TK00698		TK01148		TK01154	
13	TK00699		TK01149		TK01155	
14	TK00700		TK01150		TK01156	
15	TK00701		TK01151		TK01157	
16	TK00702		TK01152		TK01158	
17	TK00703		TK01153		TK01159	
17.5		TK00335		TK00301		TK00380
18		TK00336		TK00302		TK00381
18.5				TK00303		
19		TK00337		TK00304		TK00382
19.5		TK00338		TK00305		TK00383
20		TK00339		TK00306		TK00384
20.5				TK00307		TK00385
21		TK00340		TK00308		TK00386
21.5		TK00341		TK00309		TK00387
22		TK00342		TK00310		TK00388
22.5		TK00343		TK00311		TK00389
23		TK00344		TK00312		TK00390
23.5		TK00345		TK00313		TK00391
24		TK00346		TK00314		TK00392
24.5		TK00347		TK00315		TK00393
25		TK00348		TK00316		TK00394
25.5				TK01169		TK01147
26		TK00349		TK00317		TK00395
26.5		TK00350		TK00318		TK00396
27		TK00351		TK00319		TK00397
28				TK00320		TK00398
29				TK00321		TK00399
30				TK00322		TK00400
31				TK00323		TK00401
32				TK00324		TK00402

Electric Angle Grinders

Especially designed for continuous heavy duty work for all grinding applications. Furnished for a 110 volt power supply or 220 volt power supply. For further detailed information on the complete line of the grinder, ask a local distributor.

The specifications listed here are for your reference. If you wish to order Angle Grinders from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-62.

Specifications

For Wheel Diam	Spindle Thread	Motor	No Load Speed R.P.M.	Weight kgs
100 mm	M10 x 15 mm	510 W	11,000	1.4
125 mm	M16 x 17 mm	630 W	9,500	2.3
150 mm	M16 x 17 mm	1,050 W	8,000	3.8
180 mm	M16 x 21 mm	1,400 W	6,500	4.6

How to order : CODE

Angle grinder, electric portable, WHEEL DIAM, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	For Wheel Diam	CODE	For Wheel Diam
59 10 21	100 mm	**59 10 31**	100 mm
22	125 mm	**32**	125 mm
23	150 mm	**33**	150 mm
24	180 mm	**34**	180 mm

Rubber Pads and Holder Nuts

for Electric Grinder

Since the size of the rubber pad and nut differs from manufacturer to manufacturer, it is necessary to provide information about the manufacturer and model of the grinder you are currently using.

(to be continued)

Rubber Pad

Unit Per Pc.

CODE	For Wheel Diam	CODE	For Wheel Diam
59 10 41	100 mm	59 10 45	150 mm
43	125 mm	47	180 mm

Holder Nut

Unit Per Pc.

CODE	For Wheel Diam	CODE	For Wheel Diam
59 10 42	100 mm	59 10 46	150 mm
44	125 mm	48	180 mm

Electric Bench Grinders

For sharpening tools and other appliances.

According to safety measures, the grinding must be fitted with a wheel cover and must be firmly secured to a bench stand. Provided with permanently self lubricating ball bearings. Furnished for use with a 110 volt power supply or 220 volt power supply.

The specifications listed here are for your reference. If you wish to order Bench Grinders from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-62.

Specifications

Wheel Size mm	Motor	No Load Speed R.P.M.	Weight kgs
150 x 16 x 12.7	300 W	3,600	16
205 x 19 x 15.88	600 W	3,600	28

How to order : CODE

Bench grinder, electric, WHEEL DIAM, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	For Wheel Diam	CODE	For Wheel Diam
59 10 51	150 mm	59 10 56	150 mm
52	205 mm	57	205 mm

Electric Straight Grinders

Designed for grinding jobs in tight corners.

The specifications listed here are for your reference. If you wish to order Straight Grinders from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-62.

Specifications

Wheel Size mm	Motor	No Load Speed R.P.M.	Weight kgs
100 x 19 x 12.7	750 W	9,500	5.5
125 x 19 x 12.7	590 W	4,000	5.5

How to order : CODE

Straight grinder, electric portable, WHEEL DIAM, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	For Wheel Diam	CODE	For Wheel Diam
59 10 61	100 mm	59 10 66	100 mm
62	125 mm	67	125 mm

Electric Die Grinders

For precision grinding. A lightweight, high speed grinder to be used with a 6 mm diameter shaft stone. Furnished for a 110 volt or 220 volt power source. For further detailed information on the complete line of die grinders, ask your local distributor.

The specifications listed here are for your reference. If you wish to order Die Grinders from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-63.

Specifications

For Collet Diam	Maximum Wheel O.D.	Motor	No Load Speed R.P.M.	Weight kgs
6 mm	18 mm	145 W	30,000	0.9
6 mm	32 mm	240 W	23,000	1.9

How to order : CODE

Die grinder, electric portable, COLLET DIAM, MAXIMUM WHEEL DIAM, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase			AC 220V Single Phase		
CODE	For Collet Diam	Maximum Wheel Diam	CODE	For Collet Diam	Maximum Wheel Diam
59 10 71	6 mm	18 mm	59 10 75	6 mm	18 mm
72	6 mm	32 mm	76	6 mm	32 mm

Electric Sheet Sanders (Orbital Sanders)

Ideal for direct material finishing or sanding painting surfaces. Furnished for a 110 volt power supply or 220 volt power supply. For further detailed information on the complete line of sheet sanders, ask your local distributor.

The specifications listed here are for your reference. If you wish to order Sheet Sanders from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-63.

Specifications

Sanding Area mm	Motor	No Load Speed R.P.M.	Weight kgs
114 x 280	300 W	10,000	2.6

How to order : CODE

Sheet sander, electric portable, SIZE of SANDING AREA, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Sanding Area mm	CODE	Sanding Area mm
59 10 81	114 x 280	59 10 82	114 x 280

Electric Nibblers

For free hand cutting or cutting by template of all types of heavy sheet metal plates, light alloys, and plastic panel without damaging the material. Can also be used on curved surfaces. Furnished for use with a 110 volt or 220 volt power supply. For further detailed data on the complete line of the nibbler, ask your local distributor.

The specifications listed here are for your reference. If you wish to order Nibblers from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-63.

Specifications

Cutting Capacity		Motor	No Load Speed R.P.M.	Weight kgs
Mild Steel	Radius			
1.6 mm	40 mm	400 W	2,000	1.7
2.3 mm	50 mm	335 W	950	3.5
3.2 mm	100 mm	670 W	900	5.8
4.5 mm	110 mm	1,140 W	850	7.5

How to order : CODE

Nibbler, electric portable, CUTTING CAPACITY, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Cutting Capacity	CODE	Cutting Capacity
59 11 01	1.6 mm	59 11 05	1.6 mm
02	2.3 mm	06	2.3 mm
03	3.2 mm	07	3.2 mm
04	4.5 mm	08	4.5 mm

Accessories for Electric Nibbler

Punches and dies differ from manufacturer to manufacturer. When ordering, it is necessary to provide information about the manufacturer and model of the nibbler you are currently using.

Punch

Die

How to order : CODE

PUNCH or DIE, CUTTING CAPACITY mm, for MODEL

Unit Per Pc

Punch		Die	
CODE	Cutting Capacity mm	CODE	Cutting Capacity mm
59 11 09	1.6	59 11 10	1.6
11	2.3, 3.2	12	2.3, 3.2
13	4.5	14	4.5

Electric Shears

For cutting iron, copper, stainless steel sheeting, etc. Able to cut either straight or curved lines without deformation. Furnished for use with a 110 volt or 220 volt power supply. For further detailed data on the complete line of shears, ask your local distributor.

The specifications listed here are for your reference. If you wish to order shears from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-63.

Specifications

Cutting Capacity		Motor	No Load Speed R.P.M.	Weight kgs
Mild Steel	Radius			
1.6 mm	25 mm	440 W	4,200	1.8
2.0 mm	70 mm	240 W	2,200	4.7
2.9 mm	100 mm	335 W	1,200	6.0

How to order : CODE

Shear, electric portable, CUTTING CAPACITY, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Cutting Capacity	CODE	Cutting Capacity
59 11 21	1.6 mm	59 11 24	1.6 mm
22	2.0 mm	25	2.0 mm
23	2.9 mm	26	2.9 mm

Accessories for Electric Shear

Moving blades and stationary blades differ from manufacturer to manufacturer. When ordering, it is necessary to provide information about the manufacturer and model name of the shear you are currently using.

Moving Blade

Stational Blade

How to order : CODE

MOVING BLADE or STATIONAL BLADE, CUTTING CAPACITY mm, MODEL

Unit Per Pc

Moving Blade		Stational Blade	
CODE	Cutting Capacity	CODE	Cutting Capacity
59 11 31	1.6	59 11 32	1.6
33	2.0, 2.9	34	2.0, 2.9

Electric Planers

For smoothing and planing wood surfaces. Furnished for use with a 110 volt or 220 volt power supply. For further detailed information on the complete line of the planers, ask your local distributor.

The specifications listed here are for your reference. If you wish to order Planers from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-63.

Specifications

Planing width	Motor	No Load Speed R.P.M.	Weight kgs
82 mm	700 W	16,000	2.8

How to order : CODE

Planer, electric portable, PLANING WIDTH, POWER SOURCE VOLTAGE, MODEL

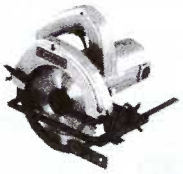
Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Planing Width	CODE	Cutting Capacity
59 11 36	82 mm	59 11 37	82 mm

Electric Circular Saws

Blade guard operates automatically in all positions. Easily adjustable for depth cut and mitre. Furnished for a 110 volt or 220 volt power supply.

The specifications listed here are for your reference. If you wish to order Circular Saws from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-63 and 64.



Specifications

Blade Diam	Arbor	Max. Cutting 90°	Motor	No Load Speed R.P.M.	Weight kgs
160 mm	19 mm	55 mm	670 W	4,700	3.1
185 mm	19 mm	65 mm	1,050 W	4,700	3.9

How to order : CODE

Circular saw, electric portable, BLADE DIAM, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Blade Diam	CODE	Blade Diam
59 11 41	160 mm	**59 11 42**	160 mm
44	185 mm	**45**	185 mm

Spare Blades for Circular Saw

When ordering, please specify the saw's use, size (O.D. and I.D.), and number of teeth. Also the manufacturer's name and the model number of the circular saw are necessary to assure a proper fit.

How to order : CODE

Spare blade for circular saw, BLADE DIAM (O.D. and I.D.)mm, NUMBER OF TEETH, for MODEL

Unit Per Pc.

CODE	Blade Size mm		Tooth
	O.D.	I.D.	
59 11 43	160	19	50/inch
47	185	19	"

Electric Tool Sets

Comprising of 1 set each of drill, circular saw and planer in plastic portable case.

Specifications

Item	Capacity	Watt	No Load Speed	Weight
Drill	10 mm for iron 15 mm for wood	380 W	0 - 2,800 rpm	1.8 kgs
Circular Saw	160 mm blade diam	670 W	4,000 rpm	3.0 kgs
Planer	84 mm blade width	430 W	15,000 rpm	2.8 kgs

59 11 46	Tool set electric AC 100 V 3's/set	Set
48	" AC 220 V 3's/set	"

Electric Rod Cutters

For cutting steel rods, pipes and angle iron, etc.

Furnished for use with a 110 volt or 220 volt power supply.

For further detailed information on the complete line of rod cutters, ask your local distributor.

The specifications listed here are for your reference. If you wish to order rod cutters from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-64.

Specifications

Wheel Diam	Cutting Capacity mm		Motor	No Load Speed R.P.M.	Weight kgs
	Round Bar	Flat			
305 mm	ø60	100 x 100	1,450 W	3,900	16
405 mm	ø65	135 x 135	1,450 W	3,100	23.6

How to order : CODE

Rod cutter, electric, WHEEL DIAM, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Wheel Diam	CODE	Wheel Diam
59 11 51	305 mm	**59 11 56**	305 mm
52	405 mm	**57**	405 mm

Spare Wheels
for Electric Rod Cutter

When ordering, please specify the outer diameter, inner diameter, thickness and maximum r.p.m.

Out Diam. (mm)	305	405

Unit Per Pc.

CODE	Wheel Diam mm	Thick mm	I.D. mm	Max. R.P.M.
59 11 61	305	2.5	25.4	4,800 mtr/min.
62	405	3.0	25.4	4,800 mtr/min.

Electric Jig Saws

Used for sawing wood, plastic, mild steel plate, etc.

Able to cut either straight or curved lines without warping the surface.

Furnished for a 110 volt or 220 volt power supply.

For further detailed data on the complete line of jig saws, ask your local distributor.

The specifications listed here are for your reference. If you wish to order jig saws from a specific manufacturer, please refer to the comparison table listing major international manufacturers and product model numbers on page 59-64.

Specifications

Cutting Capacity mm			No Load Speed R.P.M	Watt	Weight kgs
Wood	Steel	Radius			
60	6	25°	3,200	380 W	2.1

How to order : CODE

Jig saw, electric portable, CUTTING CAPACITY, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Cutting Capacity	CODE	Cutting Capacity
59 11 71	60 mm	**59 11 72**	60 mm

Spare Blades
for Electric Jig Saw

When ordering, please specify the type number of the blade with the manufacture and model name of the jig saw you are currently using. Minimum order quantity is 5 blades per packet for any types.

No.1		No.4	
No.2		No.5	
No.3		No.6	

Unit Per Pkt

CODE	Type No.	Application					
		Wood	Plastic	Mild Steel	Alum	Hard Board	Hard Rubber
59 11 73	1	○					
74	2	○	○				○
75	3	○					
76	4		○				
77	5		○	○	○	○	
78	6		○	○	○	○	

Electric Blowers

Lightweight with high air pressure and displacement. Capable of vacuuming dust. (Dust bag is available as a standard accessory.) Furnished for use with a 110 volt or 220 volt power supply. For further detailed information on the complete line of blowers, ask your local distributor.

Specifications

Air Volume	Watt	No Load Speed R.P.M.	Overall Length mm	Weight kgs
2.3 m³/min.	335	13,000	428	1.8

How to order : CODE

Blower, electric, AIR VOLUME m³/min, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Air Volume	CODE	Air Volume
59 11 81	2.3 m³/min.	**59 11 82**	2.3 m³/min.

Electric Drill Presses

Solidly built with the weight and rigidity to maintain the tolerance necessary for metal-working applications.

Variable speed drive allows operation at any speed between the listed range.

Specifications

Drilling Capacity	Watt	Speed R.P.M.	Spindle Taper	Swing mm	Stoke mm
13 mm	300	3,600, 2,400, 1,700, 960, 600	J.T. #6 (2-1/2)	360	80

How to order : CODE

Drill press, electric, DRILLING CAPACITY, POWER SOURCE VOLTAGE, MODEL

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Drilling Capacity	CODE	Drilling Capacity
59 11 86	13 mm	**59 11 87**	13 mm

Electric Jet Chisels

For use on scaling jobs. Free rotating handle will be fixed at any position to make operation easier.

Unit Per Set

CODE	**59 12 01**	**59 12 02**	**59 12 03**
Model	EJC-32A		
Power Supply	AC100V 50/60 Hz	AC115V 50/60 Hz	AC230V 50/60 Hz
Power Consumption	300 W		
Rated Current	3.2 A	2.8 A	1.4 A
Stroke Speed	3,000 min⁻¹		
Needle	2 mm x 32 or 3 mm x 15		
Power Cord Length	2.5 mtr	5 mtr	
Weight	4.5 kgs		

Name of Mfr.: Nitto Kohki Co., Ltd.

Spare Needles for Jet Chisel

How to order : CODE

Spare needle for jet chisel, DIAM x LENGTH

Unit Per Box

CODE	Needle Diam x Lgth mm	Per Box	CODE	Needle Diam x Lgth mm	Per Box
59 04 67	2 x 180	100	**59 04 68**	3 x 180	100

Comparison Table of Electric Tools

Various manufacturers and brands are available from around the world. A few products from different manufacturers are listed here for your reference. Please ask for further information with brochures of various models from manufacturers when ordering.

The standard power source voltage differs according to the model and manufacturer. Please acknowledge that it will require several days for rewinding motor coils to convert the power source voltage when the required voltage is not available in standard.

When ordering : Electric drills

1. Select the drilling capacity required : 6.5 mm for steel
2. Select a manufacturer from one of the columns to the right: Black & Decker
3. List the representative code for that size : 59 10 01
4. List the model number of the tool for the manufacturer : 1046
5. Specify required power source voltage to be used : AC 110 volt

Electric Drills

CODE	Power Source	Drill Capacity	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 10 01 59 10 11	110 V 220 V	6.5 mm for Steel	-	1046 470 W 0-2,500 rpm	DR-6A 260 W, 3,200 rpm	D6SH 240 W, 4,500 rpm	6501 230 W 4,500 rpm
59 10 02 59 10 12	110 V 220 V	10.0 mm for Steel	SBE 500 R 500 W, 0-2,650 rpm	1180 470 W, 0-1,200 rpm	DRD-10C 390 W, 1,700 rpm	D10VC3 600 W, 2,500 rpm	6402 570 W, 1,200 rpm
59 10 03 59 10 13	110 V 220 V	13.0 mm for Steel	SBE 630 R 630 W, 0-2,800 rpm	1311 470 W, 0-600 rpm	DR-13B 620W, 780 rpm	D13VL 860W, 1,100 rpm	6301 700 W, 1,300 rpm
59 10 04 59 10 14	110 V 220 V	16.0 mm for Steel	SB2E 1010 RS 1,010 W, 0 - 1,450 rpm/ 0 – 3,400 rpm	-	DR-16B 670 W, 700 rpm	-	6016 480W, 700 rpm
59 10 05 59 10 15	110 V 220 V	20.0 mm for Steel	-	-	DR-20S1 730W, 500 rpm	-	-
59 10 06 59 10 16	110 V 220 V	25.0 mm for Steel	-	-	DR-25 1,300W, 370 rpm	-	-
59 10 07 59 10 17	110 V 220 V	32.0 mm for Steel	-	-	DR-32A 1,600W, 330 rpm	-	-

Angle Grinders

CODE	Power Source	Wheel Diam.	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 10 21 59 10 31	110 V 220 V	100 mm	WS715-115 (115 mm) 710 W, 10,000 rpm	P 5404 600 W, 10,000 rpm	DGS-100B 680 W, 11,000 rpm	PDA-100K 705 W, 12,000 rpm	9553B 710 W, 11,000 rpm
59 10 22 59 10 32	110 V 220 V	125 mm	-	P 5516 720 W, 11,000 rpm	DGS-125B 680W, 9,500 rpm	-	9565H 1,100 W, 12,000 rpm
59 10 23 59 10 33	110 V 220 V	150 mm	-	-	-	-	GA6021 1,050 W, 10,000 rpm
59 10 24 59 10 34	110 V 220 V	180 mm	WSL-180 2,000 W, 8,500 rpm	P 5721 1,800W, 8,000 rpm	DGTH-180B 2,000W, 8,500rpm	PDH-180C 1,700W, 8,500 rpm	GA7020 2,200 W, 8,500 rpm

Bench Grinders

CODE	Power Source	Wheel Diam.	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 10 51 59 10 56	110 V 220 V	150 mm	-	9403 400 W, 3,000 rpm	BGB-150 300 W, 3,600 rpm	GT-15 302 W, 3,600 rpm (60 Hz)	GB602 250 W, 3,450 rpm (60 Hz)
59 10 52 59 10 57	110 V 220 V	205 mm	-	6820 870 W, 3,000 rpm	BGB-205 600 W, 3,600 rpm	-	GB801 550 W, 3,450 rpm (60 Hz)

Straight Grinders

CODE	Power Source	Wheel Diam.	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 10 61 59 10 66	110 V 220 V	100 mm	-	-	-	-	-
59 10 62 59 10 67	110 V 220 V	125 mm	-	P7701 1,400 W, 5,600 rpm	-	GP-13 570 W, 4,800 rpm	GS5000 750 W, 5,600 rpm

Die Grinders

CODE	Power Source	Shank Diam. × Maximum Wheel Diam.	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 10 71 59 10 75	110 V 220 V	6 × 18 mm	-	P7801 350 W, 25,000 rpm	-	-	GD0603 (6 x 19 mm) 240 W 28,000 rpm
59 10 72 59 10 76	110 V 220 V	6 × 32 mm	-	-	-	LDU4 240 W 23,000 rpm	GD0601 (6 x 38 mm) 400 W, 25,000 rpm

Sheet Sanders (Orbital Sanders)

CODE	Power Source	Paper Size	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 10 81 59 10 82	110 V 220 V	114 × 280 mm	VS 230 (91 × 185 mm) 150 W, 20,000 rpm	P6305 (115 × 280 mm) 450 W, 6,000 rpm	-	SV 12SD 300 W, 10,000 rpm	9046 600 W 6,000 OPM

OPM denotes Orbits Per Minute

Nibblers

CODE	Power Source	Cutting Capacity	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 01 59 11 05	110 V 220 V	1.6 mm for Mild Steel	-	-	-	CN16SA 400 W, 2,300 rpm	JN1601 550 W, 2,200 spm
59 11 02 59 11 06	110 V 220 V	2.3 mm for Mild Steel	-	P8301 (2.5mm) 350 W, 2,100 rpm	-	-	-
59 11 03 59 11 07	110 V 220 V	3.2 mm for Mild Steel	-	-	-	-	JN-3200 660 W 1,300 spm
59 11 04 59 11 08	110 V 220 V	4.5 mm for Mild Steel	-	-	-	-	-

Hand Shears

CODE	Power Source	Cutting Capacity	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 21 59 11 24	110 V 220 V	1.6 mm for Mild Steel	-	-	-	CE16SA 400 W, 4,700 rpm	JS-1600 300W, 4000 rpm
59 11 22 59 11 25	110 V 220 V	2.0 mm for Mild Steel	-	P8402 (2.5mm) 350W, 2700rpm	-	-	-
59 11 23 59 11 26	110 V 220 V	2.9 mm for Mild Steel	-	-	-	-	JS-3200 660W, 1.600rpm

Planers

CODE	Power Source	Planning Width	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 36 59 11 37	110 V 220 V	82 mm	H500 500 W, 17,000 rpm	-	SP-82 400 W, 20,000 rpm	P20SF 620 W, 17,000 rpm	KP0800 620 W, 17,000 rpm

Circular Saws

CODE	Power Source	Blade Diam.	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 41 59 11 42	110 V 220 V	160 mm	K55 1,010 W, 5,200 rpm	-	-	-	HS6101 1 100 W, 5,600 rpm

(to be continued)

Circular Saws

CODE	Power Source	Blade Diam.	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 44 **59 11 45**	110 V 220 V	185 mm	K66S (190 mm) 1,500 W, 5,200 rpm	3026 1,400 W, 5,500 rpm	-	-	HS7101, (190 mm) 1,400 W 5,600 rpm

Rod Cutters

CODE	Power Source	Wheel Diam.	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 51 **59 11 56**	110 V 220 V	305 mm	-	-	-	CC12SF 1,450 W, 4,400 rpm	2414NB, 2,000 W, 3,800 rpm
59 11 52 **59 11 57**	110 V 220 V	405 mm	-	-	-	-	2416S 1,430 W, 2,300 rpm

Jig Saws

CODE	Power Source	Sawing Capacity	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 71 **59 11 72**	110 V 220 V	60 mm	ST500 500 W, 3,000 rpm	3157 500 W, 0-3,100 rpm	-	CJ65V3 (65 mm) 400 W, 3,000 rpm	4327, (65 mm) 450 W 3,100 rpm

Blowers

CODE	Power Source	Air Volume	AEG (Germany)	BLACK&DECKER (U.S.A.)	TOSHIBA (Japan)	HITACHI (Japan)	MAKITA (Japan)
59 11 81 **59 11 82**	110 V 220 V	2.8 m^3/min	Powertherm 560 1,500 W,. 400/450 ltr/min	-	-	-	UB1100 600 W 2.8 m^3/min

17. Chain Hoists

Electric Chain Hoists

A wide range of models from different manufacturers are available. The rugged dynamic body will provide maximum protection for moving exceedingly heavy loads.

Push-button control responds immediately. Both the top and bottom hooks can turn in all directions.

Furnished for 110 volt or 220 volt single phase power supply.

For further detailed information about the electrical chain hoist, ask your local distributor.

Specifications

Lifting Capacity		Hoisting Speed	Test Load	Motor Output	Chain Diam	Weight
Tons	Mtr	Mtr/min.	kgs	kw	mm	kgs
0.25	3.0	7.0	312.5	0.4	6.3	37
0.5	3.0	4.0	625	0.4	6.3	38
1.0	3.0	3.2	1,250	0.62	7.1	58

How to order : CODE

Chain hoist, electric, LIFTING CAPACITY, POWER SOURCE VOLTAGE

Unit Per Set

AC 110V Single Phase		AC 220V Single Phase	
CODE	Lifting Capacity Tons	CODE	Lifting Capacity Tons
59 13 01	0.25	**59 13 06**	0.25
02	0.5	**07**	0.5
03	1.0	**08**	1.0

Pneumatic Chain Hoists

Designed to be used in various fields; has the following features.

* Compact and lightweight (lighter than a hand-operated chain block)
* Speed control: Operator can control the chain speed freely as he likes by a pilot control system.
* Automatic lubrication by a built-in lubricator keeps the hoist free from motor troubles.
* Safe: No mechanical brake. Self-locking worm gear provides automatic and positive braking. Holds loads securely when the motor is not operating. No motor burn-out, can be overloaded, even repeatedly stalled, without damage to any parts of the chain block. Over-load will only stop the operation of the air motor.
* No shock hazard: Controlled and powered completely by air.
* Explosion-proof type
* Required air pressure is 0.59 MPa (6 kgf/cm^2).

How to order : CODE

Chain hoist, pneumatic, LIFTING CAPACITY tons and mtr

Unit Per Set

CODE	Lift Capacity		Chain Speed	Air Hose Size mm	Weight kgs
	Tons	Mtr	mtr/min.		
59 13 52	0.5	3.0	12.0	12.7	25.2
54	1.0	3.0	2.3	19.0	22.5
55	2.0	3.0	3.0	12.7	49.0
56	3.0	3.0	3.5	19.0	52.1
57	3.0	3.0	1.4	19.0	48.6

(to be continued)

Unit Per Set

CODE	Lift Capacity		Chain Speed	Air Hose Size mm	Weight kgs
	Tons	Mtr	mtr/min.		
59 13 58	5.0	3.0	0.95	19.0	61.7
59	10.0	3.0	1.5	25.0	190
61	25.0	3.0	0.5	25.0	350

High Speed Pneumatic Chain Hoists

TCS Series

Designed to be the fastest speed in this lift capacity class, and have following features.

* Compact and lightweight with aluminium housing.
* Maximum speed limit is independently adjustable on both lifting and lowering.
* Excellent inching on both lifting and lowering movement .
* Unique design of the valve prevents air leakage and malfunction caused by rust when not in operation.
* Over travelling limit system.
* Self Cooling Design.
* Operating air pressure is 0.6 MPa (6kgf/cm²).

Each capacity model has 3 different types of controllers.

P : Pendant type
PE : Pendant + Emergency Button type
C : Cord Type

How to order : CODE

High speed chain hoist, pneumatic, LIFTING CAPACITY tons and mtr

Unit Per Set

CODE	Model	Lift Capacity		Chain Speed	No of chain falls	Hose Size (mm)	Weight kgs
		Kgs	Mtr	mtr/min.			
59 13 81	TCS-250P	250	3.0	34	1	12.7	19.0
82	TCS-250PE	250	3.0	34	1	12.7	19.0
83	TCS-250C	250	3.0	34	1	12.7	18.0
59 13 84	TCS-500P	490	3.0	17	1	12.7	19.0
85	TCS-500PE	490	3.0	17	1	12.7	19.0
86	TCS-500C	490	3.0	17	1	12.7	18.0
59 13 87	TCS-1000P	990	3.0	8.5	2	12.7	25.0
88	TCS-1000PE	990	3.0	8.5	2	12.7	25.0
89	TCS-1000C	990	3.0	8.5	2	12.7	24.0

TMH Series - 3 & 6 ton capacity

Fastest Lifting Speed in this lifting capacity, operating pressure is 0.4 to 0.6MPa.

High efficient 3 step planet gear and original heat reducing structure provides high class durability. Pin mount type of upper hook is for easy maintenance and convention to trolley hoist. Smallest headroom clearance in this capacity class.

Unit Per Set

CODE	Model	Lift Capacity		Chain Speed	No of chain falls	Hose Size (inch)	Weight (kgs)
		Kgs	Mtr	mtr/min.			
59 13 90	TMH-3000PE	3,000	3.0	5.4	1	3/4	102
91	TMH-3000C	3,000	3.0	5.4	1	3/4	101
92	TMH-6000P2E	6,000	3.0	2.7	2	3/4	133
93	TMH-6000C2	6,000	3.0	2.7	2	3/4	132

*TMH-6000 P2E/C2 – 2 x Hoist Chain

18. Ventilations/Fans

Electric Portable Ventilation Fans

Highly efficient and portable. Used to ventilate hot air and harmful gases from a tank or work area, and supply fresh air and oxygen. The ideal bell-mouth type casing is highly efficient, creates little noise and is easy to install in an air duct. Related air ducts are sold separately.

Specifications

Casing Diam	142ø	200ø	280ø	400ø	500ø
Electric Source	100 V 1P	100 V 1P 200 V 1P	100 V 1P 200 V 1P	200 V 3P	200 V 3P
Air Volume	20 m³/ min	20 m³/ min	70 m³/ min	110 m³/ min	190 m³/ min
Pressure	40 mm Aq	25 mm Aq	30 mm Aq	50 mm Aq	70 mm Aq
R.P.M.	2,000 7,000	3,000 3,600	3,000 3,600	3,000 3,600	3,000 3,600
Output	96 W	155 W	0.55 kw	1.5 kw	3.7 kw
Weight	2 kgs	9 kgs	18 kgs	35 kgs	64 kgs
Standard Accessory	Speed Control Switch	Motor Breaker Switch		Unfurnished	
	Cabtyre Cable 1 mtr	Cabtyre Cable 3 mtr			

How to order : CODE

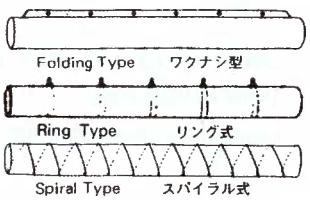
Ventilation fan, portable, electric, CASING DIAM mm, POWER SOURCE VOLTAGE

Unit Per Set

AC 100 volt ± 10%			AC 200 volt ± 10%		
CODE	Case Diam.	Phase	CODE	Case Diam.	Phase
59 14 01	142 mm	Single	**59 14 06**	200 mm	Single
02	200	"	**07**	280	"
03	280	"	**08**	400	Triple
			09	500	"

Ventilation Tubes

(Air Ducts)



Flexible ventilation tubes made of PVC tarpaulin canvas.
A lightweight, highly flexible duct ideal for improving the efficiency of blowers especially in confined areas. When ordering, specify type of tube and length required.

How to order : CODE

Ventilation tube, TYPE, TUBE DIAM, LENGTH

Unit Per Lgh.

CODE	Tube Diam. mm	Length mtr	CODE	Tube Diam. mm	Length mtr
Folding Type					
59 14 61	200	10	**59 14 66**	700	10
62	300		**67**	800	
63	400		**68**	900	
64	500		**69**	1,000	
65	600				

(to be continued)

Unit Per Lgh.

CODE	Tube Diam. mm	Length mtr	CODE	Tube Diam. mm	Length mtr
		Ring Type			
59 14 71	200	10	59 14 76	700	10
72	300		77	800	
73	400		78	900	
74	500		79	1,000	
75	600				
		Spiral Type			
59 14 81	200	5	59 14 91	700	5
82		10	92		10
83	300	5	59 14 93	800	5
84		10	94		10
85	400	5	59 14 95	900	5
86		10	96		10
87	500	5	59 14 97	1,000	5
88		10	98		10
89	600	5			
90		10			

Portable Ventilation Fans

Explosion Proof

Lightweight and robust, non-sparking type electric driven fan. Equipped with an explosion proof switch and 5 meters of cabtyre cable. An explosion proof flexible duct is also available.

How to order : CODE

Ventilation fan, explosion-proof, portable, electric, CASING DIAM mm, POWER SOURCE VOLTAGE

Unit Per Set

CODE	59 14 16	59 14 17	59 14 18	59 14 19
Casing Diam.	200 o		282 o	
Voltage	AC-100 V	AC-200 V	AC-100 V	AC-200 V
Phase	Single		Single	
R.P.M.	3,000	3,600	3,000	3,600
Air Volume	20 M /min		70 M³/min	
Pressure	25 mm Aq		30 mm/Aq	
Weight	14.5 kgs		25 kgs	

Ventilation Tubes for Explosion Proof

Ventilation Fan

How to order : CODE

Ventilation tube, explosion proof, SIZE

Unit Per Set

CODE	Size	Suitable Model
59 14 21	200o x P150 x 5 mtr	200 mm Case Diam.
22	300o x P150 x 5 mtr	300 mm Case Diam.

Made of Nylon Tarpaulin with earth grip. P denotes pitch of the spiral wire.

Portable Air Movers

Lightweight, portable compressed air (or steam) operated flow amplifiers suitable for ventilating crawl areas and confined spaces. Made of single piece cast aluminium inlet housing. Ideal for use in hazardous atmospheres because of no moving parts - important for ventilating hazardous areas - zero maintenance. Typical applications include: diluting or exhausting fumes from tanks, cargo holds, etc. Can be used with or without flexible duct.

Unit Per Set

CODE	59 14 11	59 14 12
Model	3-HP	6-HP
Inlet Pressure (kg/cm²)	4.2 - 7	4.2 - 7
Total Air Flow (m³/min.)	43 - 53	113 - 138
Air Consumed (m³/min.)	1.3 - 2	2.8 - 4.3
Outlet Dia (mm)	185	305
Length	838	1,123
Name of Mfr.	Coppus Engineering Corp.	

Venturi Type Air Movers

Used wherever there is a need to disperse and remove fumes or move air into confined spaces.

- Fast, efficient and economic way to ventilate.
- No moving parts. Means minimal maintenance.
- Operates on compressed air or steam.

Technical Specifications based on Standard European Measurements.

Model	Using 5.5 bar		Using 4.1 bar		Using 2.7 bar	
	Air Con. M³/min	Total Air Flow M³/min	Air Con. M³/min	Total Air Flow M³/min	Air Con. M³/min	Total Air Flow M³/min
TA3AMS (Short)	1.75	33.5	1.42	28	1.02	23
TX3AM	1.75	41.5	1.27	35	0.99	29
TX6AM	3.51	95	2.78	82	2.07	68
TX8AM	5.46	140	4.3	117.5	3.23	89
TX10AM	7.75	207	5.92	175	4.4	139

Unit Per Pc.

CODE	Model	Size cm		Weight kgs
		Length	Dia. Base	
59 14 30	TX3AMS (Short)	42	18	3
32	TX3AM	76	18	4
33	TX6AM	111	28	10
34	TX8AM	115	36	16
35	TX10AM	120	43	19

Name of Mfr. : Dalseide Shipping Services

Jet Fan Air Movers

For use wherever there is compressed air available. Designed for ventilation of confined areas, tanks, any place with a need to disperse and remove fumes. This unit is reversible so can become an exhauster within minutes. No air motor required.

Technical Features:

- Rated operating pressure 2.75 bar – 7.58 bar
- Heat treated to T6 Aircraft Aluminium Spec.
- Six guide vanes to eliminate turbulence.
- Four blades, precision balanced propeller.

Technical Specification

Air Pressure		Average R.P.M.	Air IN (Air con.)	Air out
Bar	Kgf/cm²		M³/min.	M³/min.
TX-JF20				
2.76	2.81	2,080	1.70	168
4.14	4.22	2,695	3.23	215
5.52	5.62	3,225	5.27	258
6.89	7.03	3,670	8.27	295

(to be continued)

Air Pressure		Average	Air IN (Air con.)	Air out
Bar	Kgf/cm²	R.P.M.	M³/min.	M³/min.
TX-JF24				
2.76	2.81	1,565	2.15	229
4.14	4.22	2,053	4.16	311
5.52	5.62	2,570	6.37	364
6.89	7.03	3,138	9.57	457

Unit Per Set

CODE	59 14 13	59 14 14
Model	TX-JF20	TX-JF24
Nominal Dia	50 cm	60 cm
Max. Bar	7.58 bar	
Mounting Slot Dia	2.54 cm	
Inlet Size	1.9 cm npt	2.54 cm npt
Bolt Circle Dia	57.2 cm (22.5")	69.85 cm – 77.85 cm (27.5" – 30.25")
Outside Dia	62.23 cm (24.5")	79.4 cm (31.25")

Name of Mfr. : Dalseide Shipping Services

Electric Portable Ventilation Fans

Designed for use in work environments where non-sparking equipment is an absolute requirement. Hazardous location electric motors meets NEC Class 1, Division 1, Group D; Class II, Division 1, Groups E, F, G ratings.

Junction Box

All housings and main components are molded of special conductive polymers for safe dissipation of static charges.

Unit Per Set

CODE	Model	Vaneaxial Airflow cfm	Vaneaxial Airflow m³/min	Voltage	Motor HP	Case Diam mm	Weight kgs
59 14 23	VEP1	867	24	115V 60HZ	1/2	330	16
24	VEP3	867	24	230V 60HZ	1/2	330	16

Name of Mfr : Coppus Engineering Corp.

Pneumatic Portable Ventilation Fans

Compressed air driven ventilators that can be used with or without a duct in hazardous areas such as cooling tanks or hatches. Provides ventilation of gas, paint fumes and other hazardous fumes.

Unit Per Set

CODE	Model	Case Diam	Capacity m³/hr
59 14 25	RF-12	305 mm	3,566
26	RF-16	405 mm	8,665

Name of Mfr. : Coppus Engineering Corp.

Deck Mount Blowers

"Marine Venturi Air Mover"

Lightweight, rugged and versatile ship-board ventilator for degassing or fresh air supply.

* Delivers 4,870 cfm (8,274 m³/h) operating with 100 psig compressed air.
* Spark resistant, corrosion resistant powder coated aluminium construction. Ideal for hazardous locations.

* Weight on 32 lbs (15 kgs).
* Mates with 122 (320 mm) Butterworth deck openings in either supply or exhaust set-up.
* Built-in flange on outlet end accepts 12" flexible duct.

Unit Per Set

CODE	59 14 27
Inlet Pressure (kg/cm²)	4.2 - 7
Total Air Flow (m³/min.)	113 - 138
Air Consumed (m³/min.)	2.8 - 4.3
Air Hose Dia. (NPT)	1" NPT
Outlet Bore Dia (mm)	248
Length (mm)	592
Name of Mfr.	Coppus Engineering Corp.

Air Driven Gas Freeing Fans

A high performance air driven fan constructed from Stainless Steel. These non-sparking (ATEX approved) fans can achieve deep penetration and operate at low pressures. Highly efficient air motors minimize air consumption, supply or extract mode by simple reversal of air supply, and can be supplied for horizontal mounting. High air flow throughput and high static pressure. Integral 'Direct In-Line' drive no gearbox to maintain or fail.

Ancillary equipment is also available (rigid hoses, ducting, fittings, adaptors, transportation trolley) on request.

Class Approved for use in hazardous areas.

VP650A

VP950AS

VP650A

Made of 316 Stainless Steel, designed to be lightweight and therefore extremely portable. Suitable for use on all types of vessels, particularly oil, gas, product, chemical, handysize, SR and LPG vessels.

VP950AS

Made of 316 Stainless Steel, suitable for all types of oil, gas, product, chemical, LR2, LR1, MR and LPG vessels.

Unit Per Set

CODE	59 15 35	59 14 29
Model	VP650A	VP950AS
Max. Air Flow Requirment m³/hr	6,750	9,000
Static Pressure Max. Pa	1,015	700
Max. Flow Requirment m³/hr	178	220
Operating Pressure Max. kg/cm²	7.0	7.0
Materials		
Casing	St. St. 316	St. St. 316
Impeller	PAGAS	Aluminium Alloy LM6
Spark Track	N/A	Beryllium Copper
Air Stator	St. St. 316	N/A
Fasteners	St. St. 316	St. St. 316
Couplings	Bronze	Bronze
Motor Type	Air ATEX Approved	Air ATEX Approved
Installation		
Standard Deck Flange	ID 318mm, PCD 389mm	ID 318mm, PCD 389mm
Standard Connections	1" Claw	1" Claw

(to be continued)

Unit Per Set

CODE	59 15 35	59 14 29
Envelope Dimensions:	H : 410 ø : 559	H : 368 ø : 580
Weight	17 kgs	24 kgs

Name of Mfr.: Victor Marine Ltd.

Air Supply Hose - Black - for Gas Freeing Fan

Styrene Butadiene Rubber (SBR) reinforced with multiple rayon braids. Available in 19 mm and 25 mm nominal bore. 20 bar working pressure, compliant to BS EN ISO 2398:2016. Available in lengths of up to 30 metres.

Unit Per Lgh.

CODE	Nom. Dia x Length	CODE	Nom. Dia x Length
59 15 36	19 mm x 10 mtrs	**59 15 41**	25 mm x 10 mtrs
37	19 mm x 15 mtrs	**42**	25 mm x 15 mtrs
38	19 mm x 20 mtrs	**43**	25 mm x 20 mtrs
39	19 mm x 25 mtrs	**44**	25 mm x 25 mtrs
40	19 mm x 30 mtrs	**45**	25 mm x 30 mtrs

Name of Mfr. : Victor Marine Ltd.

Water Driven Gas Freeing Fans

VP700W / VP1000W / VP1500W

High performance 316 stainless steel axial flow water driven fans. These non-sparking fans offered as either high or medium throughout, can achieve deep tank penetration. Suitable for all types of crude oil, chemical, product, handysize, SR LPG, Suezmax, UL/VLCC, LR2, LR1, MR and gas tankers for fast and complete gas freeing. ATEX approved.

VP1400W

Suitable for use on all types of vessels (oil, product, chemical, suezmax, UL/VLCC, LPG). The VP1400 is specially designed for low pressure systems and large deck openings whilst still maintaining the high static and flow rate for fast and efficient gas freeing. ATEX approved.

VP800W / VP1350W

Non-sparking fans offered as either medium or high flow, can achieve deep penetration suitable for all types of Oil, Gas, Panamax, Aframax, Suezmax, UL/VLCC, and LPG tankers. ATEX approved.

Key Features

* Designed and class approved for use in hazardous areas.
* Supply or extract mode by simple reversal.
* Integral 'Direct In-Line' drive, no gearbox to maintain or fail.
* Alternative deck flanges and fan connections available;
* Ancillary equipment available (layflat hoses, ducting, fittings, adaptors, transport trolley).

Unit Per Set

CODE	59 15 21	59 15 22	59 15 24	59 15 23
Model	VP700W	VP1000W	VP1400W	VP1500W
Max. Air Flow m³/hr	7,000	10,540	14,000	14,800
Static Pressure Pa	970 Pa	1,790 Pa	1,500 Pa	3,120 Pa

(to be continued)

Unit Per Set

CODE	59 15 21	59 15 22	59 15 24	59 15 23
Waterflow Capacity m³/hr Max	15	27	48	56
Operating Pressure Max. kg/cm²	12	12	7.0	12
Materials Casing Impeller Fastenings Connections Spark Track Motor Type	 St/St. 316 Pagas St/St. 316 St/St. 316 N/A N/A	 St/St.316 LM6 Alloy St/St. 316 St/St. 316 Beryllium Copper N/A	 St./St. 316 Polymide (PAGAS) St./St. 316 St./St. 316 N/A 3D Francis Turbine	 St/St.316 LM6 Alloy St/St. 316 St/St. 316 Beryllium Copper N/A
Installation To Suite Deck Opening Standard Water Connections	 ID 318mm, PCD 389 mm 1.5" BSP	 ID 318mm, PCD 389 mm 2" BSP	 ID 400mm, PCD 480 mm 2" BSP or Nakajima	 ID 318mm, PCD 389 mm 2" BSP
Envelope Dimensions	H : 465 Ø : 365	H : 572 Ø : 580	H : 514 Ø : 503	H : 572 Ø : 580
Weight	19 Kgs	27 Kgs	25 Kgs	27 Kgs

Name of Mfr.: Victor Marine Ltd.

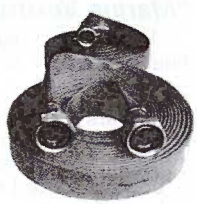
Unit Per Set

CODE	59 14 42	59 14 43
Model	VP800W	VP1350W
Max. Air Flow m³/hr	8,700	14,350
Air Velocity m/s	3.1 @ 25 mtr below deck	5.0 @ 25 mtr below deck
Static Pressure Max. Kpa Operational m³/hr	 0.72 8,000 @ 250Pa	 1.7 13,000 @ 500Pa
Waterflow Capacity m³/hr	13 to 19	47 to 68
Operating Pressure Max. kg/cm²	10.5	
Materials Casing Impeller Spark Track Air Stator Fasteners Couplings Motor Type	 Aluminium Alloy LM6 Aluminium Alloy LM6 N/A Aluminium Alloy LM6 St. St. 316 Bronze 2D Francis Turbine	
Installation Standard Deck Flange Standard Connections	 ID 318 mm, PCD 389 mm 2.5" NPT (BW)	
Envelope Dimensions	H : 690 ø : 580	H : 689 ø : 580
Weight	31 kgs	

Name of Mfr.: Victor Marine Ltd.

Layflat Hoses for Gas Freeing Fan

Red Heavy Duty Supply and Blue Medium Duty Exhaust



Reinforced woven polyester encased in polyurethane internal and external liner. Available in 38 mm and 50 mm nominal bore and available in multiples of 5 metres, up to 30 metre lengths. Supplied fitted with an extensive range of various connections.

Unit Per Lgh.

CODE		Nom. Diam x Length
Red – Heavy Duty Supply	Blue – Medium Duty Exhaust	
59 15 51	**59 15 61**	38 mm x 10 metres
52	**62**	38 mm x 15 metres
53	**63**	38 mm x 20 metres
54	**64**	38 mm x 25 metres
55	**65**	38 mm x 30 metres
59 15 56	**59 15 66**	50 mm x 10 metres
57	**67**	50 mm x 15 metres
58	**68**	50 mm x 20 metres
59	**69**	50 mm x 25 metres
60	**70**	50 mm x 30 metres

Name of Mfr.: Victor Marine Ltd.

Water Driven Turbine Fans

Designed for high performance ventilation of gas from large enclosed areas or other tank openings. Works effectively providing penetration deep into the tank for complete ventilation. Made of a non-spark construction with a line impeller and integral water motor that are coated against corrosion.

Inlet/outlet water hoses are sold separately.

How to order : CODE

Turbine fan, water driven, OUTLET BORE DIAM mm, CAPACITY m³ /min., MODEL

Unit Per Set

CODE	**59 14 36**	**59 14 37**	**59 14 40**	**59 14 41**
Model	KWF-300M	KWF-400M	C-12AWC	C-15AWC
Outlet Bore Dia. mm	300 mm	400 mm	318 mm	387 mm
Capacity m³/min.	70 - 220	100 - 290	83 - 142	123 - 210
Water Pressure kgf/cm²	1 - 7	1 - 7	MAX 10.5	MAX 10.5
Water Consumption m³/hr	20 - 43	24 - 58	19.8	27.3
Hose Dia.	65A	65A	1-1/2"	1-1/2"
Weight kgs	24	28	18	24
Name of Mfr	Exeno - Yamamizu		Coppus Engineering	

Compressed Air or Steam Driven Turbine Fans

Powerful turbine fan for efficient drying and ventilating of large areas on tankers and other vessels. These fans are turbine driven by steam pressure or compressed air.

Inlet/exhaust steam hoses, coupling and air duct hoses are sold separately.

How to order : CODE

Turbine fan, compressed air or steam driven, AIR OUTLET DIAM mm, CAPACITY m³ /min., MODEL

Unit Per Set

CODE	**59 14 46**	**59 14 47**	**59 14 49**	**59 14 48**
Model	KTF-300	KTF-400	C-12A	C-15A
Air Outlet Diam mm	300	400	318	389
Capacity m³/min.	130	210	152	238

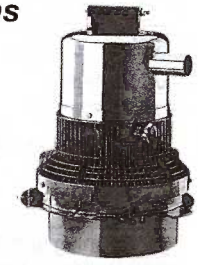
(to be continued)

Unit Per Set

CODE	**59 14 46**	**59 14 47**	**59 14 49**	**59 14 48**
Operating Stream Pressure kgf/cm²	8		MAX 10.5	
Steam Inlet Diam mm	19		19 (3/4" NPT)	
Hose Diam	50		50 (2" NPT)	
Weight kgs	32	38	45	54
Name of Mfr	Exeno - Yamamizu		Coppus Engineering	

Portable Gas Freeing Fans

Jetfan Series



Jetfan 65

For small to mid tonnage vessels. Totally portable and capable of being used in virtually any location, making it ideally suited to vessels with severely restricted space.

To be used not only for general tank gas freeing but also the ventilation of confined spaces such as cofferdams and double bottoms for inspection and repair work. The air flow can be changed from penetration to extraction in a simple operation.

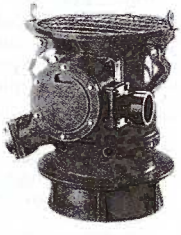
Available in three drive mediums, compressed air, stream or hydraulic.

Unit Per Set

CODE	**59 14 51**	**59 14 52**	**59 14 59**
Model	Jetfan 65		
Drive Medium	Compressed Air	Steam	Hydraulic
Supply Connection	Claw type	1" BSP	As required
Discharge Connection	2" Plain tube	2" BSP	As required
Deck Opening	318 mm		
Size Height x Width	523 x 394 mm		
Weight	17 kgs		

Name of Mfr. : Dasic Marine Ltd.

Jetfan 70



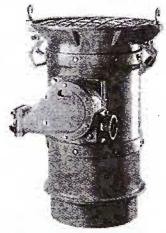
For 'mid' range vessels as a penetration fan. Ideally suited to the environment and can be easily manoeuvred and positioned by one man, a particular advantage on smaller tonnage where deck space is limited. Can choose from water or compressed air as the drive medium. A hand transport trolley is also available.

Unit Per Set

CODE	**59 14 53**	**59 14 54**
Model	Jetfan 70	
Drive Medium	Water	Compressed Air
Supply Connection	2" 7-1/2 TPI Male (ASA B26)	3/4" Claw
Discharge Connection	2-3/4" BSP Male	3/4" NB Tube
Deck Opening	Standard 318 mm stud bolt deck opening	
Size Height x Width	520 x 436 mm	
Weight	25 kgs	

Name of Mfr. : Dasic Marine Ltd.

Jetfan 125



Most efficient deep penetration or extraction gas freeing fan. Has been used successfully on vessels of up to 550,000dwt tonnes, drastically reducing time spent on gas freeing operations.

To change from penetration to extraction is a one man operation and can take barely 10 minutes to perform. There is a choice of water, compressed air or steam as the driven medium.

A handy transport trolley is also available.

Unit Per Set

CODE	59 14 56	59 14 57	59 14 58
Model	Jetfan 125		
Drive Medium	Water	Compressed Air	Steam
Supply Connection	2" 7-1/2 TPI Male (ASA B26)	3/4" Claw	1" BSP Male
Discharge Connection	2-3/4" BSP Male	3/4" NB Tube	2" BSP Male
Deck Opening size	Standard 318 mm stud bolt deck opening		
Size Height x Width	736 x 500 mm		
Weight	44 kgs		

Name of Mfr. : Dasic Marine Ltd.

Gas Freeing Fan Trolley

Fan Trolley manufactured in a lightweight tubular construction, this trolley is available to ease the transportation of fans in restricted areas. Complete with durable wheels and a fan retaining strap for added protection. Also available in 316 stainless steel.

59 14 60	Trolley for gas freeing fan	Pc.

Air Ducting for Gas Freeing Fan

Heavy duty, anti-static, flame resistant spiral wound PVC coated, flexible fabric ducting. Produced in standard 300/400 mm diameter nominal bore or special purpose diameters and lengths. These ducts are suitable for both supply and exhaust mode operation and fitted with deck flange to suit 318/400 mm deck opening. Specially designed for marine "hazardous areas". Outlet ducts are available in many sizes ex-stock. Also available as a detachable option.

Unit Per Lgh

CODE	Nom. Diam. x Length	CODE	Nom. Diam. x Length
59 15 15	300 mm x 10 metres	**59 15 20**	400 mm x 10 metres
16	300 mm x 15 metres	**25**	400 mm x 15 metres
17	300 mm x 20 metres	**26**	400 mm x 20 metres
18	300 mm x 25 metres	**27**	400 mm x 25 metres
19	300 mm x 30 metres	**28**	400 mm x 30 metres

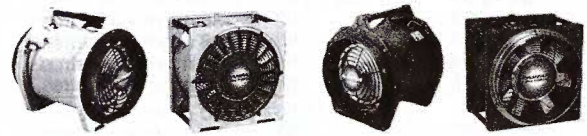
Name of Mfr. : Victor Marine Ltd.

Electric Blowers / Exhausters

Portable blower / exhauster with turbine blades to deliver a constant source of clean air in even the most difficult to ventilate conditions. These rugged industrial blowers have corrosion and chemical resistant ABS (Acrylonitrile Butadiene Styrene copolymer) housings, cast aluminium turbine fan blades and heavy duty cycle switched motors.

Anti-static intrinsically safe models are recommended for use in hazardous atmospheres containing explosive and combustible gases and vapors.

Standard Models | Intrinsically Safe Models



59 15 01 EFi75 | 59 15 02 EFi50 | 59 15 06 EFi75XX | 59 15 07 EFi150XX

Standard Models

Unit Per Pc.

CODE	59 15 01	59 15 02
Model	EFi75	EFi50
Fan Size	12"/30 cm x 17 blade impeller	16"/40 cm x 21 blade impeller
Free Airflow	2,500 CFM/ 4,250 m³/hr	3,200 CFM/ 5,440 m³/hr
Motor	3/4 HP	1/2 HP
	115 / 230 V 50 / 60 Hz 1P	
Amps	115V : Start : 37, Run : 7.2 230V : Start : 14, Run : 3	115V : Start : 21, Run : 6 230V : Start : 10, Run : 3
Switch Enclosure	IP65 rain tested	
Housing Material	Glass-reinforced ABS	
Weight	46 lbs / 21 kgs	46 lbs / 21 kgs
Dimensions H x W x D	16 x 15 x 16 inches 406 x 381 x 406 mm	19 x 18 x 12 inches 480 x 460 x 305 mm
Name of Mfr.	Euramco Safety	

Intrinsically Safe Models

Unit Per Pc.

CODE	59 15 06	59 15 07
Model	EFi75××	EFi150××
Fan Size	12"/30 cm x 17 blade impeller	16"/40 cm x 7 blade impeller
Free Airflow	2,500 CFM/ 4,250 m³/hr	4,459 CFM/ 7,580 m³/hr
Motor	3/4 HP	1.5 HP
	115 / 230 V 50 / 60 Hz 1P	
Amps	115V : Start : 37, Run : 7 230V : Start : 14, Run : 3	115V : Start : 57, Run : 15 230V : Start : 32, Run : 7.5
Motor Rating	Totally enclosed hazardous location motor rated UL Class I – Group D, UL Class II – Group E,F,G	
Housing Material	Glass-reinforced, carbon-filled, anti-static ABS	
Weight	44 lbs / 20 kgs	61 lbs / 28 kgs
Dimensions H x W x D	16 x 15 x 16 inches 406 x 381 x 406 mm	19 x 18 x 12 inches 480 x 460 x 305 mm
Name of Mfr.	Euramco Safety	

Air Driven Blowers

These air driven blowers are engineered specifically for hazardous work environments where intrinsically safe equipment is absolutely required. The anti-static, glass-reinforced ABS (Acrylonitrile Butadiene Styrene copolymer) housing is corrosion and chemical resistant. Complete with filter, motor lubricator, exhaust muffler, air control valve and static grounding cord. Motor exhausts outside of duct; compressed air not in air stream.

59 15 11 AFi75xx

59 15 12 AFi50xx

Unit Per Pc.

CODE	59 15 11	59 15 12
Model	AFi75xx	AFi50xx
Fan Size	12"/ 30 cm x 17 blades	16"/40 cm x 21 blades
Free Airflow	2,042 CFM / 3,471 m^3/hr	3,200 CFM / 5,440 m^3/hr
Air Motor	GAST 4AM-NRV-50C	
Duct Adaptor	Integral 12"	Reversible 16"
Housing Material	Anti-static, glass-reinforced ABS	
Weight	33 lbs / 15 kgs	43 lbs / 20 kgs
Dimensions H x W x D	16 x 17 x 16 inches 410 x 430 x 410 mm	19 x 21 x 12 inches 480 x 530 x 305 mm
Name of Mfr.	Euramco Safety	

Portable Electric Industrial Fan Heaters

Used for warming up the cold areas and rooms. They can be also used as drying wet surfaces and atmospheres. Fitted with fan blades that can blow hot air out a few meters away. Heater includes; Overheat protection, Adjustable thermostat control, Cool blows thermostat control (fan blades), Carrying handle and mounting foot and can be wall mounted by own's fabrication. CE certified.

Unit Per Pc.

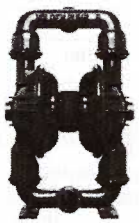
CODE	59 15 31
Model	CFH-30
Voltage / Phase	230 V / Single
Frequency	50 / 60 Hz
Power	3,000 Watts
Temperature Range	0 – 40°C continuously
Heater I.D.	200 mm
Size	28 x 39 x 31 cm
Weight	8.8 kgs

Name of Mfr.: Cobolt – KM Kinley

19. Pumps/Ejectors

Pneumatic Diaphragm Pumps

Metal range with Plo-flo air valve system (Formerly known as the M series, T series)



An air operated diaphragm pump designed for simplicity in operation and maintenance.

Safe for use in explosive environments.

The Metal pump lines provides the durability, chemical resistance, abrasion resistance, and temperature range required for a variety of process and waste applications.

The standard material combination is composed of aluminium casing and neoprene diaphragm, balls and valve seat for general purpose non aggressive applications such as in oil and petroleum based fluids. Cast iron, 316 stainless steel and hastelloy casing materials are available as well.

Wilden pump features:

- Ease of operation
- Variable speed
- Variable pressure
- Dead head capability
- Plastic Center Block
- Lube-free operation
- Intrinsically safe
- Ability to pass solids
- Ability to run dry
- No dynamic seals
- No-stalling unbalanced spool

Unit Per Set

CODE		59 16 07	59 16 05	59 16 01	59 16 02	59 16 03
Model		P.025	P1	P2	P4	P8
Standard Casing		Aluminium				
Suction Lift	Dry	10.8'	19'	19'	19'	24'
	Wet	30.6'	31'	28'	39'	31'
Air Inlet NPT		1/8"	1/4"	1/4"	1/2"	3/4"
Water	Inlet	1/4"	1/2"	1"	1-1/2"	2"
	BSP/ NPT	Female				
	Outlet	1/4"	1/2"	3/4"	1-1/4"	2"
	BSP/ NPT	Female				
Size	Height	5.8"	8.8"	11"	17.4"	26.3"
	Width	6.5"	8.2"	10.5"	15.4"	15.9"
	Depth	4.5"	7"	7.3"	11.2"	13.5"
Weight Lbs		4	13	26	38	70
Name of Mfr.		Wilden				

Pump casing materials and elastomer selection options

Casing	Diaphragms	P.025	P1	P2	P4	P8
Stainless Steel	TF	O	O	O	O	O
	WFS	O	O	O	O	O
	VTS	X	O	O	O	O
	BNS	O	O	O	O	O
Hastelloy	TF	X	O	X	X	X
	WFS	X	X	X	X	X
	VTS	X	O	X	X	X
	BNS	X	X	X	X	X
Cast Iron	TF	X	X	X	O	O
	WFS	X	X	X	O	O
	VTS	X	X	X	O	O
	BNS	X	X	X	O	O

Ordering other material options by adding suffix letter to the end of the pump code

Casing		
S	Stainless steel casing.	
W	Cast iron casing.	Unavailable for P.025, P1 & P2 series.
H	Hastelloy casing.	Standard with PTFE elastomers.
Diaphragms		
WFS	Diaphragm : Wil-Flex (Light chemicals) Low cost alternative to Teflon in acidic and caustic applications. Has long flex life and handle abrasives well.	
TF	Diaphragm : PTFE material for aggressive chemicals. Excellent in acidic & caustic applications with long flex life and handles abrasives well.	
VTS	Diaphragm : Viton. Good flex life at extremely high temperature. Handle aggressive fluids such as acids & chlorinated hydrocarbons well.	
BNS	Diaphragm : Buna-N for oil & petroleum based fluids.	

Example:
59 16 02 W/WFS P4 pump with cast iron casing & Wil-Flex diaphragms, balls, and valve seats.

Plastic range with Proflo air valve system

Plastic pump lines provides the durability, chemical resistance, abrasion resistance, and temperature range required for a variety of process and waste applications.

The standard material combination is composed of polypropylene casing and Teflon diaphragm balls and valve seat. PTFE diaphragm are extremely suitable for aggressive chemicals. Excellent in acidic & caustic applications with long flex life and handles abrasives well.

Unit Per Set

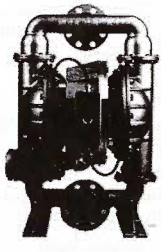
CODE		59 16 10	59 16 11	59 16 12	59 16 13	59 16 14
Model		P.025	P1	P2	P4	P8
Standard Casing		Polypropylene				
Suction Lift	Dry	9'	20'	18'	16'	23'
	Wet	31'	31'	29'	26'	31'
Air Inlet NPT		1/8"	1/4"	3/4"	1/2"	3/4"
Water	Inlet	1/4"	1/2"	1"	1-1/2"	2"
	BSP/ NPT	Female		ANSI 150 Flange		
	Outlet	1/4"	1/2"	1"	1-1/2"	2"
	BSP/ NPT	Female		ANSI 150 Flange		
Size	Height	6.4"	8.6"	14"	20.8"	30.3"
	Width	5.7"	8.2"	11.6"	15.5"	19.3"
	Depth	4.5"	8"	9.1"	11.2"	13.1"
Weight Lbs		3	9	18	37	75
Name of Mfr.		Wilden				

Ordering other materials options by adding suffix letter to the end of the pump code

Casing		
K	Kynar (PVDF)	For temperatures up to 107 deg.C
Diaphragms		
WF	Diaphragm :	Wil-Flex (Light chemicals) Low cost alternative to Teflon in acidic and caustic applications. Has long flex life and handle abrasives well.
VT	Diaphragm :	Viton. Good flex life at extremely high temperature. Handle aggressive fluids such as acids & chlorinated hydrocarbons well.
BN	Diaphragm :	Buna-N for oil & petroleum based fluids.

Example:
XX XX XX K/VT
Note : VT (Viton) Unavailable for P.025

High Pressure Double Diaphragm Pump



The introduction of the H800 expands Wilden's application range to include head pressures up to 250 psig. Wilden's patent pending high pressure technology yields a 250 psig discharge pressure designed for solid laden slurries. Capable of generating 250 psig with only 85 psig air supply.

Standard material composes of stainless steel casing with PTFE backed diaphragm. Suitable for boosting air line pressure over long distances.

Unit Per Set

CODE		59 16 16	59 16 17
Model		H800	
Pressure Ratio		3 : 1	
Standard Casing		Stainless steel	Ductile iron
Suction Lift	Dry	12'	
	Wet	29.5'	
Air Inlet NPT		3/4"	
Water	Inlet	2" ANSI 300# Flanges	
	BSP/NPT	Female	
	Outlet	2" ANSI 300# Flanges	
	BSP/NPT	Female	
Size	Height	29.9"	
	Width	19.3"	
	Depth	21.5"	
Weight Lbs		283	
Name of Mfr.		Wilden	

*Hastelloy Casing is also available upon request

Unit Per Set

CODE		59 16 18	59 16 19	59 16 20
Model		H400 S		H200
Pressure Ratio		2 : 1		3 : 1
Standard Casing		Stainless steel	Aluminium	Ductile iron
Suction Lift	Dry	10.1'	10.2'	9.1'
	Wet	30.6'	29.5'	29.5'
Air Inlet NPT		3/4"		1/2"
Water	Inlet	1-1/2"		1"
	BSP/NPT	ANSI 300# Flanges		BSP/NPT
	Outlet	1-1/2"		1"
	BSP/NPT	ANSI 300# Flanges		BSP/NPT
Size	Height	23.8"	20.8"	13.5"
	Width	13.6"	15.1"	17.7"
	Depth	12.2"	12.2"	12"
Weight Lbs		60	82	84
Name of Mfr.		Wilden		

Plo-flow SHIFT air valve system

Wilden Pro-Flo Shift Air Distribution System (ADS) is energy-efficient type model and achieves up to 60% savings in air consumption. It delivers more yield per SCFM versus competitive AODD pumps, has fewer operating parts, meaning less downtime and simplified maintenance. Available in a single point exhaust option (for submersible applications), and has drop-in configuration capacity (compatible with M,T, and P models).

Unit Per Set

CODE		59 16 08	59 16 09	59 16 04	59 16 06
Model		PS4	PS8	PS15	PS20
Standard Casing		Aluminium			Cast iron
Suction Lift	Dry	23.3'	23.8'	21.6'	14.4'
	Wet	28.4'	29.5'	28.4'	28.4'
Air Inlet NPT		3/4"			
Water	Inlet	1-1/2"	2"	3"	4"
	BSP/ NPT	Female			ANSI Flange
	Outlet	1-1/4"	2"	3"	4"
	BSP/ NPT	Female			ANSI Flange

(to be continued)

Unit Per Set

CODE		59 16 08	59 16 09	59 16 04	59 16 06
Size	Height	16.9"	26.3"	32.1"	32.5"
	Width	14.5"	15.9"	20.2"	37"
	Depth	12.9"	13.3"	16.7"	13"
Weight Lbs		46	78	121	492
Name of Mfr.		Wilden			

Pump casing materials and elastomer selection options

Casing	Diaphragms	PS4	PS8	PS15	PS20
Stainless Steel	TF	O	O	O	X
	WFS	O	O	O	X
	VTS	O	O	O	X
	BNS	O	O	O	X
Hastelloy	TF	O	X	X	X
	WFS	X	X	X	X
	VTS	X	X	X	X
	BNS	X	X	X	X
Cast Iron	TF	O	O	O	O
	WFS	O	O	O	O
	VTS	O	O	O	O
	BNS	O	O	O	O

Ordering other material options by adding suffix letter to the end of the pump code

Casing

S	Stainless steel casing.	Unavailable for PS20 series.
W	Cast iron casing.	
H	Hastelloy casing.	Standard with PTFE elastomers.

Diaphragms

WFS	Diaphragm : Wil-Flex (Light chemicals) Low cost alternative to Teflon in acidic and caustic applications. Has long flex life and handle abrasives well.
TF	Diaphragm : PTFE material for aggressive chemicals. Excellent in acidic & caustic applications with long flex life and handles abrasives well.
VTS	Diaphragm : Viton. Good flex life at extremely high temperature. Handle aggressive fluids such as acids & chlorinated hydrocarbons well.
BNS	Diaphragm : Buna-N for oil & petroleum based fluids.

Example:

59 16 04 S/TF PS15 pump with stainless steel casing & PTFE diaphragms, balls, and SS valve seats.

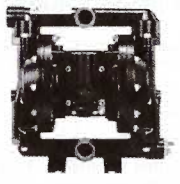
W/WFS PS4 pump with cast iron casing & Wil-Flex diaphragms, balls, and valve seats.

Pneumatic Diaphragm Pumps

ARO advanced series with excellent reliability, high efficiency and easy serviceability features. EXP metallic pumps are available from 1/2" to 3" port sizes, including Aluminium, Stainless Steel, Cast Iron and Hastelloy pump body material to optimize fluid compatibility.

For the purpose of making ordering easier, provided the following ordering table composed of the most practical specifications for marine use. For any further detailed information please contact local sales or distributors.

1" Metallic EXP Pump (port size 25 mm)



Seat Material Same as Housing

Ball G Nitrile, T PTFE

Diaphragm G Nitrile, T PTFE

PD10 X - X X X - X X X

Center Section
A Aluminium
P Polypropylene
S Stainless Steel

Connection
A NPTF Thread
B BSP Thread
F 1" ANSI/DIN Flange (Side)
Y 1" ANSI/DIN Flange (Center)

Wetted Material
S Stainless Steel
A Alminium
C Cast Iron
H Hastelloy-C
P Polypropylene
K PVDF

Hardware
S Stainless Steel
P Plated Steel

Unit Per Set

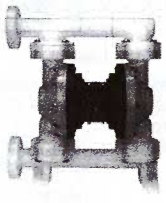
CODE	59 17 01	59 17 02
Recommended Model	PD10X-XXX-XXX	PD10P-XXX-XXX
Description	1" Pump	
Central Section Material	Aluminium/ Stainless Steel	Polypropylene
Connection Thread	BSP / NPT	BSP / NPT /ANSI, DIN Flange
Wetted Material	Aluminium/ Stainless Steel	Polypropylene/ PVDF
Hardware	Plated Steel/ Stainless Steel	Stainless Steel
Seat Material	Same as Housing	
Ball Material	Nitrile / PTFE	
Diaphragm Material	Nitrile / PTFE	

Performance Specification

Max. Flow GPM (Liters)	52 (197)
Max. Operating Pressure psi (bar)	120 (8.3)
Maximum Dry Suction Lift ft (meter)	19 (5.7)
Max. Solids Inches (mm)	1/8" (3.3)
Air Inlet	1/4" – 18 NPT
Recommended Filter / Regulator	P39124-600
Pump Weight (Kgs)	9.4 (AL), 27.8 (SS), 8.78 (PP), 11.72 (PV)
Air Line Kit	66073-2
Fluid Service Kit	637401-XX | 637396-XX
Air Motor Service Kit	637397
Manufacturer	Ingersoll Rand ARO

Remark : If you require another material of pump, please refer to the ordering guide for material selection of components.

1.5" Metallic EXP Pump (port size 40 mm)



Seat Material Same as Housing | **Ball** G Nitrile, T PTFE | **Diaphragm** G Nitrile, T PTFE

PD15 X - X X X - X X X

Center Section
A Aluminium
P Polypropylene
S Stainless Steel

Connection
A NPTF Thread
B BSP Thread
F 1" ANSI/DIN Flange (Side)
Y 1" ANSI/DIN Flange (Center)

Wetted Material
S Stainless Steel
A Alminium
C Cast Iron
H Hastelloy-C
P Polypropylene
K PVDF

Hardware
S Stainless Steel
P Plated Steel

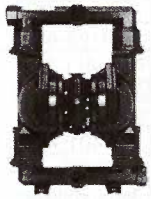
Unit Per Set

CODE	59 17 03	59 17 04
Recommended Model	PD15X-XXX-XXX	PD15P-XXX-XXX
Description	1.5" Pump	
Central Section Material	Aluminium/ Stainless Steel	Polypropylene/ PVDF
Connection Thread	BSP / NPT	ANSI, DIN Flange
Wetted Material	Aluminium/ Stainless Steel	Polypropylene/ PVDF
Hardware	Plated Steel/ Stainless Steel	Stainless Steel
Seat Material	Same as Housing	
Ball Material	Nitrile / PTFE	
Diaphragm Material	Nitrile / PTFE	

Performance Specification		
Max. Flow GPM (Liters)	123 (465)	
Max. Operating Pressure psi (bar)	120 (8.3)	
Maximum Dry Suction Lift ft (meter)	14 (4.2)	
Max. Solids Inches (mm)	1/4" (6.4)	
Air Inlet	1/2" – 14 NPT	
Recommended Filter / Regulator	P39344-600	
Pump Weight Lbs (Kgs)	64.28 (29.2)	
Air Line Kit	66084-1	
Fluid Service Kit	637375-XX	637391-XX
Air Motor Service Kit	637389	
Manufacturer	Ingersoll Rand ARO	

Remark : If you require another material of pump, please refer to the ordering guide for material selection of components.

2" Metallic EXP Pump (port size 50 mm)



Seat Material Same as Housing | **Ball** G Nitrile, T PTFE | **Diaphragm** G Nitrile, T PTFE

PD20 X - X X X - X X X - (B)

Center Section
A Aluminium
P Polypropylene
S Stainless Steel

Connection
A NPTF Thread
B BSP Thread
F 2" ANSI/DIN Flange (Side)

Wetted Material
S Stainless Steel
A Alminium
C Cast Iron
H Hastelloy-C
P Polypropylene
K PVDF

Hardware
S Stainless Steel
P Plated Steel

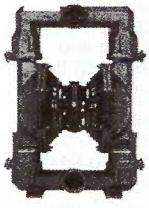
Unit Per Set

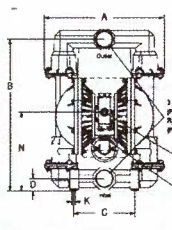
CODE	59 17 06	59 17 07
Recommended Model	PD20X-XXX-XXX-B	PD20P-XXX-XXX
Description	2" Stainless Steel Pump	
Central Section Material	Aluminium/ Stainless Steel	Polypropylene
Connection Thread	BSP / NPT	ANSI, DIN Flange
Wetted Material	Aluminium/ Stainless Steel	Polypropylene/ PVDF
Hardware	Plated Steel/ Stainless Steel	Stainless Steel
Seat Material	Same as Housing	
Ball Material	Nitrile / PTFE	
Diaphragm Material	Nitrile / PTFE	

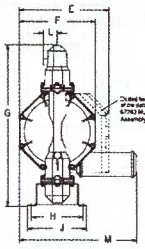
Performance Specification		
Max. Flow GPM (Liters)	172 (651)	
Max. Operating Pressure psi (bar)	120 (8.3)	
Maximum Dry Suction Lift ft (meter)	14 (4.2)	
Max. Solids Inches (mm)	1/4" (6.4)	
Air Inlet	3/4" – 14 NPTF	
Recommended Filter / Regulator	P39354-610	
Pump Weight Lbs (Kgs)	149.8 (68)	
Air Line Kit	66312	
Fluid Service Kit	637309-XX	637373-XX
Air Motor Service Kit	637421	637369
Manufacturer	Ingersoll Rand ARO	

Remark : If you require another material of pump, please refer to the ordering guide for material selection of components.

3" Metallic EXP Pump (port size 80 mm)







Seat Material Same as Housing | **Ball** G Nitrile, T PTFE | **Diaphragm** G Nitrile, T PTFE

PD30 X - X X X - X X X - C

Center Section
A Aluminium
S Stainless Steel

Connection
A NPTF Thread
B BSP Thread
F 2" ANSI/DIN Flange

Wetted Material
S Stainless Steel
A Alminium
C Cast Iron
H Hastelloy-C

Hardware
S Stainless Steel
P Plated Steel

Unit Per Set

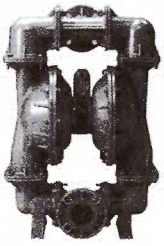
CODE	59 17 08
Recommended Model	PD30X-XXX-XXX-C
Description	3" Stainless Steel Pump
Central Section Material	Aluminium / Stainless Steel
Connection Thread	BSP / NPT /ANSI, DIN Flange
Wetted Material	Aluminium / Stainless Steel / Cast Iron / Hastelloy-C
Hardware	Plated Steel / Stainless Steel
Seat Material	Same as Housing
Ball Material	Nitrile / PTFE
Diaphragm Material	Nitrile / PTFE

Performance Specification	
Max. Flow GPM (Liters)	275 (1,041)
Max. Operating Pressure psi (bar)	120 (8.3)
Maximum Dry Suction Lift ft (meter)	14 (4.2)
Max. Solids Inches (mm)	3/8" (9.5)
Air Inlet	3/4" – 8 NPTF
Recommended Filter / Regulator	P39354-610
Pump Weight Lbs (Kgs)	228.8 (103.8)
Air Line Kit	66109
Fluid Service Kit	637303-XX
Air Motor Service Kit	637421
Manufacturer	Ingersoll Rand ARO

Remark : If you require another material of pump, please refer to the ordering guide for material selection of components.

Air Operated

Double Diaphragm Pumps



Versa-Matic® pumps deliver non-stalling, non-icing, lubrication free on / off reliability. Available with patented longer-life diaphragm designs and the exclusive Elima-Matic® air valve system. The products are designed with ease of maintenance in mind, for reduced downtime. They are available in a wide array of materials, construction choices, and porting options to handle virtually any requirement.

E1 1" Bolted Metallic Pumps

Unit Per Set

CODE		59 17 15	59 17 16	59 17 17
Body Material		Aluminium	Stainless steel	Hastelloy C
Flow Rate		0-35 gpm (0-132 lpm) adjustable		
Port Size	Inlet	1.0" Female NPT (BSP)		
	Discharge	1.0" Female NPT (BSP)		
Air Inlet		0.375" NPT		
Air Exhaust		0.50" NPT		
Suction Lift		15' dry / 25' wet (4.57 m / 7.62 m)		
Max. Particle Size (Diameter)		0.125" (3.17 mm)		
Weight lbs (kgs)		31 (14.07)	42 (19.05)	

Remark : Do not exceed 125 psig (8.5 bars) air supply or liquid pressure.
Name of Mfr. : Versa-Matic Pump Company

E4 1-1/4" Clamped Metallic Pumps

Unit Per Set

CODE		59 17 18	59 17 19	59 17 20	59 17 21
Body Material		Aluminium	Cast iron	Hastelloy C	Stainless steel
Flow Rate		0-70 gpm (0-265 lpm) adjustable			
Port Size	Inlet	1.50" FNPT (BSP)			
	Discharge	1.25" FNPT (BSP)			
Air Inlet		0.50" NPT			
Air Exhaust		0.75" NPT			
Suction Lift		15' dry / 25' wet (4.57 m / 7.62 m)			
Max. Particle Size (Diameter)		0.1875" (4.76 mm)			
Weight lbs (kgs)		41 (18.6)	57 (25.85)		

Remark : Do not exceed 125 psig (8.5 bars) air supply or liquid pressure.
Name of Mfr. : Versa-Matic Pump Company

E2 2" Clamped Metallic Pumps

Unit Per Set

CODE		59 17 22	59 17 23	59 17 24	59 17 25
Body Material		Aluminium	Cast iron	Hastelloy C	Stainless steel
Flow Rate		0-155 gpm (0-586 lpm) adjustable			
Port Size	Inlet	2" FNPT (BSP)			
	Discharge	2" FNPT (BSP)			
Air Inlet		0.50" NPT			
Air Exhaust		0.75" NPT			
Suction Lift		20' dry/25' wet (6.10 m / 7.62 m)			
Max. Particle Size (Diameter)		0.25" (6.35 mm)			
Weight lbs (kgs)		70 (31.75)	115 (52.16)		

Remark : Do not exceed 125 psig (8.5 bars) air supply or liquid pressure.
Name of Mfr. : Versa-Matic Pump Company

E3 3" Clamped Metallic Pumps

Unit Per Set

CODE		59 17 26	59 17 27	59 17 28	59 17 29
Body Material		Aluminium	Cast iron	Hastelloy C	Stainless steel
Flow Rate		0-230 gpm (0-984 lpm) adjustable			
Port Size	Inlet	3" FNPT (BSP)			
	Discharge	3" FNPT (BSP)			
Air Inlet		0.5" NPT			
Air Exhaust		1.0" NPT			
Suction Lift		20' dry/25' wet (6.10 m / 7.62 m)			
Max. Particle Size (Diameter)		0.375" (9.52 mm)			
Weight lbs (kgs)		115 (52.16)	210 (95.25)		

Remark : Do not exceed 125 psig (8.5 bars) air supply or liquid pressure.
Name of Mfr. : Versa-Matic Pump Company

Plastic Diaphragm Pumps

Husky

Polypropylene casing pneumatic double diaphragm pumps with polypropylene center section for chemical compatibility.

Husky 205

Husky 307

Husky 515

Husky 1050

Husky 1590

Unit Per Set

CODE	59 17 65	59 17 66	59 17 67
Model	Husky 205	Husky 307	Husky 515
Casing	Polypropylene		
Center	Polypropylene		
Thread Type	NPT or BSP	NPT or BSP	NPT or BSP

(to be continued)

Unit Per Set

CODE	59 17 65	59 17 66	59 17 67
Connection Size	1/4 in (6.3 mm)	3/8 in (9.4 mm)	1/2 in (12.7 mm)
Max. Flow Rate	5 gpm (19 lpm)	7 gpm (26 lpm)	15 gpm (57 lpm)
Max. Discharge Pressure	7 bar		
Max. Solids	0.06" (1.5 mm)	0.063" (1.6 mm)	0.094" (2.5 mm)
Dimension	6.0 x 6.8 x 3.7 in	8.13 x 8.12 x 5.3 in	10.63 x 9.71 x 6.25 in
Weight	0.9 kgs	2.2 kgs	2.9 kgs

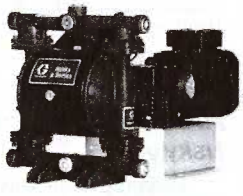
Name of Mfr. : Graco

Unit Per Set

CODE	59 17 68	59 17 69
Model	Husky 1050	Husky 1590
Casing	Polypropylene	
Center	Polypropylene	
Thread Type	ANSI/DIN Flange	ANSI Flange
Connection Size	1 in (25.4 mm)	1-1/2 in (38.1 mm)
Max. Flow Rate	50 gpm (189 lpm)	100 gpm (379 lpm)
Max. Discharge Pressure	8.6 bar	8.3 bar
Max. Solids	0.125" (3.2 mm)	0.188" (4.8 mm)
Dimension	13.7 x 13.9 x 10.2 in	21.75 x 17.55 x 10.45 in
Weight	8.2 kgs	16 kgs

Name of Mfr. : Graco

Electric Operated Double Diaphragm Pumps



The electric operated double diaphragm pump uses a new technology that allows the pump to stall under pressure preventing failures from clogged lines or closed valves. The energy efficient electric drive reduces energy consumption up to 5x compared to traditional air operated diaphragm pumps. Seal-less diaphragm pump design eliminates leaking and failures due to run-dry pump conditions.

<Model Range>

Motor	Center Section	Fluid Section	Compressor / Cart
AC	Aluminium	Aluminium	Option
		Polypropylene	
		Stainless Steel	
	Stainless Steel	Aluminium	
		Polypropylene	
		Stainless Steel	
AC Atex	Aluminium	Aluminium	Option
		Polypropylene	
		Stainless Steel	
	Stainless Steel	Aluminium	
		Polypropylene	
		Stainless Steel	
DC Brushless	Aluminium	Aluminium	Option
		Polypropylene	
		Stainless Steel	
	Stainless Steel	Aluminium	
		Polypropylene	
		Stainless Steel	

Unit Per Set

CODE	59 17 70
Model	Husky 1050E
Casing	Aluminium
Center	Aluminium
Connection Size	1" NPT(f) or BSPT
Max. Flow Rate	48 gpm (148 lpm)
Max. Pump Speed	280 cpm
Max. Solids	1/8" (3.2 mm)
AC Motor Power	2 HP
BLDC Motor Power	2.2 HP
Dimension	73.2 x 26.1 x 34.8 cm (AC Motor)
Weight	33.6 kgs – 49.7 kgs (depending on configuration)

Name of Mfr. : Graco

Cross Reference of Diaphragm Pumps

Inlet / Outlet Port Size	Wilden	Yamada	Aro	Versa-Matic Pump	Warren Rupp	Graco
Air Inlet 1/8" Inlet/Outlet Port Size 1/4" x 1/4"	**P.025** **59 16 07** Aluminium Stainless Steel (BSPT/NPT) **59 16 10** Polypropylene PVDF Flow Rate: 18 LPM	-	**PD01P** Polypropylene, PVDF (NPT) Flow Rate: 20 LPM	-	-	**Husky 205** **59 17 65** Polypropylene (BSPT/NPT) Flow Rate: 19 LPM
Air Inlet 1/4" Inlet/Outlet Port Size 1/2" x 1/2"	-	-	-	-	-	**Husky 307** Acetal **59 17 66** Polypropylene (BSPT/NPT) Flow Rate: 26 LPM

(to be continued)

PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

Inlet / Outlet Port Size	Wilden	Yamada	Aro	Versa-Matic Pump	Warren Rupp	Graco
Air Inlet 1/4" Inlet/Outlet Port Size 1/2" x 1/2"	**P1** **59 16 05** Aluminium Stainless Steel **59 16 11** Polypropylene PVDF (BSPT/NPT) Flow Rate: 57 LPM	-	**PD05X** Aluminium Stainless Steel Polypropylene, PVDF (BSP/NPT) Max Flow Rate 54.5 LPM	-	-	**Husky 515** **59 17 67** Polypropylene (BSPT/NPT) Flow Rate: 57 LPM
Air Inlet 1/4" Inlet/Outlet Port Size 3/4" x 3/4"	-	**NDP-20** Aluminium (NPT/PT) Flow Rate: 106 LPM	-	-	-	**Husky 716** Aluminium Stainless Steel (ANSI Flange) Flow Rate: 61 LPM
Air Inlet 1/4" Inlet/Outlet Port Size 1" x 3/4"	**P2** **59 16 01** Aluminium Stainless Steel **59 16 12** Polypropylene PVDF (BSPT/NPT) Flow Rate: 145 LPM	-	6661XX(1") Aluminium Stainless Steel (BSP/NPT) Polypropylene PVDF (1"ANSI Flange #150)	-	-	**Husky 1050** Aluminium Stainless Steel Polypropylene **59 17 68** (ANSI/DIN Flange) Flow Rate: 189 LPM
Air Inlet 1/4" Inlet/Outlet Port Size 1" x 1"	**P220** Aluminium Stainless Steel (BSPT/NPT) Polypropylene PVDF (ANSI Flange) Flow Rate: 190 LPM	**NDP-25** Aluminium (NPT/PT) Flow Rate: 185 LPM	**59 17 01** **PD10X** Aluminium Stainless Steel Cast Iron Hastelloy C (BSP/NPT) **59 17 02** Polypropylene PVDF (BSP/NPT/ ANSI,DIN Flange) Max. Flow Rate 197 LPM	**E1** (BSPT/NPT) **59 17 15** Aluminium **59 17 16** Stainless Steel **59 17 17** Hastelloy C Flow Rate 0-35 GPM (0-132 LPM)	**S1F AL** Aluminium (NPT) Flow Rate: 170 LPM	-
Air Inlet 1/2" Inlet/Outlet Port Size 1-1/2" x 1-1/4"	**P4** **59 16 02** Aluminium Stainless Steel Cast Iron **59 16 13** Polypropylene PVDF (BSPT/NPT) **59 16 08** **PS4** Aluminium Flow Rate: 370 LPM	-	6661XX(1.5") Aluminium Stainless Steel (BSP/NPT) Polypropylene PVDF (1-1/2"ANSI Flange #150)	**E4** (BSPT/NPT) **59 17 18** Aluminium **59 17 19** Cast Iron **59 17 20** Hastelloy C **59 17 21** Stainless Steel Flow Rate 0-70 GPM (0-265 LPM)	-	**Husky 1590** Aluminium Polypropylene **59 17 69** (ANSI Flange) Flow Rate: 379 LPM
Air Inlet 1/2" Inlet/Outlet Port Size 1-1/2" x 1-1/2"	**PS420** Aluminium Stainless Steel Cast Iron Polypropylene PVDF (ANSI Flange) Flow Rate: 450LPM	**NDP-40** Aluminium (ANSI/JIS Flange) Flow Rate: 439 LPM	**59 17 03** **PD15X** Aluminium Stainless Steel Cast Iron Hastelloy C (BSP/NPT) **59 17 04** Polypropylene PVDF (1-1/2"ANSI Flange #150) Max. Flow Rate 465 LPM	-	**S15 AL** Aluminium (NPT) Flow Rate: 401 LPM	-

(to be continued)

Inlet / Outlet Port Size	Wilden	Yamada	Aro	Versa-Matic Pump	Warren Rupp	Graco
Air Inlet 3/4" Inlet/Outlet Port Size 2" x 2"	**P8** **59 16 03** Aluminium Stainless Steel Cast Iron **59 16 14** Polypropylene PVDF **PS8** **59 16 09** Aluminium (BSPT/NPT) Flow Rate: 650LPM	**NDP-50** Aluminium (ANSI/JIS Flange) Flow Rate: 628 LPM	**59 17 06** **PD20X** Aluminium Stainless Steel Cast Iron Hastelloy C (BSP/NPT) **59 17 07** Polypropylene PVDF (2" ANSI Flange #150) Max. Flow Rate 651 LPM	**E2** (BSPT/NPT) **59 17 22** Aluminium **59 17 23** Cast Iron **59 17 24** Hastelloy C **59 17 25** Stainless Steel Flow Rate 0-155 GPM (0-586 LPM)	**S20 AL** Aluminium (NPT) Flow Rate: 568 LPM	**Husky 2150** Aluminium Stainless Steel Polypropylene (ANSI Flange) Flow Rate: 568 LPM
Air Inlet 3/4" Inlet/Outlet Port Size 3" x 3"	**PS15** **59 16 04** Aluminium Stainless Steel Cast Iron (BSPT/NPT) Flow Rate: 850 LPM	**NDP-80** Aluminium (ANSI/JIS Flange) Flow Rate: 810 LPM	**PD30X** **59 17 08** Aluminium Stainless Steel Cast Iron Hastelloy C (BSP/NPT)	**E3** (BSPT/NPT) **59 17 26** Aluminium **59 17 27** Cast Iron **59 17 28** Hastelloy C **59 17 29** Stainless Steel Flow Rate 0-230 GPM (0-984 LPM)	**S30 AL** Aluminium (NPT) Flow Rate: 901 LPM	**Husky 3300** Aluminium Stainless Steel Polypropylene (ANSI Flange) Flow Rate: 1,059 LPM
Air Inlet 3/4" Inlet/Outlet Port Size 4" x 4"	**PS20** **59 16 06** Cast Iron (ANSI Flange) Flow Rate: 1,048 LPM	-	-	-	-	-

High Pressure Diaphragm Valve

Inlet/Outlet Port Size	Wilden	Yamada	Aro	Versa-Matic Pump	Warren Rupp	Graco
Air Inlet 3/4" Inlet/Outlet Port Size 2" x 2"	**H800** (250 psig) (ANSI 300#Flanges) Pressure Ratio: 3:1 **59 16 16** Stainless Steel Hastelloy **59 16 17** Ductile Iron Flow Rate: 350 LPM	-	**PH20F** (2:1) Stainless Steel (BSP/NPT/ ANSI,DIN Flange)	-	-	-
Air Inlet 3/4" Inlet/Outlet Port Size 1-1/2" x 1-1/2"	**H400S** (250 psig) (ANSI 300#Flanges) Pressure Ratio: 2:1 **59 16 18** Stainless Steel **59 16 19** Aluminium Flow Rate: 180 LPM	-	**PH15F** (2:1) Stainless Steel (BSP/NPT/ ANSI,DIN Flange)	-	-	-
Air Inlet 1/2" Inlet/Outlet Port Size 1" x 1"	**59 16 20** **H200** (250 psig) Pressure Ratio: 3:1 Ductile Iron Stainless Steel Flow Rate: 90 LPM	-	**PH10A** (3:1) Stainless Steel (BSP/NPT)	-	-	-

*Actual Flow Rate may vary depending on conditions

Electric Sump Pumps

For permanent or portable application and ideal for loading anywhere there is an accumulation of water. Furnished for a 110 volt or 220 volt power supply.

How to order : CODE

Sump pump, electric, LIFTING CAPACITY mtr and m³/min., POWER SOURCE VOLTAGE, MODEL

Unit Per Set

CODE	Lift Capacity		Discharge Diam mm	Weight kgs
	Mtr	m³/min.		
AC 100 Volt-Single Phase				
59 16 21	5.0	0.13	40	17
22	8.0	0.15	50	17.5
23	8.0	0.13	50	17
AC 200 Volt-Triple Phase				
59 16 26	14.0	0.4	80	32
27	18.0	0.2	50	27
28	20.0	0.5	80	49
29	30.0	0.5	80	49
AC 440 Volt-Triple Phase				
59 16 30	30.0	0.5	80	49

Pneumatic Sump Pumps

This pump is used both in the naval and in the civil sector, and on the ships for removal of salt water mixed with petrol.

Highly resistant centrifugal pump, built in nodular cast iron or bronze (sparkless version) and has a remarkable shock resistance. The engine is sealed to avoid water leakage or penetration of sand or other particles. The impeller is in bronze and the transmission shafts are sleeved in bushings and special bearings. Equipped with lifting handle and suction filter.

Accessories : Connections and pipes for air and water – Air filters and nebulizer – Mufflers conforming to EEC Regulations.

Unit Per Set

CODE	59 16 31	59 16 32
Material	Nodular Cast Iron	Bronze
Model	900-0-BN60 Type B	900-BZ Type C
Head	30 mtr	40 mtr
Delivery of mt. 3	670 ltr/min.	670 ltr/min.
Delivery of mt. 25	350 ltr/min	350 ltr/min
Feeding Pressure	6 – 7 bar	6 – 8 bar
Air Consumption	50 CMB/hr	50 CMB/hr
Overall Dimensions	260 × 230 × 517 mm	
Weight	13 kgs	20 kgs

Name of Mfr.: I. CO. s.r.l.

Electric Sump Pumps

Suitable for permanent or portable application and ideal for loading anywhere there is an accumulation of water.

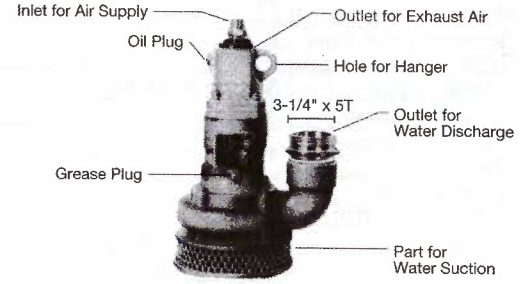
Unit Per Set

CODE	59 16 46	59 16 47
Model	900-0-EL	
Power Source	AC 110V Single Phase	AC 220V 3 Phase
Lifting Capacity	7.5 mtr – 40 mtr	
Air Consumption	0.25 CBM/min. – 1.3 CBM/min.	
Discharge Diameter	40 mm up to 80 mm	

Name of Mfr.: I. CO. s.r.l.

Pneumatic Sump Pumps

Suitable to empty ballast tanks, bilge wells, etc. in emergency cases. Often used for draining cargo holds during and after the washing procedure. Especially preferred where an electric spark may risk ignition or explosion. Required air pressure is 0.59 MPa (6 kgf/cm²).



How to order : CODE

Sump pump, pneumatic, TOTAL HEAD CAPACITY mtr, DISCHARGE CAPACITY m³/hr., MODEL

Unit Per Set

CODE	Capacity		Max. Air Consumption	Water Hose Size	Air Hose Size	Weight kgs
	Total Head	Dis-charge				
59 16 35	15 mtr	22 m³/H	2.0 m³/min	63.5 mm	3/4	19
36	20	28	3.4	63.5	3/4	22
37	25	38	4.4	63.5	1	32

SludgeMaster SMA3-A

Air-powered trash pump handles mud, leaves, twigs, sand, sludge, trash-laden water and soft solids to 1.5" (3.8 cm). High capacity - low head. It weighs only 59 pounds (26 kgs), and can fit through an opening as small as 14" (35 cm). Sturdy construction for rough handling and long life. Optional rock screen available

Unit Per Set

CODE		59 16 38
Model		SMA3-A
Displacement Per Stroke	Max. Flow per Minute	300 gal/1,140 ltr
	Max. Solids Handling	1.5"/38 mm
Air Inlet		1/2" NPT (12.5 mm)
Discharge Pipe Thread		3" (75 mm) NPT female
Weight		59 lbs (26 kgs)

Name of Mfr.: Warren Rupp, Inc.

Two Ball Double Acting Pumps

Air Operated

For transferring of material from original containers or bulk storage to the point of use, and the two-ball pumps are primarily designed for the high volume transfer of light and medium viscosity fluids. Stainless steel construction offers compatibility with a wide range of fluids.

Unit Per Set

CODE		59 16 41
Type		Air operated two ball double acting pump
Model		AF0810XXXXXXX-XX-X
Ratio		10 : 1
Air Motor Diameter		8" (20.3 cm)
Stroke		6" (15.2 cm)
Air Inlet (Female)		3/4 – 14 N.P.T.F. – 1
Air Exhaust (Female)		1-1/4 – 11-1/2 N.P.T.F. – 1
Lower Pump Material	Inlet (Male)	2 – 11-1/2 N.P.T.F. – 1
	Output (Female)	1-1/4 – 11-1/2 N.P.T.F. – 1
Air Inlet Pressure Range		30 – 120 p.s.i. (2.1 – 8.3 bar)
Fluid Pressure Range		300 – 1,200 p.s.i. (20.7 – 82.8 bar)
Max. Rec'd Cycles / Minute		70
Displacement in 3 per Cycle		59.8
Volume / Cycle		33.1 oz (979.6 ml)
Cycles per Gallon		3.9
Flow at 70 cycles / Minute		18.1 g.p.m. (86.6 l.p.m.)
Noise Level at 60 p.s.i. - 40 c.p.m.		89.8 db
Weight		102 lbs (46.3 kgs)
Name of Mfr.		Ingersoll-Rand

Portable Pumps

Battery Powered

A battery-powered pump operates using any 12-volt car or truck battery. It comes equipped with cables and battery clips. Extremely portable, the pump weights only 33 pounds (15kg) and can fit through openings as small as 10" (25cm). Electrically safe and whisper quiet.

Suitable for all of onsite dewatering needs such as ditches, manholes, and caissons. The pump is available with an optional handy carrying case for convenient safe storage. Furnished with remote waterproof controller integrated into the pump cable for simple safe operation. The pump is submersible by the watertight o-ring seals

Performance

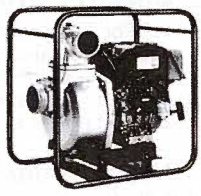
Capacity		Discharge Height	
Gallons/Minute	Liters/Minute	Feet	Meter
41.6	157.4	5	1.5
34.0	128.7	10	3.0
25.0	94.6	15	4.5
21.3	80.6	20	6.0
0.0	0.0	25	7.6

Unit Per Set

CODE	59 16 43	59 16 44
Model	Porta Pump (SPA 1-1/2-E)	
Delivering up to	43 gpm (163 lpm)	
Connections	1-1/2" NPT	1-1/2" BSPT (Tapered thread)
Motor	1/3 hp	
Power Source	12 volt battery	
Weight	33 lbs (14.9 kgs)	

Name of Mfr. : Warren Rupp, Inc.

Diesel Engine Water Pumps



Strong and lightweight die-cast aluminium water pump with diesel engine operated. Highly effective mechanical seal made with special carbon ceramics provides extra durability. Entire unit is protected by sturdy rollover pipe frame.

Unit Per Set

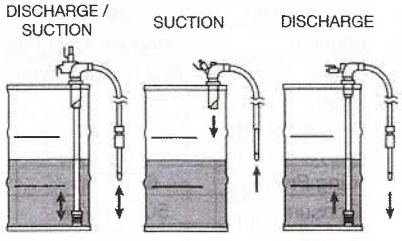
CODE	59 16 48	59 16 49	59 16 50
Model	SE-50XD	SE-80XD	SE-100XD
Connecting Dia	50 mm (2")	80 mm (3")	100 mm (4")
Connecting Thread	Outer Pipe Thread BSP		
Delivery Volume	560 L/min	900 L/min	1,100 L/min
Max. Suction Head	8 m (26 ft)		
Exhaust Volume	230 cc	265 cc	
Rated Output	3.1 kW (4.2 PS) / 3,600 rpm	3.7 kW (5.0 PS) / 3,600 rpm	
Max. Output	3.5 kW (4.2 PS) / 3,600 rpm	4.4 kW (5.0 PS) / 3,600 rpm	
Continuous Operating Time	Approx. 3.5 hrs	Approx. 3 hrs	Approx. 2.5 hrs
Weight	47 kgs	50 kgs	64 kgs
Size (L x W x H mm)	573 x 413 x 500	573 x 413 x 500	664 x 445 x 698
Accessories	1 x Strainer, 2 x Hose Couplings, 3 x Hose Bands, 1 x Engine Tool Set		

Name of Mfr. : Koshin

Pneumatic Drum Pumps

Capable of pumping and discharging water, oil and bottom sludge. And also any explosive material can be sucked when the pump is properly grounded. No oil mist is produced and the pumping and discharge action is very speedy (about 2 minutes for 200 ltrs of water). Available in three types.

Furnished with 3 mtrs of oil-resistant hose and 300 mm of discharge nozzle.



59 16 51 59 16 52 59 16 53

Unit Per Set

CODE		59 16 51	59 16 52	59 16 53
Type		QTO	Q	TO
Application		Suction & Discharge	Suction	Discharge
Sucking Performance	Pressure of Compressed Air	5 kgf/cm²	5 kgf/cm²	-
	Vacuum Degree	4,600 mm/ H_2O	4,600 mm/ H_2O	-
	Recovery Time for 100 ltr Clean Water	60 sec	60 sec	-

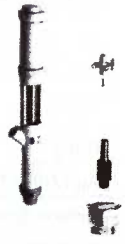
(to be continued)

Unit Per Set

CODE		59 16 51	59 16 52	59 16 53
Discharging Performance	Discharge Pressure	0.55 kgf/cm²	-	0.55 kgf/cm²
	Recovery Time for 100 ltr Clean Water	60 sec	-	60 sec
Hose		ø 32 mm x 3M	ø 32 mm x 3M	ø 32 mm x 3M

Name of Mfr. : Blovac Co. Ltd.

Pneumatic Piston Pumps



Ideal for delivering fuel to oil burners as well as to take out water or oil from drums or other containers.

Furnished air valve cock and air hose nipple, however, the related drum joint and pipe for the drum can be sold separately.

Specifications

Capacity ltr / min	Piston Dia	Overall Length	Weight kgs
40 - 60	50 mm	608 mm	4.6

59 16 61	Pneumatic piston pump complete w/drum joint & pipe for drum can	Set
59 16 62	Piston pump only	Pc.
59 16 63	Drum joint and pipe for drum can	Set

Pneumatic Portable Transfer Pumps

Suitable for rapid transfer of oil, acid, and solvent fluids (in the stainless steel version). Strongly built, it has the motor body in light ally. Available in turbine or piston version.

Turbine Type

Unit Per Set

CODE	59 16 66	59 16 67
Model	500-0	500-00
Turbset Material	Steel	Stainless Steel
Max Head	10 – 15 mtr	
Max. Delivery Water	240 ltr/min.	
Max. Delivery Oil	135 ltr/min.	
Tubset Dia x Length	40 mm or 48 mm x 1,000 mm	
Feeding Pressure	7 bar	
Air Consumption	1,200 ltr/min.	
Weight	8 kgs	7 kgs

Name of Mfr.: I.CO. s.r.l.

Piston Type

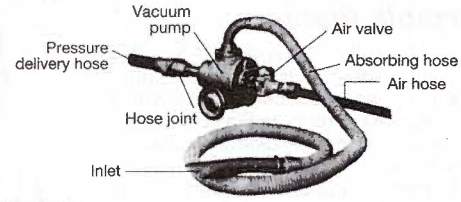
Unit Per Set

CODE	59 16 68	59 16 69
Model	17,000-0	17,000-00
Piston Material	Steel	Stainless Steel
Max Head	60 mtr	
Max. Delivery Water	35 ltr/min.	
Max. Delivery Oil	25 ltr/min.	
Tubset Dia x Length	54 mm x 1,000 mm	
Feeding Pressure	7 bar	
Air Consumption	75 ltr/min.	
Weight	8.5 kgs	8 kgs

Name of Mfr.: I.CO. s.r.l.

Vacuum Pumps Suction & Pressure System

Using high pressure compressed air this vacuum/boiler pump creates strong suction and diffusion power for all types of materials. Best used for vacuuming or displacing dust, grit, sand, water, oil, paint, etc. A suction hose 50 mmø x 4 mtr and a suction nozzle are furnished as standard accessories.



Specifications

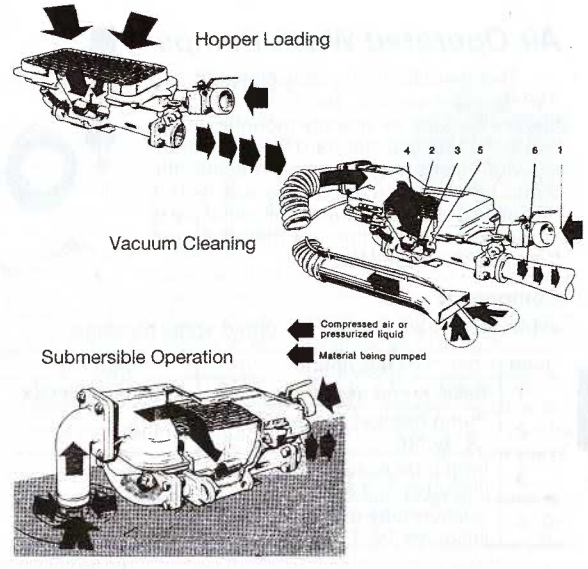
Air Pressure		5 -7 kgf/cm²
Vacuum Pressure		4.5 Hg (Mercury) 6,100 m/mAq (Water)
Capacity of Transfering		2,100 kgs/hour (Steel grit)
Dimensions		W300 x L750 x H450 mm
Weight		21 kgs
Hose	Suction	50 mm ø x 4 mtr
	Dispersion	50 mm ø x 20 mtr
Usual accessories included in set		Suction hose 50 mm ø x 4 mtr - 1 pc Suction nozzle - 1pc

59 16 71	Vacuum Pump, suction and pressure system, 2,100 kgs/hour	Set

Mucking Pumps

A portable jet pump, made of cast aluminium, that solves problems encountered in removing sludge, scale, solids, abrasive materials and concentrated slurries by moving the materials with forced pressure. Also suitable for removal and/or recovery of spent sand blasting abrasive from tank.

A stainless steel strainer will prevent particles of up to 38 mm in size from passing through the pump. It's light weight and small size (305 x 406 mm) allow it to pass through openings as well. Suction and discharge hoses are sold separately.

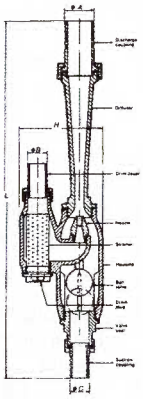


Production Capacity	Max. Transport Distance		Weight kgs
	Horizontal	Vertical	
5 ton/hour	153 mtr	305 mtr	31

59 16 72	Mucking pump, production capacity up to 5 ton/hour	Set

Name of Mfr. : IPEC Advanced System Inc.

Portable Ejectors



Portable ejectors have been found to be indispensable on bulk carriers, lube-oil tankers and chemical carriers where it is essential to empty tanks completely.

It is also extremely useful on all other types of ships for mopping up the last few barrels of liquid from tanks, holds, cofferdams or other compartments when stripping is required.

These ejectors are powered either by water or by the liquid which is being pumped. Normally made of bronze with a stainless steel nozzle. One standard nozzle and an extra nozzle for lower driving pressure are attached as standard accessories.

Unit Per Set

CODE	Type	Hose Connections			Dimension		Wgt.
		A	B	C	L	H	Kgs
59 16 76	1 x 1 x 1-1/2	1"	1"	1-1/2"	47 cm	10 cm	3.5
59 16 77	1-1/4 x 1-1/4 x 2	1-1/4"	1-1/4"	2"	55 cm	12 cm	6.5
59 16 78	1 -1/2 x 1-1/2 x 2-1/2	1-1/2"	1-1/2"	2-1/2"	70 cm	14 cm	8.5

Name of Mfr. : Teamtec A/S

Equipped with standard nozzle :

Type	Suction Capacity	Required driving pressure against various discharge heads					Nozzle Size
		5 m	10 m	15 m	20 m	25 m	
1 x 1 x 1-1/2	3 tons	5.0 kp/cm²	6.5 kp/cm²	8.0 kp/cm²	9.5 kp/cm²	11.0 kp/cm²	6.4 mm
1-1/4 x 1-1/4 x 2	6 tons	5.0 "	6.5 "	8.0 "	9.5 "	11.0 "	8.5 mm
1 -1/2 x 1-1/2 x 2-1/2	9 tons	5.0 "	6.5 "	8.0 "	9.5 "	11.0 "	11.1 mm

Air Operated Wash Pumps

Designed for heavy duty cleaning with detergents, caustics, and dilute acid type cleaners. May be directly mounted in the two inch bung of a standard 55 gallon drum or, when using the mounting bracket, the pump can be mounted on the wall or in a 55 gallon open head drum. All metal parts in the pumping section are manufactured from 316 stainless steel.

Component

4-1/4" High pressure wall-mounted spray package

Item	Description	Part No.
1	Basic pump assembly	AF0409C8XXXXX
2	Pump bracket assembly (2" bung)	61113
3	Bent pipe assembly (includes 7, 8 & 9)	61133
4	Suction tube assembly (includes 10, 11, 12 &13)	61139-1

(to be continued)

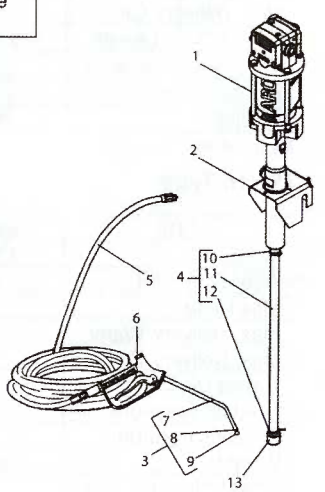
Item	Description	Part No.
5	Hose assembly (3/8 i.d. 2 fabric)	622427-40
6	Control handle assembly	641523
7	Bent pipe	76821
8	Nozzle cover	76330
9	Spray tip	TP6250-18
10	Hose clamp	76315
11	Tube	92249-26
12	Hose clamp	76315
13	Screen assembly	61138

Unit Per Set

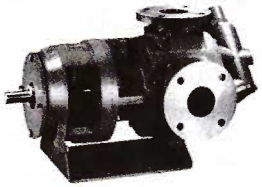
CODE	**59 08 81**
Type	Air operated wash pump (Model : WP0409C8XXXXXXXX)
Ratio	10 : 1
Air Motor Diameter	4-1/4" (10.795 cm)
Stroke (Double Acting)	4" (10.16 cm)
Air Inlet	1/2 – 14 NPTF – 1 (f)
Air Exhaust	1-1/4 – 11-1/2 NPTF – 1 (f)
Material Outlet	3/8 – 18 NPTF – 1 (f)
Material Inlet	Barbed
Pump Construction	Series 316 stainless steel
Air Inlet Pressure Range	0 – 150 p.s.i. (0 – 10.3 bar)
Fluid Pressure Range	0 – 1,500 p.s.i. (0 – 103 bar)
Displacement in³ per Cycle	11.0 (0.18 ltr)
Cycle per Gallon	21 (5.5 ltr)
Maximum Delivery / Min.	3.9 gallons (14.8 ltr)
Name of Mfr.	Ingersoll-Rand

#WP0409C8XXXXXXXX is assembled with the following components ; (4-1/4" High pressure wall-mounted spray package)

#AF0409C8XXXXX : Pump	#641523 : Control handle
#61113 : Wall bracket	#61133 : Spray wand
#61139-1 : 55 gallon suction tube assembly	#TP6250-18 : Spray tip
#622427-40 : Material hose (40 feet)	



Internal Gear Pumps



Internal gear pumps will handle high viscosity, hot or abrasive fluids, or a combination of all these. Built to extend seal life, improve reliability and prevent leaks by utilizing an internal seal chamber vent and oversized shaft diameters that minimize shaft detection. Back pull-out design provides ease of maintenance. Viscosities to 1,000,000 ssu (220,000 cst).

When order please specify the required seal type selecting from the following applications, in addition to suitable pump capacity.

Application of Seals ;

Tuffseal cartridge lip seals	: for viscous liquids
Hard face seals	: for abrasive or tacky fluids
High pressure cartridge seals	: for handling high system pressure
Double cartridge seals	: for containing potentially hazardous liquids
High temperature seals	: for handling liquids such as hot oil

Cast Iron Construction

How to order : CODE

Pump, Internal gear, cast iron, MODEL, with TYPE OF SEALS

Unit Per Set

CODE		59 17 31	59 17 32	59 17 33	59 17 34	59 17 35
Model		GG015	GG030	GG050	GG070	GG080
Max. Capacity	USGPM	15	30	50	70	80
	LPM	57	114	189	265	303
Max. Pressure		13.8 bar (200 PSI)				
Max. RPM		1,800		1,500		
Weight kgs		22.7		49.9		

Name of Mfr. : Tuthill

Unit Per Set

CODE		59 17 36	59 17 37	59 17 38	59 17 39
Model		GG090	GG120	GG130	GG200
Max. Capacity	USGPM	90	120	130	200
	LPM	341	454	492	757
Max. Pressure		13.8 bar (200 PSI)			
Max. RPM		1,500	1,200	1,000	
Weight kgs		49.9	78.1		116

Name of Mfr. : Tuthill

Unit Per Set

CODE		59 17 40	59 17 41	59 17 42	59 17 43
Model		GG210	GG250	GG500	GG550
Max. Capacity	USGPM	210	250	500	550
	LPM	795	946	1,968	2,081
Max. Pressure		13.8 bar (200 PSI)		10.3 bar (150 PSI)	
Max. RPM		800	640	520	500
Weight kgs		116	125	318.2	

Name of Mfr. : Tuthill

Stainless Steel Construction

How to order : CODE

Pump, Internal gear, stainless steel, MODEL, with TYPE OF SEALS

Unit Per Set

CODE		59 17 45	59 17 46	59 17 47	59 17 48
Model		GG015	GG030	GG050	GG070
Max. Capacity	USGPM	10	20	33	46
	LPM	38	75	125	174
Max. Pressure		10.3 bar (150 PSI)			
Max. RPM		1,200		1,000	
Weight kgs		22.7		49.9	

Name of Mfr. : Tuthill

Unit Per Set

CODE		59 17 49	59 17 50	59 17 51	59 17 52
Model		GG080	GG090	GG120	GG130
Max. Capacity	USGPM	53	60	80	86
	LPM	200	227	303	325
Max. Pressure		10.3 bar (150 PSI)			
Max. RPM		1,000		800	640
Weight kgs		49.9		78.1	

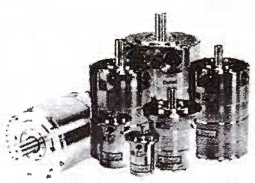
Name of Mfr. : Tuthill

Unit Per Set

CODE		59 17 53	59 17 54	59 17 55
Model		GG200	GG210	GG250
Max. Capacity	USGPM	133	140	160
	LPM	503	530	632
Max. Pressure		10.3 bar (150 PSI)		6.9 bar (100 PSI)
Max. RPM		640	520	
Weight kgs		116		125

Name of Mfr. : Tuthill

Axial Piston Pumps



The simple construction of the axial piston pump with fewer parts allows highly reliable operation with long service intervals and easy maintenance. The axial piston pumps are positive displacement pumps with axial pistons that move a fixed amount of water in each cycle. Flow is proportional to the number of input shaft revolutions (rpm). Unlike centrifugal pumps, they produce the same flow at a given speed no matter what the discharge pressure.

Oil lubricants are replaced with the pumped medium, water, so there is no contamination risk from the pump.

Efficient design and all-stainless steel construction ensure exceptionally long life. Service is easy, and can be carried out on-site due to the simple design and few parts. Service intervals of 8,000 hours can be expected.

All parts are made of high corrosion resistant materials e.g. Duplex (EN1.4462/UNS S31803/SAF 2205) and Super Duplex (EN1.4410/UNS S32750/SAF 2207) stainless steel and carbon reinforced PEEK (Poly Ether Ether Keton).

Unit Per Pc.

CODE		59 17 56	59 17 57	59 17 58
Model		APP0.6	APP0.8	APP1.0
Geometric Displacement	cm³/rev	4.07	5.08	6.30
Max. Outlet Pressure Continuous	barg	80		
	psig	1,160		
Min. Outlet Pressure	barg	20		
	psig	290		
Inlet Pressure Continuous	barg	0.5 - 5		
	psig	7.3 – 72.5		
Max. Inlet Pressure Peak	barg	10		
	psig	145		
Min. Speed Continuous	rpm	700		
Max. Speed Continuous	rpm	3,450		
Typical Flow				
1,000 rpm at Max. Pressure	m³/h	0.22	0.29	0.36
1,500 rpm at Max. Pressure	m³/h	0.34	0.43	0.54
1,200 rpm at Max. Pressure	gpm	1.18	1.52	1.90
1,800 rpm at Max. Pressure	gpm	1.78	2.28	2.84
Weight (Dry)	kgs	5.2		
Typical Motor Size				
Max. Speed at Max. Pressure	kW	2.2	3.0	4.0
3,000 rpm at Max. Pressure	HP	3	5	5
Torque at Max. Outlet Pressure	Nm	5.8	7.2	8.9

Name of Mfr. : Danfoss Engineering

Unit Per Pc.

CODE		59 17 59	59 17 60	59 17 62	59 17 63
Model		APP 1.5	APP 1.8	APP 2.2	APP 2.5
Geometric Displacement	cm³/rev	9.31	10.04	12.52	15.35
Max. Outlet Pressure Continuous	barg	80			
	psig	1,160			
Min. Outlet Pressure	barg	20			
	psig	290			
Inlet Pressure Continuous	barg	0.5 – 5			
	psig	7.3 – 72.5			
Max. Inlet Pressure Peak	barg	10			
	psig	145			
Min. Speed Continuous	rpm	700			
Max. Speed Continuous	rpm	3,450			3,000

(to be continued)

Unit Per Pc.

CODE		59 17 59	59 17 60	59 17 62	59 17 63
Model		APP 1.5	APP 1.8	APP 2.2	APP 2.5
Typical Flow					
1,000 rpm at Max. Pressure	m³/h	0.53	0.57	0.73	0.90
1,500 rpm at Max. Pressure	m³/h	0.79	0.86	1.09	1.34
1,200 rpm at Max. Pressure	gpm	2.80	3.03	3.83	4.73
1,800 rpm at Max. Pressure	gpm	4.19	4.55	5.75	7.09
Weight (Dry)	kgs	8.6			
Typical Motor Size					
Max. Speed at Max. Pressure	kW	5.5		7.5	
3,000 rpm at Max. Pressure	HP	7.5		10.0	15.0
Torque at Max. Outlet Pressure	Nm	13.0	13.9	17.4	21.3

Name of Mfr. : Danfoss Engineering

End Suction Bare Shaft Pumps

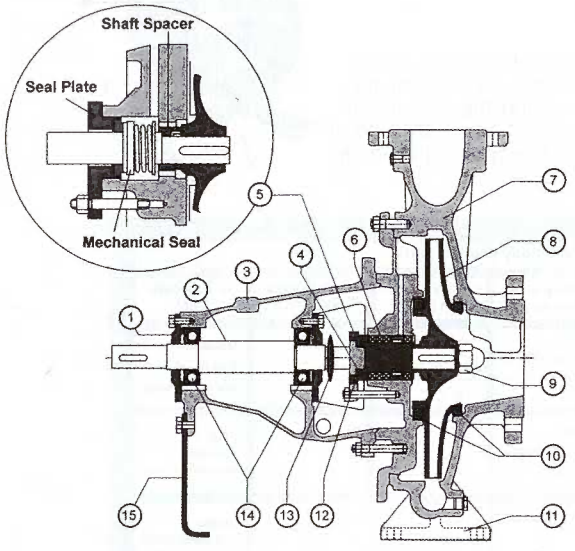
Volute casing centrifugal end suction pump with Back Pull-Out (BPO) feature, main dimensions and performance according to EN 733/DIN24255 standards.

Type	End Suction centrifugal, Black Pull-Out (BPO)
Design	EN733/DIN24255
Flange	DIN2332 PN 10RF
Direction of Rotation	Clockwise as viewed from the drive side
Material :	
Casing	Cast iron, Ductile iron, Bronze and Stainless steel
Impeller	Cast iron, Ductile iron, Bronze and Stainless steel
Shaft	SS420, optional AISI304 & AISI316
Shaft Seal	Mechanical seal and Gland packing
Operating Range :	
Flow Rate (Q)	Up to 1,100 m³/h
Head (H)	up to 150 m
Speed	1,450 – 2,900 rpm (50 Hz) 1,750 – 3,600 rpm (60 Hz)
Operating Temp.	-10 °C to 105 °C standard, optional 140 °C
Operating Pressure	10 bar standard; optional 16 bar

Range of Application:

EUROFLO pumps can be used for the following services in the Commercial, Residential, Agricultural, Industrial, Process, Petroleum and Food & Beverage industries.

Water treatment & supply, Sea water transfer, Fire fighting & protection, Bilging & ballasting, Pressure boosting, Air conditioning, Cooling towers, Refrigeration, Plumbing, Circulating, Transfer, Irrigation, Drainage



Parts ;

No.	Name	No.	Name
1	Bearing cover (Shaft end)	8	Impeller
		9	Impeller nut
2	Shaft	10	Casing wear rings
3	Bearing housing	11	Front foot support
4	Shaft protection sleeve (with Gland packing only)	12	Seal plate
		13	Slinger
5	Mechanical seal	14	Ball bearings (Deep groove)
6	Gland packing (option)		
7	Volute casing	15	Rear foot support

How to order : 59-17-61

Pump, end suction bare shaft,with further information as ordering guide

Ordering Guide ;

EU 32 / 13 MBC DB
EUM 100 / 26 MBC A2 – 0110

XXX XX / XX X XX XX - XXXX - X

Series
EU = Bareshaft pumps
EUM = Monoblock pumps

Discharge Size

Impeller Nominal Size

Seal Type
M = Carbon – Ceramic / NBR
*P = Gland packing
M1 = Carbon – SiC/Viton (Optional)
M2 = Carbon – SiC/EPDM

Impeller / Body Casing Material
BC = Bronze impeller and Cast iron body
BD = Bronze impeller and Ductile iron body
BB = Bronze impeller and body
CC = Cast iron impeller and body
CD = Cast iron impeller and Ductile iron body
KK = SS316 impeller and body
KC = SS316 impeller and Cast iron body
SS = SS 304 impeller and body
SC = SS 304 impeller and Cast iron body

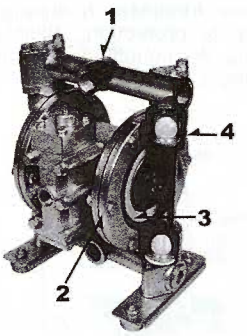
Special Code
[1]DB = Double bearing – 6307 / 5307
[1]HH = Bigger shaft and bearing frame
[1]OL = Oil lubricator
S4 = SS 304 shaft
K6 = SS 316 shaft
**A2 = 50 Hz / 2 poles
**A4 = 50 Hz / 4 poles
**B2 = 60 Hz / 2 poles
**B4 = 60 Hz / 4 poles
**ZZ = Special motor / voltage

Motor Rating
Eg.0005 = 0.55 kW
0055 = 5.5 kW
0500 = 50 kW
5000 = 500 kW

Motor Type
Eg.Stub shaft
Extended shaft
Barepump (B)

Note :
* Only for EU series of pump
** Applicable to EUM pumps only
[1] All shaft are in 2Cr13

Double Diaphragm Pumps Series



Basic Model Variations

- Eight sizes of pumps
- Six types of wetted parts as a main body
- Seven types of materials for a diaphragm

Total of 150 or more basic models are provided as a result of combination of the size, wetted part type and diaphragm material type. In addition, the DP-F series for semiconductor manufacturing process and the non-metal pump series all composed of basic components made of resin are added to the conventional models to allow you to transfer various types of solutions and/or handle the various use conditions.

Material of a diaphragm ball valve sheet	Material of the main body (wetted part)						
	A: Aluminium alloy (ADC12)	F: Cast iron (FC250/S45C)	S: Stainless (SCS14/SUS316)	P: Polypropylene (PPG) * See Note.	T: Fluorocarbon resin (PTFE)	V: Polyvinylidene-fluoride (PVDF)	D: Polyacetal (POM)
C: Chloroprene rubber (CR)	Glost Bilge wastewater	Argil agent Ferrite slurry Activated sludge Sewage water	Ammonia water Calcium hydroxide	Ferrous chloride Glost			Methanol Sodium sulfate Ammonium sulfate
N: Nitrile-butadiene rubber (NBR)	Lubricant Kerosene Wax Cutting oil		L.P.G. Ethyl chloride Sodium peroxide	Whisky Sodium silicate Methanol			Ethanol Methanol Ammonium nitrate
H: Thermoplastic elastomer polyester (TPEE)	Lubricant, heavy oil Break oil Naphtha , kerosene Mold lubricant						Ethanol Ammonium chloride Calcium chloride
E: Ethylene propylene (EPDM)	Acetone aqueous solution		Coal slurry CMP	Sulfuric acid (less than 20 %)			Acetaldehyde Butyl nitrile Chromium acid
S: Thermoplastic elastomer polyolefin (TPO)	Acetone bilge wastewater						Acetone Ammonia water Butyl acetate
V: Fluorine contained rubber (FKM)	Ethanol Xylene Jet fuel		Methylene chloride Lactic acid Trichloroethylene	Ethanol Tetrachlorethylene			Copper sulfate (II) Sodium sulfate Barium sulfate
T: Fluorocarbon resin (PTFE)	Latex Paint Ink		Sulfuric acid (98 %) Nitric acid (less than 25%) MEK Acetone	Plating solution Developer Benzene Hydrogen peroxide	Fluorine, nitric acid, hydrochloric acid, sulfuric acid, chromium acid, aqua regals, CMP	Sodium hypochrolite	Ammonium sulfate Barium sulfate Dimethyl ether

yamada Classification of the model names

- To allow you to select our pump easily, model names of our diaphragm pumps are classified as shown below according to the combination of its "diameter," "material of the main body" and "material of the diaphragm."
- When you are to use a pump at 70℃ or higher, the material of the switching mechanism and other parts has to be changed. Contact us for details.

NDP- □ **B** □ □

4 Valve type
- B: Ball valve
- F: Flat valve (NDP-5, NDP-15)

1 Pump size (Bore diameter)
- 5: 5 Series (Bore diameter: 1/4B)
- 10: 10 Series (Bore diameter: 3/8B)
- 15: 15 Series (Bore diameter: 1/2B)
- 20: 20 Series (Bore diameter: 3/4B)
- 25: 25 Series (Bore diameter: 1B)
- 40: 40 Series (Bore diameter: 1-1/2B)
- 50: 50 Series (Bore diameter: 2B)
- 80: 80 Series (Bore diameter: 3B)

2 Main body wetted part
- P: Polypropylene (PPG) (* See ***Note 1***.)
- A: Aluminium alloy (ADC-12/AC4C-T6)
- F: Cast iron (FC250/S45C)
- S: Stainless (SUS14/316)
- T: Fluorocarbon resin (PTFE)
- V: Polyvinylidene-fluoride (PVDF)
- D: Polyacetal (POM)

3 Material of a diaphragm and other parts
- C: Chloroprene rubber (CR)
- N: Nitrile-butadiene rubber (NBR)
- H: Thermoplastic elastomer polyester (TPEE)
- E: Ethylene propylene rubber (EPDM)
- S: Thermoplastic elastomer polyolefin (TPO)
- V: Fluorine-contained rubber (FKM)
- T: Fluorocarbon resin (PTFE)

Note 1: *Glass-reinforced polypropylene*

Temperature range table for various materials

Material of the main body	Solution temperature range
Aluminium Cast iron Stainless	0 to 100℃
Polypropylene	0 to 60℃

Material of a diaphragm	Solution temperature range
NBR CR	0 to 70℃
TPEE EPDM	0 to 80℃
FKM TPO PTFE	0 to 100℃

Conversion Table

Length

	m	km	in	ft	yd	mile
m	1	1×10^{-3}	39.37	3.28	1.093	6.214×10^{-4}
km	1×10^{3}	1	3.937×10^{4}	3,280	1,093	0.621
in	0.0254	2.54×10^{-5}	1	1/12	1/36	1.58×10^{-5}
ft	0.305	3.048×10^{-4}	12	1	1/3	1.894×10^{-4}
yd	0.914	9.144×10^{-4}	36	3	1	5.682×10^{-4}
mile	1,609	1.609	63,360	5,280	1,760	1

Mass (Weight)

	g	kg	t	lb	oz
g	1	1×10^{-3}	1×10^{-6}	2.204×10^{-3}	0.0352
kg	1×10^{3}	1	1×10^{-3}	2.204	35.27
t	1×10^{6}	1×10^{3}	1	2,204	35,270
lb	453.6	0.4536	4.536×10^{-4}	1	16
oz	28.35	0.02835	2.835×10^{-5}	1/16	1

Volume

	cm^3 (cc or ml)	m^3	l	in^3	qt	pt	fl-oz	ft^3	gal
cm^3 (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m^3	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in^3	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
Ft^3	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

Pressure

	bar	kgf/cm^2	lbf/cm^2	mmHg (0 °C)	Pa (SI)
bar	1	1.020	14.50	750.1	100,000
kgf/cm^2	0.9807	1	14.22	753.6	98,066
lbf/cm^2	0.0689	0.0703	1	51.72	6,895
mmHg (0°C)	0.00133	0.0013	0.0193	1	133.3
Pa (SI)	1×10^{-5}	1.02×10^{-5}	1.45×10^{-4}	10.2×10^{-4}	1

Stress

	Pa (SI)	MPa	kgf/mm^2	kgf/cm^2
Pa (SI)	1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
MPa	1×10^{6}	1	1.01972×10^{-1}	1.01972×10
kgf/mm^2	9.80665×10^{6}	9.80665	1	1×10^{2}
kgf/cm^2	9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

Force

	kW	kgf · m/sec	HP
kW	1	102.0	1.341
kgf · m/sec	0.009807	1	0.01315
HP	0.7457	76.04	1

61

HAND TOOLS

Socket Wrenches P. 61-1 ~ 9	Wrenches/Spanners P. 61-9 ~ 17	Torque Tools/Torque Wrenches P. 61-17 ~ 18
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Packing Hooks & Pipe Cutters P. 61-26 ~ 27	Tube Expanders P. 61-27	Screwdrivers P. 61-27 ~ 30
Hammers P. 61-30 ~ 32	Glass Cutters P. 61-32 ~ 33	Bars/Nail Pullers P. 61-33
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61
HAND TOOLS

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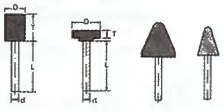
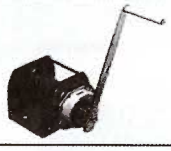
Hose Bands/ Pipe Clamps P. 61-45 ~ 50	Carborundom Paste P. 61-50	Files P. 61-50 ~ 52
Grinding Wheels/Disc Paper  P. 61-52 ~ 56	Winches/ Chain Hoists  P. 61-56 ~ 57	Gear Pullers/ Bearing Pullers P. 61-57 ~ 59
Hydraulic Jacks P. 61-59 ~ 60	Nut Splitters/ Flange Jacks P. 61-60 ~ 61	Pipe Cleaners P. 61-61
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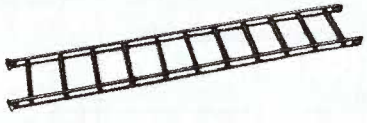
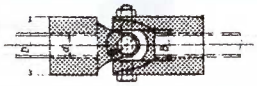
Bahco Tools P. 61-70 ~ 72	Ridgid Tools P. 61-72 ~ 74	Torches/ Leak Detectors P. 61-74 ~ 75
Ladders  P. 61-75 ~ 76		Trucks/Carriers P. 61-76 ~ 77
Roller Conveyors/ Mesh Box Pallets P. 61- 77	Universal Joints  P. 61-78	Lubricators/ Grease Pumps P. 61-78 ~ 86
Grease Nipples/ Grease Guns P. 61-86 ~ 87	Oilers/Oil Containers P. 61-87 ~ 88	

1. Socket Wrenches

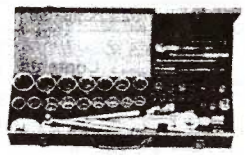
These strong socket wrench sets are forged from chrome-vanadium steel, a special alloy chrome plated steel. These sets are very useful for engineers, mechanics and electricians.

Socket Wrench Set Summary

CODE	Drive mm	No. of Socket	Size	No. of Tools	TONE
61 01 01	6.35 (1/4")	12	5-12 mm & 3/16"- 3/8"	18's	146
	12.7 (1/2")	26	8-32 mm		
	19.0 (3/4")	9	26-41 mm		
61 01 07	6.35 (1/4")	8	5-13 mm	4's	1850M
61 01 08		12	5-12 mm & 3/16"- 3/8"	8's	1800
61 01 09		8	3/16"- 7/16"	4's	1850
10		12	4-14 mm	7's	1800M
61 01 14	9.5 (3/8")	13	6-22 mm	4's	1560MS
15		13	5.5-24 mm	4's	1570M
16		13	6-22 mm	4's	1560M
17		13	6-22 mm	8's	1500M
18		17	6-22 mm	8's	1550M
61 01 19		13	1/4"–7/8"	8's	1500
61 01 20	12.7 (1/2")	26	8-32 mm	8's	170M
21		10	8-24 mm	3's	800MISO
22		13	8-27 mm	4's	-
23		13	8-27 mm	5's	750M
41		13	8-27 mm	5's	750MS
24		13	8-32 mm	4's	770M
25		15	8-32 mm	5's	260MISO
26		18	8-32 mm	8's	160M
27		15	9-32 mm	5's	260M
28		15	9-32 mm	8's	-
29		8	10-24 mm	2's	-
30		8	10-26 mm	2's	-
31		10	10-26 mm	3's	800M
32		13	10-26 mm	4's	-
33		13	10-30 mm	4's	713M
42		13	10-32 mm	4's	760M
43		13	10-32 mm	4's	760MS
61 01 34		10	3/8"-15/16"	3's	800
35		13	3/8"-1"	4's	-
36		13	3/8"-1"	5's	750
37		15	7/16"-1-1/4"	5's	260
61 01 39		26	8-32 mm & 3/8"-1"	8's	-
61 01 40		24	10-27 mm & 7/16"-1"	8's	550
61 01 51	19.0 (3/4")	20	19-60 mm	6's	230M
52		10	24-41 mm	2's	210M
53		8	24-50 mm	4's	200MISO
54		8	26-50 mm	4's	200M
56		8	26-50 mm	4's	200MS
61 01 55		13	1-1/16"-2"	4's	200
61 01 61	25.4 (1")	8	32-65 mm	5's	240M
62		12	32-85 mm	5's	250MISO
63		12	35-85 mm	5's	250M

Socket Wrench Sets

Square Drive : 6.35mm (1/4"), 12.7 mm (1/2"), 19.0 mm (3/4")



61 01 01	Socket wrench set, 6.35 mm, 12.7 mm, 19.0 mm sq. drive 47 sockets (5-41 mm) w/18 tools	Set

Contents

6.35 mm (1/4") Square Drive

12 Sockets (6 Point)	5, 5.5 (7/32"), 6, 7, 8 (5/16"), 9, 10, 11 (7/16"), 12, 3/16", 1/4", 3/8"

1 Ratchet Handle (reversible)	115 mm (4-1/2")
1 Nut Spinner Handle (hinged)	150 mm (6")
1 Sliding T Handle	105 mm (4")
1 Driver Handle	140 mm (5-1/2")
1 Extension Bar	50 mm (2")
1 Extension Bar	150 mm (6")
1 Universal Joint	35 mm (1-3/8")
1 Cross Bar	100 mm (4")

12.7 mm (1/2") Square Drive

26 Sockets (12 Point)	8 (5/16"), 9, 10, 11 (7/16"), 12, 13, 14, 14.5 (9/16"), 15 (19/32"), 16 (5/8"), 17 (21/32"), 17.5 (11/16"), 18, 19 (3/4"), 20 (25/32"), 21, 22, 23, 24 (15/16"), 25 (1"), 26,27 (1-1/16"), 28, 29, 30 (1-3/16"), 32 (1-1/4")

1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	250 mm (10")
1 Universal Joint	75 mm (3")
1 Cross Bar	250 mm (10")

19.0 mm (3/4") Square Drive

9 Sockets (12 Point)	26, 27, 29, 30, 32, 35, 36, 38, 41 mm

1 Ratchet Handle (reversible)	500 mm (20")
1 Extension Bar	200 mm (8")

Socket Wrench Sets

Square Drive 6.35 mm (1/4")

How to order : CODE

Socket wrench set, 6.35 mm sq. drive, SOCKET SIZE, NUMBER of SOCKETS, NUMBER of TOOLS

Unit Per Set

CODE	Socket Size		Quantity of Sockets	Quantity of Tools
	mm	Inch		
61 01 07	5-13	-	8	4
08	5-12	3/16-3/8	12	8
09	-	3/16-7/16	8	4
10	4-14	-	12	7

Contents

61 01 07

8 Sockets (6 Point)	5, 5.5, 6, 7, 8, 10, 12, 13 mm

1 Nut Spinner Handle (hinged)	150 mm (6")
1 Ratchet Handle (reversible)	115 mm (4-1/2")
1 Driver Handle	140 mm (5-1/2")
1 Cross Bar	100 mm (4")

61 01 08	
12 Sockets (6 Point)	5, 5.5(7/32"), 6, 7, 8(5/16"), 9, 10, 11(7/16"), 12, 3/16", 1/4", 3/8"
1 Ratchet Handle (reversible)	115 mm (4-1/2")
1 Nut Spinner Handle (hinged)	150 mm (6")
1 Sliding T Handle	105 mm (4")
1 Driver Handle	140 mm (5-1/2")
1 Extension Bar	50 mm (2")
1 Extension Bar	150 mm (6")
1 Universal Joint	35 mm (1-3/8")
1 Cross Bar	100 mm (4")

61 01 09	
8 Sockets (6 Point)	3/16", 7/32", 1/4", 9/32" 5/16", 11/32", 3/8", 7/16"
1 Ratchet Handle	115 mm (4-1/2")
1 Nut Spinner Handle (hinged)	150 mm (6")
1 Driver Handle	150 mm (6")
1 Cross Bar	100 mm (4")

61 01 10	
12 Sockets (6 Point)	4, 5, 5.5, 6, 7, 8 9, 10, 11, 12, 13, 14 mm
1 Ratchet Handle	115 mm (4-1/2")
1 Nut Spinner Handle (hinged)	150 mm (6")
1 Sliding T Handle	105 mm (4")
1 Driver Handle	150 mm (6")
1 Extension Bar	50 mm (2")
1 Extension Bar	150 mm (6")
1 Universal Joint	40 mm (1-9/16")

Socket Wrench Sets

Square Drive 9.5 mm (3/8")

9.5 mm 3/8"

How to order : CODE

Socket wrench set, 9.5 mm sq. drive, SOCKET SIZE, NUMBER of SOCKETS , NUMBER of TOOLS

Unit Per Set

CODE	Socket Size		Quantity of Sockets	Quantity of Tools
	mm	Inch		
61 01 14	6-22	-	13	4
15	5.5-24	-	13	4
16	6-22	-	13	4
17	6-22	-	13	8
18	6-22	-	17	8
19	-	1/4-7/8	13	8

Contents

61 01 14	
13 Sockets (6 Point)	6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 19, 21, 22 mm
1 Ratchet Handle (hold Type)	185 mm (7-1/4")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Ball Joint	44 mm (1-3/4")

61 01 15	
13 Sockets (6 Point) (12 Point)	5.5, 6, 7, 8 mm 10, 12, 13, 14, 17, 19, 21, 22, 24 mm
1 Ratchet Handle (hold Type)	185 mm (7-1/4")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Ball Joint	44 mm (1-3/4")

61 01 16	
13 Sockets (6 Point) (12 Point)	6, 7, 8, 9 mm 10, 11, 12, 13, 14, 17, 19, 21, 22 mm
1 Ratchet Handle (reversible)	190 mm (7-1/2")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Universal Joint	54 mm (2")

61 01 17	
13 Sockets (6 Point) (12 Point)	6, 7, 8, 9 mm 10, 11, 12, 13, 14, 17, 19, 21, 22 mm
1 Nut Spinner Handle (hinged)	190 mm (7-1/2")
1 Ratchet Handle (reversible)	190 mm (7-1/2")
1 Sliding T Handle	200 mm (8")
1 Speeder (Brace)	400 mm (16")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	300 mm (12")
1 Universal Joint	50 mm (2")

61 01 18	
17 Sockets (6 Point) (12 Point)	6, 7, 8 (5/16"), 9 mm 10, 11 (7/16"), 12, 13, 14, 14.5 (9/16"), 15 (19/32"), 16 (5/8"), 17 (21/32"), 17.5 (11/16"), 19 (3/4"), 21, 22 mm
1 Ratchet Handle (reversible)	190 mm (7-1/2")
1 Nut Spinner Handle (hinged)	190 mm (7-1/2")
1 Sliding T Handle	200 mm (8")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	300 mm (12")
1 Cross Bar	150 mm (6")
1 Universal Joint	54 mm (2")

61 01 19	
13 Sockets (6 Point) (12 Point)	1/4", 5/16", 3/8" 7/16", 1/2", 17/32", 9/16", 19/32", 5/8", 11/16", 3/4", 13/16", 7/8"
1 Nut Spinner Handle (hinged)	190 mm (7-1/2")
1 Ratchet Handle (reversible)	190 mm (7-1/2")
1 Sliding T Handle	200 mm (8")
1 Speeder (Brace)	400 mm (16")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	300 mm (12")
1 Universal Joint	50 mm (2")

Socket Wrench Sets

Square Drive 12.7 mm (1/2")

12.7 mm 1/2"

Socket Set Contents with Metric Sizes.

How to order : CODE

Socket wrench set, 12.7 mm sq. drive, SOCKET SIZE, NUMBER of SOCKETS, NUMBER of TOOLS

Unit Per Set

CODE	Socket Size		Quantity of Sockets	Quantity of Tools
	mm	Inch		
61 01 20	8-32	-	26	8
21	8-24	-	10	3
22	8-27	-	13	4
23	8-27	-	13	5
41	8-27	-	13	5
61 01 24	8-32	-	13	4
25	8-32	-	15	5
26	8-32	-	18	8
27	9-32	-	15	5
28	9-32	-	15	8

(to be continued)

Unit Per Set

CODE	Socket Size mm	Socket Size Inch	Quantity of Sockets	Quantity of Tools
61 01 29	10-24	-	8	2
30	10-26	-	8	2
31	10-26	-	10	3
32	10-26	-	13	4
33	10-30	-	13	4
61 01 42	10-32	-	13	4
43	10-32	-	13	4

Contents

61 01 20

26 Sockets (12 Point)	8, 9, 10, 11, 12, 13, 14, 14.5, 15, 16, 17, 17.5, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	362 mm (14-1/4")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	250 mm (10")
1 Universal Joint	70.5 mm (3/4")
1 Cross Bar	250 mm (10")

61 01 21

10 Sockets (12 Point)	8, 10, 11, 12, 13, 14, 17, 19, 22, 24 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	150 mm (6")

61 01 22

13 Sockets (12 Point)	8, 10, 11, 12, 13, 14, 17, 19, 21, 22, 24, 26, 27 mm
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")
1 Universal Joint	75 mm (3")

61 01 23

13 Sockets (12 Point)	10, 11, 12, 13, 14, 17, 19, 21, 22, 24, 26, 27, 30 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")

61 01 41

13 Sockets (6 Point)	8, 10, 11, 12, 13, 14, 17, 19, 21, 22, 24, 26, 27 mm
1 Ratchet Handle (hold Type)	250 mm (10")
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Ball Joint	60 mm (2-3/8")
1 Cross Bar	250 mm (10")

61 01 24

13 Sockets (12 Point)	8, 10, 11, 12, 13, 14, 17, 19, 22, 24, 27, 30, 32 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")

61 01 25

15 Sockets (12 Point)	8, 10, 11, 12, 13, 14, 17, 19, 21, 22, 24, 26, 27, 30, 32 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")

61 01 26

18 Sockets (12 Point)	8, 9, 10, 11, 12, 13, 14, 17, 19, 21, 22, 23, 24, 26, 27, 29, 30, 32 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	250 mm (10")
1 Universal Joint	75 mm (3")
1 Cross Bar	250 mm (10")

61 01 27

15 Sockets (12 Point)	9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 26, 29, 32 mm
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")

61 01 28

15 Sockets (12 Point)	9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 26, 29, 32 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Sliding T Handle	250 mm (10")
1 Offset Handle	275 mm (11")
1 Speed T Handle	300 mm (12")
1 Speeder	395 mm (16")
1 Extension Bar	150 mm (6")
1 Universal Joint	75 mm (3")

61 01 29

8 Sockets (12 Point)	10, 12, 13, 14, 17, 19, 22, 24 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Extension Bar	150 mm (6")

61 01 30

8 Sockets (12 Point)	10, 12, 14, 17, 19, 21, 23, 26 mm
1 Sliding T Handle	250 mm (10")
1 Extension Bar	150 mm (6")

61 01 31

10 Sockets (12 Point)	10, 12, 13, 14, 15, 17, 19, 21, 23, 26 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	150 mm (6")

61 01 32

13 Sockets (12 Point)	10, 11, 12, 13, 14, 14.5, 16, 17, 17.5, 19, 21, 23, 26 mm
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Universal Joint	75 mm (3")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")

Contents

61 01 33

13 Sockets (12 Point)	10, 11, 12, 13, 14, 17, 19, 21, 22, 24, 26, 27, 30 mm
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")

61 01 42

13 Sockets (12 Point)	10, 12, 13, 14, 17, 19, 21, 22, 24, 26, 27, 30, 32 mm
1 Ratchet Handle (hold Type)	250 mm (10")
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Ball Joint	60 mm (2-3/8")

61 01 43

13 Sockets (6 Point)	10, 12, 13, 14, 17 19, 21, 22, 24, 26, 27, 30, 32 mm
1 Ratchet Handle (hold Type)	250 mm (10")
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Ball Joint	60 mm (2-3/8")

Socket Set Contents with Inch Sizes

How to order : CODE

Socket wrench set, 12.7 mm sq. drive, SOCKET SIZE, NUMBER of SOCKETS, NUMBER of TOOLS

Unit Per Set

CODE	Socket Size		Quantity of Sockets	Quantity of Tools
	mm	Inch		
61 01 34	-	3/8 - 15/16	10	3
35	-	3/8 - 1	13	4
36	-	3/8 - 1	13	5
37	-	7/16 -1-1/4	15	5

Contents

61 01 34

10 Sockets (12 Point)	3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16"
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	150 mm (6")

61 01 35

13 Sockets (12 Point)	3/8", 7/16", 1/2", 9/16", 19/32", 5/8", 11/16", 3/4", 25/32", 13/16", 7/8", 15/16", 1"
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Universal Joint	75 mm (3")
1 Cross Bar	250 mm (10")

61 01 36

13 Sockets (12 Point)	3/8", 7/16", 1/2", 9/16", 19/32", 5/8", 11/16", 3/4", 25/32", 13/16", 7/8", 15/16", 1"
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	300 mm (12")
1 Extension Bar	150 mm (6")
1 Universal Joint	75 mm (3")
1 Cross Bar	250 mm (10")

61 01 37

15 Sockets (12 Point)	7/16", 1/2", 9/16", 19/32", 5/8", 11/16", 3/4", 25/32", 13/16", 7/8", 15/16", 1, 1-1/16", 1-1/8", 1-1/4"
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	150 mm (6")
1 Cross Bar	250 mm (10")

Socket Set Contents in Metric & Inch Sizes

How to order : CODE

Socket wrench set, 12.7 mm sq. drive SOCKET SIZE, NUMBER of SOCKETS, NUMBER of TOOLS

Unit Per Set

CODE	Socket Size		Quantity of Sockets	Quantity of Tools
	mm	Inch		
61 01 39	8 - 32	3/8 - 1	26	8
40	10 - 26	7/16 - 1	24	8

Contents

61 01 39

26 Sockets (12 Point)	8(5/16"), 9, 10, 11(7/16"), 12, 13, 14, 14.5(9/16"), 15(19/32"), 16(5/8"), 17(21/32"), 17.5(11/16"), 19(3/4"), 20(25/32"), 21, 22, 23, 24(15/16"), 26, 27(1-1/16"), 29, 30(1-3/16"), 32(1-1/4"), 3/8"(9.5), 1/2"(12.7), 1"(25.4)
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	250 mm (10")
1 Universal Joint	75 mm (3")
1 Cross Bar	250 mm (10")

61 01 40

24 Sockets (12 Point)	10, 11, 12, 13, 14, 17, 19, 21, 22, 23, 24, 26 7/16", 1/2", 9/16", 19/32", 5/8", 11/16", 3/4", 25/32", 13/16", 7/8", 15/16", 1"
1 Ratchet Handle (reversible)	270 mm (10-1/2")
1 Nut Spinner Handle (hinged)	380 mm (15")
1 Sliding T Handle	250 mm (10")
1 Extension Bar	75 mm (3")
1 Extension Bar	150 mm (6")
1 Extension Bar	250 mm (10")
1 Universal Joint	75 mm (3")
1 Cross Bar	250 mm (10")

Socket Wrench Sets

Square Drive 19.0 mm (3/4")

How to order : CODE

Socket wrench set, 19.0 mm sq. drive, SOCKET SIZE, NUMBER of SOCKETS, NUMBER of TOOLS

Unit Per Set

CODE	Socket Size		Quantity of Sockets	Quantity of Tools
	mm	Inch		
61 01 51	19-60	-	20	6
52	24-41	-	10	2
53	24-50	-	8	4
54	26-50	-	8	4
56	26-50	-	8	4
55	-	1-1/16-2	13	4

Contents

61 01 51

20 Sockets (12 Point)	19, 21, 22, 23, 24, 26, 27, 29, 30, 32, 35, 36, 38, 41, 46, 50, 54, 55, 58, 60 mm
1 Ratchet Handle (reversible)	500 mm (20")
1 Nut Spinner Handle (hinged)	500 mm (20")
1 Sliding T Handle	500 mm (20")
1 Extension Bar	200 mm (8")
1 Extension Bar	400 mm (16")
1 Universal Joint	97 mm (3-7/8")

61 01 52

10 Sockets (12 Point)	24, 26, 27, 29, 30, 32, 35, 36, 38, 41 mm
1 Sliding T Handle	500 mm (20")
1 Extension Bar	200 mm (8")

61 01 53

8 Sockets (12 Point)	24, 27, 30, 32, 36, 41, 46, 50 mm
1 Ratchet Handle (reversible)	500 mm (20")
1 Sliding T Handle	500 mm (20")
1 Extension Bar	200 mm (8")
1 Extension Bar	400 mm (16")

61 01 54

8 Sockets (12 Point)	26, 29, 32, 35, 38, 41, 46, 50 mm
1 Ratchet Handle (reversible)	500 mm (20")
1 Sliding T Handle	500 mm (20")
1 Extension Bar	200 mm (8")
1 Extension Bar	400 mm (16")

61 01 56

8 Sockets (6 Point)	26, 29, 32, 35, 38, 41, 46, 50 mm
1 Ratchet Handle	500 mm (20")
1 Sliding T Handle	500 mm (20")
1 Extension Bar	200 mm (8")
1 Extension Bar	400 mm (16")

61 01 55

13 Sockets (12 Point)	1-1/16", 1-1/8", 1-3/16", 1-1/4", 1-5/16", 1-3/8", 1-7/16", 1-1/2", 1-5/8", 1-3/4", 1-13/16", 1-7/8", 2"
1 Ratchet Handle (reversible)	500 mm (20")
1 Sliding T Handle	500 mm (20")
1 Extension Bar	200 mm (8")
1 Extension Bar	400 mm (16")

Socket Wrench Sets

Square Drive 25.4 mm (1")

25.4 mm 1"

How to order : CODE

Socket wrench set, 25.4 mm sq. drive, SOCKET SIZE, NUMBER of SOCKETS, NUMBER of TOOLS

Unit Per Set

CODE	Socket Size		Quantity of Sockets	Quantity of Tools
	mm	Inch		
61 01 61	32-65	-	8	5
62	32-85	-	12	5
63	32-85	-	12	5

Contents

61 01 61

8 Sockets (12 Point)	32, 36, 41, 46, 50, 55, 60, 65 mm
1 Ratchet Head	165 mm (6-1/2")
1 Sliding Head	80 mm (3-1/8")
1 Extension Bar	150 mm (6")
1 Extension Bar	400 mm (16")
1 Cross Bar	660 mm (26")

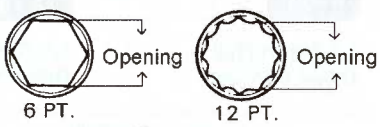
61 01 62

12 Sockets (12 Point)	32, 36, 41, 46, 50, 55, 60, 65, 70, 75, 80, 85 mm
1 Ratchet Head	165 mm (6-1/2")
1 Sliding Head	80 mm (3-1/8")
1 Extension Bar	150 mm (6")
1 Extension Bar	400 mm (16")
1 Cross Bar	660 mm (26")

61 01 63

12 Sockets (12 Point)	35, 38, 41, 46, 50, 54, 58, 63, 67, 71, 77, 85 mm
1 Ratchet Head	165 mm (6-1/2")
1 Sliding Head	80 mm (3-1/8")
1 Extension Bar	150 mm (6")
1 Extension Bar	400 mm (16")
1 Cross Bar	660 mm (26")

Socket Wrenches



These socket wrenches are made of a special chromed alloy steel. The socket walls are made thin to make it easier to fit to bolts or nuts that are set in narrow, difficult to reach spots. The nominal sizes of the sockets are determined by the socket opening, not the bolt size.

When ordering, please indicate the size of the square drive opening at the back of the socket: 6.35 mm (1/4"), 9.5 mm (3/8"), 12.7 mm (1/2"), 19.0 mm (3/4"), 25.4 mm (1"). Also specify the number of points in the socket and the size of the opening. The following illustrations show how to measure the opening of the socket sizes properly.

Careful When Ordering !

American and Metric wrench sizes are taken across the flats of the bolt head, British Standard size is taken from the outside diameter of threads.

How to order : CODE

Socket wrench, SQUARE DRIVE mm or inch, OPENING SIZE mm, TYPE OF OPENING POINT

6.35 mm (1/4") Drive 6 Point

Unit Per Pc.

CODE	Opening mm	Opening inch	Overall Length mm	CODE	Opening mm	Opening inch	Overall Length mm
61 01 81	5	-	22	61 01 90	13	-	22.5
82	5.5	7/32	22	91	14	-	22.5
83	6	-	22	92	-	3/16	22
84	7	9/32	22	93	-	1/4	22
85	8	5/16	22	94	-	9/32	22
61 01 86	9	11/32	22	61 01 95	-	11/32	22
87	10	-	22.5	96	-	3/8	22.5
88	11	7/16	22.5				
89	12	15/32	22.5				

9.5 mm (3/8") Drive 6 Point

9.5 mm (3/8") Drive 12 Point

Unit Per Pc.

CODE	Opening mm	Opening inch	Overall Length mm	CODE	Opening mm	Opening inch	Overall Length mm
61 02 01	6	-	27	61 02 21	10	-	29
02	7	9/32	27	22	11	7/16	29
03	8	5/16	27	23	12	15/32	29
04	9	11/32	29	24	13	-	29
05	10	-	29	25	14	-	31.5
61 02 06	11	7/16	29	61 02 26	14.5	-	31.5
07	12	15/32	29	27	15	19/32	31.5
08	13	-	29	28	16	5/8	31.5
09	14	-	31.5	29	17	21/32	31.5
10	17	21/32	31.5	30	17.5	11/16	31.5
61 02 11	19	3/4	35	61 02 31	19	3/4	35
12	21	13/16	35	32	21	13/16	35
13	22	-	35	33	22	-	35
14	-	1/4	27	34	23	-	35
15	-	9/32	27	35	-	1/2	31
61 02 16	-	11/32	29	61 02 36	-	17/32	31.5
17	-	3/8	29	37	-	13/16	35
				38	-	7/8	35

12.7 mm (1/2") Drive 6 Point

12.7 mm (1/2") Drive 12 Point

Unit Per Pc.

CODE	Opening mm	Opening inch	Overall Length mm	CODE	Opening mm	Opening inch	Overall Length mm
61 02 41	8	5/16	35	61 02 66	8	5/16	36
42	9	11/32	35	67	9	11/32	36
43	10	-	35	68	10	-	36
44	11	7/16	35	69	11	7/16	36
45	12	15/32	35	70	12	15/32	36
61 02 46	13	-	35	61 02 71	13	-	36
47	14	-	35	72	14	-	36
48	15	19/32	35	73	14.5	-	36
49	16	5/8	36	74	15	19/32	36
50	17	21/32	37	75	16	5/8	36
61 02 51	18	-	37	61 02 76	17	21/32	38
52	19	3/4	38	77	17.5	11/16	38
53	20	25/32	38	78	18	-	38
54	21	13/16	39	79	19	3/4	38
55	22	-	40	80	20	25/32	38
61 02 56	23	-	41	61 02 81	21	13/16	38
57	24	-	41	82	22	-	40
58	26	-	44	83	23	-	40
59	27	1-1/16	44	84	24	15/16	40
60	28	-	44	85	26	-	42.5
61 02 61	29	1-1/8	44	61 02 86	27	1-1/16	42.5
62	30	-	47	87	28	-	43
63	32	1-1/4	47	88	29	1-1/8	44
				89	30	-	46
				90	32	1-1/4	46

(to be continued)

Unit Per Pc.

CODE	Opening mm	Opening inch	Overall Length mm	CODE	Opening mm	Opening inch	Overall Length mm
				61 02 91	33	-	46
				92	-	11/32	35
				93	-	3/8	35
				94	-	1/2	35
				95	-	13/16	39
				61 02 96	-	7/8	40
				97	-	1	44
				98	-	1-1/8	44

Careful When Ordering !!

American and Metric wrench sizes are taken across the flats of the bolt head, British Standard size is taken from the outside diameter of the threads.

19 mm (3/4") Drive 6 Point

19 mm (3/4") Drive 12 Point

Unit Per Pc.

CODE	Opening mm	Opening inch	Overall Length mm	CODE	Opening mm	Opening inch	Overall Length mm
61 03 01	19	3/4	50	61 03 21	19	3/4	50
02	21	13/16	50	20	20	-	47.5
03	22	-	50	22	21	13/16	50
04	23	-	50	23	22	-	50
05	24	-	50	24	23	-	50
61 03 06	26	-	53	61 03 25	24	-	50
07	27	1-1/16	53	26	26	-	53
08	29	1-1/8	56	27	27	1-1/16	53
09	30	-	56	28	29	1-1/8	56
10	32	1-1/4	56	29	30	1-3/16	56
61 03 11	35	1-3/8	58	61 03 30	32	1-1/4	56
12	36	-	58	31	35	1-3/8	58
13	38	1-1/2	60	32	36	-	58
14	41	-	63	33	38	1-1/2	60
15	46	1-3/16	65	34	41	-	63
61 03 16	50	-	70	61 03 35	46	1-3/16	65
				36	50	-	58
				37	54	2-1/8	58
				38	55	-	60
				39	58	-	63
				61 03 40	60	-	65
				41	-	1-5/16	56
				42	-	1-7/16	58
				43	-	1-5/8	63
				44	-	1-3/4	65
				61 03 45	-	1-7/8	67
				46	-	2	70

25.4 mm (1") Drive 12 Point

Unit Per Pc.

CODE	Opening mm	Opening inch	Overall Length mm	CODE	Opening mm	Opening inch	Overall Length mm
61 03 51	32	1-1/4	67	61 03 61	60	-	90
52	35	1-3/8	67	62	63	-	95
53	36	-	67	63	65	-	95
54	38	1-1/2	70	64	67	-	100
55	41	-	73	65	70	-	105
61 03 56	46	1-13/16	78	61 03 66	71	-	105
57	50	-	82	67	75	-	110
58	54	2-1/8	85	68	77	-	110
59	55	-	85	69	80	-	115
60	58	-	88	70	85	-	120

Deep Socket Wrenches

Deep sockets made of a special alloy steel. The socket walls are made thin for easy access to nuts and bolts set in narrow spots. The nominal size of the socket is determined by measuring the opening of the socket, not the bolt size. Only supplied in a 12.7 mm sized square drive attachment. 12 point sockets and sockets in metric sizes are available. A hole is located at the top of the socket for use with a cross bar.

12.7 mm (1/2") Drive 12 Point

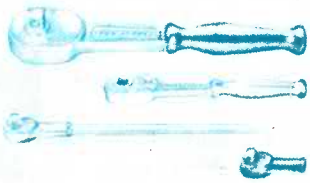
Unit Per Pc.

CODE	Opening mm	Opening inch	Overall Length mm	CODE	Opening mm	Opening inch	Overall Length mm
61 03 76	10	-	83	61 03 84	22	-	83
77	11	7/16	83	85	23	-	83
78	12	15/32	83	86	24	-	83
79	13	-	83	87	26	-	83
80	14	-	83	88	27	1-1/16	83
61 03 81	17	21/32	83	61 03 89	29	1-1/8	83
82	19	3/4	83	90	30	-	83
83	21	13/16	83	91	32	1-1/4	83

Ratchet Handles
for Socket Wrenches

6.35 mm (1/4")-25.4mm (1")

Drop forged from selected steel with 24 teeth in the ratcheting-gear instead of the usual 16 to 20. Turning shift lever reverses action instantly.



61 04 01
61 04 02
61 04 09
61 04 10

Unit Per Pc.

CODE	Square Drive	Male or Female	Overall Length mm	Weight grm
61 04 01	6.35 mm	Male	115	100
02		Female	115	80
61 04 03	9.5 mm	Male	190	280
04		Female	190	250
61 04 05	12.7 mm	Male	270	490
06		Female	270	420
61 04 07	19.0 mm	Male	500	1,925
08		Female	500	1,780
61 04 09	25.4 mm	Male	755	4,500
10		Male Head	165	1,300

Nut Spinner Handles
for Socket Wrenches

Made from selected alloy steel. Flexible head, knurled grip and a cross hole in the end for use with sliding bars.

Unit Per Pc.

CODE	Square Drive	Overall Length mm	Weight grm
61 04 15	6.35 (1/4")	150	100
16	9.5 (3/8")	250	365
17	12.7 (1/2")	300	690
18	12.7 (1/2")	380	820
19	19.09 (3/4")	500	1,550

Sliding T Handles
for Socket Wrenches

Made from selected alloy steel. Specify only the size of the square drive fitting of the sockets to be used.

Unit Per Pc.

CODE	Square Drive	Description	Overall Length mm	Weight grm
61 04 21	6.35 (1/4")	Adaptor & Handle Bars	105	60
22	9.5 (3/8")		200	190
23	12.7 (1/2")		250	320
24	19.0 (3/4")		550	1,765
25	25.4 (1")		660	3,820

Cross Bar Handles
for Socket Wrenches

Cross bars or sliding handle for use with the nut spinner and the deep sockets.

Unit Per Pc.

CODE	For	Overall Length mm	Weight grm
61 04 29	6.35 mm (1/4") Square Drive	100	25
30	9.5 mm (3/8") "	150	85
31	12.7 mm (1/2") "	250	225
32	19.0 mm (3/4") "	330	500
33	25.4 mm (1") "	660	3,200

Offset Handles
for Socket Wrenches

Made from selected alloy steel with a nonrevolving knurled grip.

Unit Per Pc.

CODE	Square Drive	Overall Length mm	Weight grm
61 04 36	12.7 mm (1/2")	275	465
37	19.0 mm (3/4")	313	1,110

Speed T Handles
for Socket Wrenches

12.7 mm (1/2") square drive, length 300 mm. Made from selected alloy steel with a revolving knurled grip in the middle.

61 04 41	Speed T Handle 12.7 mm sq drive x L 300 mm	Pc.

Speeder Handles
for Socket Wrenches

Selected alloy steel with knurled revolving grips.

Unit Per Pc.

CODE	Square Drive	Overall Length mm	Weight grm
61 04 42	9.5 mm (3/8")	395	510
43	12.7 mm (1/2")	395	650

Extension Driver Handles
for Socket Wrenches

Driver has a plastic grip with a 6.35 mm (1/4") square drive fitting. Total length : 140 mm.

61 04 46	Driver handle, extension 6.35 mm sq drive x L 140 mm	Pc.

Extension Bars
for Socket Wrenches

Made from selected alloy steel. Has a square drive fitting for attaching a socket at one end and a receptacle fitting for attaching the ratchet handle at the other.

Unit Per Pc.

CODE	Square Drive	Overall Length mm	Weight grm
61 04 48	6.35 mm (1/4")	50	30
49		150	70
61 04 50	9.5 mm (3/8")	75	70
51		150	120
52		300	225
61 04 53	12.7 mm (1/2")	75	135
54		150	225
55		250	350
61 04 56	19.0 mm (3/4")	200	800
57		400	1,570
61 04 58	25.4 mm (1")	150	870
59		400	1,820
61 04 60	25.4 mm (1")	250	1,250

Universal Joints
for Socket Wrenches

Made from selected alloy steel with approximately a 140° operating range.

Unit Per Pc.

CODE	Square Drive	Overall Length mm	Weight grm
61 04 65	6.35 mm (1/4")	35	30
66	9.5 mm (3/8")	54	65
67	12.7 mm (1/2")	75	145
68	19.0 mm (3/4")	97	465
69	25.4 mm (1")	128	890

Socket Adapters
for Socket Wrenches

Adapters used to fit ratchet handles to sockets which have larger or smaller square drive fittings.

Unit Per Pc.

CODE	Male SQ Drive	x	Female SQ Drive	Overall Length mm	Weight grm
61 04 71	9.5 (3/8")	x	6.35 (1/4")	23	15
72	6.35 (1/4")	x	9.5 (3/8")	25	25
73	12.7 (1/2")	x	9.5 (3/8")	32	40
74	9.5 (3/8")	x	12.7 (1/2")	33	50
75	19.0 (3/4")	x	12.7 (1/2")	42	115
61 04 76	12.7 (1/2")	x	19.0 (3/4")	46	170
77	25.4 (1")	x	19.0 (3/4")	58	340
78	19.0 (3/4")	x	25.4 (1")	63	420
79	38.1 (1-1/2")	x	25.4 (1")	77	780

Driver Sockets
for Socket Wrenches

These attachments allow you to drive screws with socket wrenches. Only 12.7 mm (1/2") square drive sockets available.

How to order : CODE

Driver socket for socket wrench, 12.7 mm square drive x BLADE WIDTH mm

Unit Per Pc.

CODE	Square Drive	Blade Width mm	Blade Width Inch	Weight grm
61 04 81	12.7 mm (1/2")	19	3/4	70
82	12.7 mm (1/2")	24	1	95
83	12.7 mm (1/2")	30	13/16	110

Stud Remover Wrenches
Roller Type

This roller type stud bolt remover can be used for bolts of 8 – 19 mm. If used in connection with a 12.7 mm (1/2") square drive ratchet wrench, the work can be carried out more quickly and easily.

61 04 86	Wrench stud remover 1/2 sq. drive for bolt size 8-19 mm	Pc.

Power Wrenches

Best for loosening tight bolts and nuts without effort. Even stubborn (frozen-jammed-corroded) bolts and nuts loosen in an easy and quick way. Tightens in the same easy way.

Features
- Power input is increased up to 4 times.
- Hand operated.
- Compact design for work in close quarters.

Advantages
- No air or electric power is required.
- Portable, can be used anyplace.
- Easy to operate.
- Can be used with 25.4 mm drive sockets from any manufacturer.

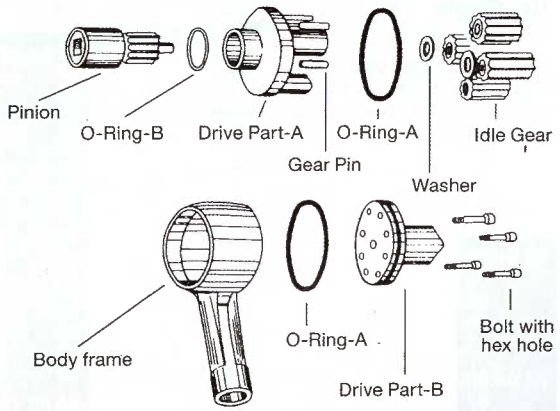
How to order : CODE

Power wrench, POWER INPUT SQ. DRIVE x POWER OUTPUT SQ. DRIVE

Unit Per Set

Description \ CODE		61 04 88	61 04 89
Square Drive	Input Power	19.0 mm (3/4")	12.7 mm (1/2")
	Output Power	25.4 mm (1")	19.0 mm (3/4")
Ratchet Overall Length		121 mm	86 mm
Power	Input	850 N.m	400 N.m
	Output	2,550 N.m	1,200 N.m
Handle Size		26 x 590 mm	19 x 436 mm
Metal Case Size		625 x 190 x 120 mm	505 x 120 x 100 mm
Weight		7.2 kgs	2.5 kgs

Power Wrench Spare Parts



2. Wrenches/Spanners

Double Open End Wrench Sets,
Double Head 15° Angle

Chrome vanadium steel with head polished and clipped into a metal clip. Set consists of 6 wrenches with the opening size stamped at both ends.

How to order : CODE

Wrench set, double open end, SIZE (MINIMUM to MAXIMUM) mm, 6's/set

Unit Per Set

CODE	Contents & Opening
61 05 01	mm ..... 6x7, 8x9, 10x12, 11x13, 12x14, 14x17, 6' s
61 05 02	mm ..... 8x9, 10x12, 12x14, 14x17, 17x19, 21x23, 6's
61 05 03	mm ..... 8x9, 10x12, 12x14, 14x17, 19x21, 23x26, 6's
61 05 04	mm ISO .... 6x7, 8x10, 11x13, 12x14, 17x19, 22x24, 6's
61 05 05	inch..... 5/16x3/8, 13/32x7/16, 1/2x9/16, 19/32x5/8, 11/16x3/4, 25/32x7/8, 6's
61 05 06	inch..... 3/8x7/16, 1/2x9/16, 19/32x5/8, 11/16x3/4, 25/32x7/8, 15/16x1, 6's

Double Open End Wrench Sets
Long Type 15° Angle

A long wrench specially designed for hard-to-reach nuts. There is a different sized opening at each wrench head.

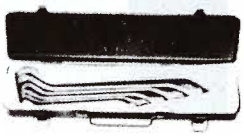
How to order : CODE

Wrench set, double open end, long handle, SIZE (MINIMUM to MAXIMUM), 6's/set

Unit Per Set

CODE	Contents & Opening
61 05 10	mm ... 8x9, 10x12, 12x14, 14x17, 17x19, 21x23, 6's
61 05 11	mm ... 8x9, 10x12, 12x14, 14x17, 19x21, 23x26, 6's
61 05 12	mm ... 6x7, 8x9, 10x12, 11x13, 12x14, 14x17, 6's
61 05 13	mm ... 6x7, 8x10, 11x13, 12x14, 17x19, 22x24, 6's

12 Point Double Offset Wrench Sets
45° Double Offset



For use in awkward places and connecting rods, main bearings, cylinder head and spring clips, etc.

How to order : CODE

Wrench set, 12 point double offset, SIZE (MINIMUM to MAXIMUM), 6's/set

Unit Per Set

CODE	Contents & Opening	Q' ty
61 05 16	mm Opening ... 10x12, 12x14, 14x17, 17x19, 19x21, 23x26 in Metal Case	6' s
61 05 17	mm Opening ... 8x10, 11x13, 12x14, 14x17, 19x22, 24x27 in Metal Case	6' s
61 05 18	mm Opening ... 10x12, 12x14, 14x17, 17x19, 19x21, 23x26 in Metal Case, Long Handle	6' s
61 05 19	mm Opening ... 8x10, 11x13, 12x14, 14x17, 19x22, 24x 27 in Metal Case, Long Handle	6' s
61 05 20	mm Opening ... 10x12, 14x17, 19x21, in Vinyl Bag, Long Handle	3' s
61 05 21	mm Opening ... 8x9, 10x12, 11x13, 14x17, 19x21, 22x24, 23x26 24x27 in Metal Case, Long Handle	8' s
61 05 26	inch Opening ... 3/8x7/16, 1/2x9/16, 5/8x11/16, 3/4x25/32, 13/16x7/8, 15/16x1 in Metal Case	6' s
61 05 27	inch Opening ... 3/8x7/16, 1/2x9/16, 5/8x11/16 in Vinyl Bag, Long Handle	3' s

Open & 12 Point Box Wrench Sets
15° Angle Open End-12 Point Opening Box End

How to order : CODE

Wrench set, open & 12 point, SIZE (MINIMUM to MAXIMUM), NUMBER of WRENCHES/set

Unit Per Set

CODE	Contents & Opening mm	Q' ty
61 05 31	8x8, 10x10, 12x12, 13x13, 14x14, 17x17, 19x19, 21x21, 22x22, 24x24	10's
61 05 32	10x10, 11x11, 12x12, 13x13, 14x14, 17x17	6's
61 05 33	6x6, 7x7, 8x8, 9x9, 10x10, 11x11, 12x12, 13x13, 14x14, 17x17, 19x19	11's
61 05 34	8x8, 10x10, 12x12, 13x13, 14x14, 17x17, 19x19, 22x22, 24x24, 27x27, 30x30, 32x32	12's
61 05 35	8x8, 9x9, 10x10, 11x11, 12x12, 13x13, 14x14, 17x17, 19x19, 22x22, 24x24, 27x27, 30x30, 32x32	14's
61 05 36	6x6, 7x7, 8x8, 9x9, 10x10, 11x11, 12x12, 13x13, 14x14, 17x17, 19x19, 22x22, 24x24, 27x27, 30x30, 32x32	16's
61 05 37	7x7, 8x8, 9x9, 10x10, 11x11, 12x12, 13x13, 14x14, 15x15, 16x16, 17x17, 18x18, 19x19, 20x20, 21x21, 22x22, 23x23, 24x24	18's

(to be continued)

Unit Per Set

CODE	Contents & Opening mm	Q'ty
61 05 38	6x6, 7x7, 8x8, 9x9, 10x10, 11x11, 12x12, 13x13, 14x14, 15x15, 16x16, 17x17, 18x18, 19x19, 20x20, 21x21, 22x22, 23x23, 24x24, 25x25, 26x26, 27x27, 28x28, 29x29, 30x30, 32x32	26's

Double Open End Wrenches

15° Angle

Jaws are long, thin, and pointed. With the 15 angle of the openings, a hex nut can be rotated completely by turning the wrench in a range of only 30 . Forged from selected alloy steel, heat treated and finished in industrial black with the heads buffed bright.

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size Metric	Whitworth
61 05 51	5.5x7	100	M3 x M4	-
52	6x7	100	M3.5 x M4	-
53	6x8	105	M3.5 x M5	-
54	7x8	105	M4 x M5	-
55	8x9	110	M5 x -	-
61 05 56	8x10	120	M5 x M6	-
57	8x11	120	M5 x M7	-
58	9x10	120	- x M6	-
59	10x11	130	M6 x M7	-
60	10x12	130	M6 x -	W3/16 x W1/4
61 05 61	10x13	140	M6 x M8	-
62	10x14	140	M6 x -	W3/16 x W5/16
63	11x12	140	M7 x -	- x W1/4
64	11x13	140	M7 x -	-
49	12x13	140	-	W1/4 x -
61 05 65	12x14	140	-	W1/4 x W5/16
66	13x17	165	- x M10	-
50	14x15	165	-	W5/16 x -
67	14x17	165	- x M10	W5/16 x W3/8
68	17x19	180	M10 x M12	W3/8 x W7/16
61 05 69	17x21	200	M10 x -	W3/8 x W1/2
70	19x21	210	M12 x -	W7/16 x W1/2
71	19x22	210	M12 x M14	-
72	19x24	220	M12 x M16	-
73	21x23	220	-	W1/2 x W9/16
61 05 74	21x26	230	-	W1/2 x W5/8
75	22x24	220	M14 x M16	-
76	23x26	240	-	W9/16 x W5/8
77	24x27	240	M16 x M18	-
78	24x30	270	M16 x M20	-
61 05 79	26x29	270	-	W5/8 x W11/16
80	26x32	270	- x M22	W5/8 x W3/4
81	27x30	270	M18 x M20	-
82	29x32	280	- x M22	W11/16 x W3/4
83	30x32	280	M20 x M22	-
61 05 84	32x35	310	M22 x -	W3/4 x W7/8
85	32x36	310	M22 x M24	-
86	32x41	330	M22 x M27	-
87	35x41	350	- x M27	W7/8 x W1
88	36x41	350	M24 x M27	-
61 05 89	41x46	410	M27 x M30	W1 x W1-1/8
90	41x50	410	M27 x M33	W1 x W1-1/4
91	46x50	430	M30 x M33	W1-1/8 x W1-1/4
92	50x54	430	M33 x M36	W1-1/4 x W1-3/8
93	50x55	430	M33 x M36	W1-1/4 x -
61 05 94	50x58	475	M33 x M39	W1-1/4 x W1-1/2
95	50x60	475	M33 x M39	W1-1/4 x -
96	54x58	475	M36 x M39	W1-3/8 x W1-1/2
97	55x60	475	M36 x M39	-

Single Open End Wrenches

15° Angle

Milled surface and smoothed edge, opening size is stamped on the head. Hardened and finished in industrial black, head has a polished finish. For check-jam-lock nuts, etc.

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size Metric	Whitworth
61 06 01	5.5	82 mm	M 3	-
02	6	82	M 3.5	-
03	7	92	M 4	-
04	8	92	M 5	-
05	9	105	-	-
61 06 06	10	105 mm	M 6	W 3/16
07	11	122	M 7	-
08	12	122	-	W 1/4
09	13	135	M 8	-
10	14	140	-	W 5/16
61 06 11	17	165 mm	M 10	W 3/8
12	19	180	M 12	W 7/16
13	21	200	-	W 1/2
14	22	210	M 14	-
15	23	210	-	W 9/16
61 06 16	24	220 mm	M 16	-
17	26	245	-	W 5/8
18	27	245	M 18	-
19	29	270	-	W 11/16
20	30	270	M 20	-
61 06 21	32	285 mm	M 22	W 3/4
22	35	315	-	W 7/8
23	36	315	M 24	-
24	38	320	-	W 15/16
25	41	360	M 27	-
61 06 26	46	400 mm	M 30	W 1-1/8
27	50	430	M 33	W 1-1/4
28	54	470	-	W 1-3/8
29	55	470	M 36	-
30	58	510	-	W 1-1/2
61 06 31	60	510 mm	M 39	-
32	63	550	M 42	W 1-5/8
33	65	550	-	-
34	67	575	M 47	W 1-3/4
35	70	575	-	-
61 06 36	71	575 mm	M 48	W 1-7/8
37	75	645	-	-
38	77	645	M 52	W 2
39	80	645	M 54	-
40	85	715	M 56	W 2-1/4
61 06 41	90	715 mm	-	-
42	95	770	M 64	W 2-1/2
43	100	770	-	-
44	105	825	M 72	W 2-3/4
45	110	825	M 76	W 3
61 06 46	115	870 mm	-	-
47	120	870	M 85	-

12 Point Single End Wrenches 40° Bent

Made of selected alloy steel with the opening size stamped on the head. Hardened and chrome plate finished. Each head is bent 40° for easier leveraging.

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size Metric	Whitworth
61 06 51	10	165 mm	M 6	-
52	11	165	M 7	-
53	12	165	-	W 1/4
54	13	186	M 8	-
55	14	186	-	W 5/16
61 06 56	17	203 mm	M 10	W 3/8
95	18	-	-	-
57	19	215	M 12	W 7/16
58	21	232	-	W 1/2
59	22	232	M 14	-
61 06 60	23	243 mm	-	W 9/16
61	24	248	M 16	-
62	26	265	-	W 5/8
63	27	265	M 18	-
64	29	282	-	W 11/16
61 06 65	30	282 mm	M 20	-
66	32	289	M 22	W 3/4
67	35	311	-	W 7/8
68	36	311	M 24	-
69	38	345	-	W 15/16
61 06 70	41	345 mm	M 27	W 1
71	46	378	M 30	W 1-1/8
72	50	412	M 33	W 1-1/4
73	54	450	-	W 1-3/8
74	55	450	M 36	-
61 06 75	58	484 mm	-	W 1-1/2
76	60	484	M 39	-
77	63	522	M 42	W 1-5/8
78	65	522	-	-
79	67	552	M 45	W 1-3/4
61 06 80	70	552 mm	-	-
81	71	552	M 48	W 1-7/8
82	75	616	-	-
83	77	616	M 52	W 2
84	80	663	M 54	-
61 06 85	85	663 mm	M 56	W 2-1/4
86	90	704	-	-
87	95	704	M 64	W 2-1/2
88	100	704	-	-
89	105	740	M 72	W 2-3/4
61 06 90	110	740 mm	M 76	W 3
91	115	776	-	-
92	120	776	M 85	-
93	125	812	-	-
94	130	812	M 90	-

12 Point Double End Wrenches

Both Heads 40° Bent

For use in close quarters. Thin head walls permit use where the clearance is limited. Made of selected alloy steel, heat treated and chrome plated. Opening sizes are stamped on each neck.

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size Metric	Whitworth
61 07 01	10 x 11	179 mm	M6 x -	-
02	10 x 12	179	M6 x -	- x W1/4
03	10 x 13	179	M6 x M8	-
04	11 x 13	179	- x M8	-
05	12 x 14	186	-	- x W5/16
61 07 06	13 x 17	210 mm	M8 x M10	- x W3/8
07	14 x 17	210	- x M10	- x W3/8
08	17 x 19	230	M10 x M12	W3/8 x W7/16
09	17 x 21	230	M10 x -	W3/8 x W1/2
10	19 x 21	262	M12 x -	W7/16 x W1/2

(to be continued)

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size Metric	Whitworth
61 07 11	19 x 22	262 mm	M12 x M14	W7/16 x -
12	19 x 24	286	M12 x M16	W7/16 x -
13	21 x 23	286	-	W1/2 x W9/16
14	21 x 26	286	-	W1/2 x W5/8
15	22 x 24	286	M14 x M16	-
61 07 16	23 x 26	303 mm	-	W9/16 x W5/8
17	24 x 27	303	M16 x M18	-
18	24 x 30	324	M16 x M20	-
19	26 x 32	324	- x M22	W5/8 x W3/4
20	27 x 30	324	M18 x M20	-

12 Point Double Offset Wrenches

45° Double Offset

Adapted to work in close quarters. Drop forged from selected alloy steel. Heat treated and chrome plated with bright heads. Different opening at each head. Opening size stamped on each neck.

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size Metric	Whitworth
61 07 26	6 x 7	128	M3.5 x M4	-
27	8 x 9	174	M5 x -	-
28	8 x 10	174	M5 x M6	- x W3/16
29	10 x 11	189	M6 x M7	W3/16 x -
30	10 x 12	189	M6 x -	W3/16 x W1/4
61 07 31	10 x 13	198	M6 x -	W3/16 x -
32	11 x 13	198	M7 x -	-
33	12 x 14	214	-	W1/4 x W5/16
24	12 x 13	214	-	W1/4 x -
34	13 x 17	243	- x M10	-
61 07 25	14 x 15	243	-	W5/16 x -
35	14 x 17	243	- x M10	W5/16 x W3/8
36	17 x 19	276	M10 x M12	W3/8 x W7/16
37	17 x 21	293	M10 x -	W3/8 x W1/2
38	19 x 21	314	M12 x -	W7/16 x W1/2
61 07 39	19 x 22	314	M12 x M14	- -
40	19 x 24	317	M12 x M16	- -
41	21 x 23	333	- -	W1/2 x W9/16
42	21 x 26	364	- -	W1/2 x W5/8
43	22 x 24	333	M14 x M16	-
61 07 44	23 x 26	366	- -	W9/16 x W5/8
45	24 x 27	366	M16 x M18	-
46	24 x 30	392	M16 x M20	-
47	26 x 29	392	- x -	- x W11/16
48	26 x 32	392	- x M22	W5/8 x W3/4
61 07 49	27 x 30	392	M18 x M20	-
50	29 x 32	428	- x M22	W11/16 x W3/4
51	30 x 32	428	M20 x M22	- x W3/4
52	32 x 35	428	M22 x -	W3/4 x W7/8
53	32 x 36	428	M22 x M24	W3/4 x -
61 07 54	35 x 41	454	- x M27	W7/8 x W1
55	36 x 41	454	M24 x M27	W7/8 x W1

Open & 12 Point Box Wrenches

15° Angle Open End-12 Point Opening Box End

For use in close quarters. The open end is pointed with slim jaws. The other end is a thin walled 12 point box head. Both heads have the same size opening. Drop forged from tough, selected alloy steel, heat-treated and chrome plated.

Metric

Unit Per Pc.

CODE	Opening mm	Overall Length mm	CODE	Opening mm	Overall Length mm
61 07 61	6	99	**61 07 95**	25	333
62	7	105	**77**	26	330
63	8	105	**78**	27	360
64	9	110	**96**	28	390
65	10	118	**97**	29	390
61 07 66	11	134	**61 07 79**	30	387
67	12	140	**80**	32	420
68	13	150	**81**	35	465
69	14	170	**82**	36	490
92	15	198	**83**	41	520
61 07 70	16	190	**61 07 84**	43	550
71	17	215	**85**	45	550
93	18	245	**86**	46	580
72	19	235	**87**	50	580
94	20	268	**88**	54	635
61 07 73	21	265	**61 07 89**	55	635
74	22	280	**90**	58	710
75	23	310	**91**	60	710
76	24	310			

Inch

Unit Per Pc.

CODE	Opening mm	Overall Length mm	CODE	Opening mm	Overall Length mm
61 08 01	1/4	99	**61 08 13**	1	330
02	5/16	105	**14**	1- 1/16	360
03	3/8	118	**15**	1- 1/8	387
04	7/16	134	**16**	1- 1/4	420
05	1/2	150	**17**	1-11/16	550
61 08 06	9/16	170	**61 08 18**	1- 3/4	550
07	5/8	190	**19**	1- 7/8	580
08	11/16	215	**20**	2	580
09	3/4	235	**21**	2- 1/8	635
10	13/16	265	**22**	2- 1/4	635
61 08 11	7/8	280	**61 08 23**	2- 3/8	710
12	15/16	310			

Open & Ratchet Type 12 Point Box Wrenches

One standard open end, but the other end has ratchet type 12 point wrenches which can fasten the bolt or nut using a ratchet mechanism at only 5° handles swinging space. Both heads have the same size opening.

Unit Per Pc.

CODE	Opening mm	Overall Length mm	CODE	Opening mm	Overall Length mm
61 08 31	8	140	**61 08 36**	13	180
32	9	150	**37**	14	190
33	10	160	**38**	15	200
34	11	165	**39**	17	220
35	12	170	**40**	19	246

Open & Ratchet Type 12 Point Box Wrench Sets

Unit Per Set

CODE	Size mm	Pcs/Set
61 08 45	10 - 14	4's (10, 12, 13, 14)
46	8 - 17	6's (8, 10, 12, 13, 14, 17)

6 Point T-Type Wrenches

Handles Fixed (Not Removable)

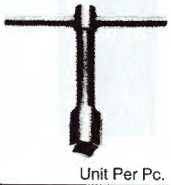
Broached and chrome plated with a smoothed surface. Made of selected alloy steel. The size of the opening for this 6 point wrench is determined by measuring the length between two parallel flat sides.

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size	
			MM	WW
61 08 51	6	110 mm	M 3	-
52	7	110	M 3.5	-
53	8	110	M 4	-
54	9	110	M 5	-
55	10	150	M 6	W 3/16
61 08 56	11	150 mm	-	-
57	12	165	-	W 1/4
58	13	165	M 8	-
59	14	165	-	W 5/16
60	17	180	M 10	W 3/8
61 08 61	19	200 mm	M 12	W 7/16
62	21	210	-	W 1/2
63	22	210	M 14	-
64	23	220	-	W 9/16
65	24	220	M 16	-
61 08 66	26	240 mm	-	W 5/8
67	27	240	M 18	-
68	29	250	-	W 11/16
69	30	250	M 20	-
70	32	250	-	W 3/4
61 08 71	35	280 mm	M 22	W 7/8
72	36	280	M 24	-
73	41	300	M 27	W 1
74	46	320	M 30	W 1-1/8
75	50	360	M 33	W 1-1/4
61 08 76	54	380 mm	M 36	W 1-3/8
77	55	380	-	-

4 Point T-Type Wrenches

Handle Fixed (Not Removable)



Fixed handle and square opening. Broached, hardened and chrome plated.

Unit Per Pc.

CODE	Opening mm/in.	Overall Length
61 08 86	6 (1/4)	60 mm
87	8 (5/16)	67
88	9 (3/8)	85
89	10 (-)	85
90	11 (7/16)	100
61 08 91	12 (1/2)	110 mm
92	14 (9/16)	120
93	16 (5/8)	130
94	19 (3/4)	140

6 Point T-Type Wrenches

Handles Detachable

Broached, surface smoothed and chrome plated, 6 point extra heavy wrenches with detachable handles. The size of the openings are measured between two parallel sides of the socket.

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW
61 09 01	10	145 mm	M 6	W 3/16
02	11	145	-	-
03	12	150	-	W 1/4
04	13	155	M 8	-
05	14	160	-	W 5/16
61 09 06	17	180 mm	M 10	W 3/8
07	19	190	M 12	W 7/16
08	21	200	-	W 1/2
09	22	205	M 14	-
10	23	210	-	W 9/16
61 09 11	24	220 mm	M 16	-
12	26	230	-	W 5/8
13	27	235	M 18	-
14	30	245	M 20	-
15	32	250	-	W 3/4
61 09 16	35	280 mm	M 22	W 7/8
17	36	285	M 24	-
18	41	300	M 27	W 1
19	46	320	M 30	W 1-1/8
20	50	340	M 33	W 1-1/4
61 09 21	55	365 mm	-	-
22	60	375	-	-
23	65	390	-	-
24	70	405	-	-
25	71	410	M 48	W 1-7/8
61 09 26	75	415 mm	-	-

Flex 6 Point T-Type Wrenches

Flexible head, fixed handle.

Unit Per Pc.

CODE	Opening mm	Overall Length
61 09 31	10	320 mm
32	11	320
33	12	320
34	13	320
35	14	320
61 09 36	17	350 mm
37	19	350

6 Point L-Type Wrenches

Offset Wrenches

Broached, surface smoothed, hardened and chrome plated.

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW
61 09 41	6	110 mm	M 3	-
42	7	110	M 3.5	-
43	8	110	M 4	-
44	9	110	M 5	-
45	10	182	M 6	W 3/16
61 09 46	11	182 mm	-	-
47	12	193	-	W 1/4
48	13	194	M 8	-
49	14	209	-	W 5/16
50	17	226	M 10	W 3/8
61 09 51	19	228 mm	M 12	W 7/16
52	21	258	-	W 1/2
53	22	260	M 14	-
54	23	270	-	W 9/16
55	24	271	M 16	-
61 09 56	26	278 mm	-	W 5/8
57	27	278	M 18	-
58	30	296	M 20	-
59	32	296	-	W 3/4
60	35	343	M 22	W 7/8

(to be continued)

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW
61 09 61	36	344 mm	M 24	-
62	41	354	M 27	W 1
63	46	369	M 30	W 1-1/8
64	50	392	M 33	W 1-1/4
65	55	415	-	-

6 Point Y-Type Wrenches

3 Different Opening Selected Alloy Steel

Made from selected alloy steel and heat-treated. This one tool has 3 openings for 3 different nut sizes. The vacant two bars may be used as a handle when nutting. Adapted for close corner nutting work.

Unit Per Pc.

CODE	Opening Size mm	Length of Handle mm
61 09 71	8 x 9 x 10	80 x 80 x 80
72	10 x 12 x 14	80 x 85 x 85
73	10 x 14 x 17	85 x 85 x 85
74	12 x 14 x 17	95 x 95 x 95
75	13 x 17 x 19	100 x 100 x 100
61 09 76	14 x 17 x 19	100 x 100 x 100
77	14 x 17 x 21	105 x 105 x 105
78	17 x 19 x 21	110 x 110 x 110
79	19 x 21 x 23	120 x 120 x 120
80	31 x 23 x 26	130 x 130 x 130

12 Point & Spud End Wrenches

60° Offset

Adapted for heavy industrial and automotive work where unusual leverage is necessary. The 12 point box head insures a firm hold on the nut and it is offset to give maximum clearance. The long sturdy tapered handle provides ample strength and leverage, and can be easily inserted into bolt holes to bring them into line. Drop forged from selected alloy steel, heat-treated.

Unit Per Pc.

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW
61 10 01	13	220 mm	M8	-
02	14	230	-	W5/16
03	17	300	M10	W3/8
04	19	320	M12	W7/16
05	21	335	-	W1/2
61 10 06	22	335 mm	M14	-
07	23	335	-	W9/16
08	24	355	M16	-
09	26	370	-	W5/8
10	27	370	M18	-
61 10 22	29	-	-	-
11	30	390 mm	M20	-
12	32	405 mm	-	W3/4
23	34	-	-	-
13	35	440 mm	M22	W7/8
61 10 14	36	440 mm	M24	-
24	38	-	-	-
15	41	475 mm	M27	W1
43	42	-	-	-
44	43	-	-	-
61 10 45	44	-	-	-
16	46	510 mm	M30	W1-1/8
46	48	-	-	-
17	50	545 mm	M33	W1-1/4
18	54	560 mm	M36	W1-3/8

(to be continued)

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW
61 10 19	55	560 mm	-	-
20	58	575 mm	M39	W1-1/2
21	60	575 mm	-	-
47	65	-	-	-

Wrenches, Double or Single Head Ratchet 12 Point

Made from selected alloy steel. All the critical parts are heat-treated.

Single Head

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size Metric	For Bolt Size Whitworth
61 10 26	10	195	M 6	W 3/16
27	12	195	-	W 1/4
28	13	210	-	-
29	14	210	-	W 5/16
30	17	250	M10	-
61 10 31	19	270	M12	W 7/16
32	21	290	-	W 1/2
33	22	290	M14	-
34	24	310	M16	-
35	26	330	-	W 5/8
61 10 36	27	330	M18	-
37	30	350	M20	-
38	32	370	-	W 3/4
39	35	410	M22	W 7/8
40	36	410	M24	-
61 10 41	41	450	M27	W 1
42	46	460	M30	W 1-1/8

Double Head

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size Metric	For Bolt Size Whitworth
61 10 51	10 x 12	195	M6 x -	W3/16 x W1/4
52	10 x 13	210	M6 x -	W3/16 x -
53	10 x 14	210	M6 x -	W3/16 x W5/16
54	12 x 14	210	-	W1/4 x W5/16
55	13 x 17	250	- x M10	-
61 10 56	14 x 17	250	- x M10	W5/16 x -
57	17 x 19	290	M10 x M12	- x W7/16
58	17 x 21	290	M10 x -	- x W1/2
59	19 x 22	290	M12 x M14	W7/16 x -
60	19 x 24	330	M12 x M14	W7/16 x -
61 10 61	21 x 26	330	-	- x W5/8
62	21 x 27	330	- x M18	-
63	22 x 24	330	M14 x M16	-
64	22 x 27	330	M14 x M18	-
65	24 x 27	330	M16 x M18	-
61 10 66	24 x 30	370	M16 x M20	-
67	26 x 32	370	-	W5/8 x W3/4
68	27 x 30	370	M18 x M20	-
69	30 x 32	370	M20 x -	- x W3/4

Striking Wrenches 12 Point Ring
(Slogging Wrenches 12 Point Ring)

Adapted for heavy industrial work at close quarters where large nuts must be set-up tight or frozen nuts must be loosened. Drop forged from selected alloy steel and prbperly heat-treated to withstand shocks.

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW	Weight kgs
61 11 01	30	196 mm	M20	-	0.53
02	32	196	M22	W3/4	0.53
03	35	210	-	W7/8	0.67
04	36	210	M24	-	0.67
05	41	223	M27	W1	0.92
61 11 06	46	250 mm	M30	W1-1/8	1.13
07	50	250	M33	W1-1/4	1.13
08	54	273	-	W1-3/8	1.75
09	55	273	M36	-	1.75
10	58	282	-	W1-1/2	2.10
61 11 11	60	282 mm	M39	-	2.10
12	63	302	M42	W1-5/8	2.50
13	65	302	-	-	2.50
14	67	327	M45	W1-3/4	3.20
15	70	327	-	-	3.20
61 11 16	71	327 mm	M48	W1-7/8	3.20
17	75	353	-	-	4.40
18	77	353	M52	W2	4.40
19	80	353	M54	-	4.40
20	85	397	M56	W2-1/4	7.0
61 11 21	90	397 mm	-	-	7.0
22	95	418	M64	W2-1/2	8.50
23	100	418	-	-	8.50
24	105	441	M72	W2-3/4	11.20
25	110	441	M76	W3	11.20
61 11 26	115	441 mm	-	-	11.20
27	120	480	M85	-	13.30
28	125	490	-	-	15.80
29	130	492	M90	-	15.80
30	135	512	M95	-	16.60
61 11 31	145	553	M100	-	18.0

Striking Wrenches Single Open End
(Slogging Wrenches Single Open End)

This open end slogging wrench is designed for the same purpose as the 12-point slogging wrench. Drop forged from selected alloy steel and heat treated

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW	Weight kgs
61 11 41	30	222	M 20	-	0.83
42	32	222	M 22	W3/4	0.83
43	35	222	-	W7/8	0.83
44	36	222	M 24	-	0.83
45	41	238	M 27	W1	1.15
61 11 46	46	266	M 30	W1-1/8	1.45
47	50	266	M 33	W1-1/4	1.45
48	54	303	M 36	W1-3/8	2.20
49	55	303	M 36	-	2.20
50	58	303	M 39	W1-1/2	3.50
61 11 51	60	324	M 39	-	3.50
52	63	324	M 42	W1-5/8	4.10
53	65	324	M 42	-	4.10
54	67	350	M 45	W1-3/4	5.40
55	70	350	M 45	-	5.40
61 11 56	71	350	M 48	W1-7/8	5.40
57	75	381	M 48	-	7.00
58	77	381	M 52	W2	7.00
59	80	381	M 54	-	7.00
60	85	499	M 56	W2-1/4	10.00
61 11 61	90	429	M 60	-	10.00
62	95	429	M 64	W2-1/2	10.00
63	100	451	M 68	-	13.70
64	105	469	M 72	W2-3/4	14.50
65	110	487	M 76	W3	16.00

(to be continued)

Unit Per Pc

CODE	Opening mm	Overall Length	For Bolt Size MM	For Bolt Size WW	Weight kgs
61 11 66	115	507	M 80	-	17.90
67	120	521	M 85	-	20.20
68	125	532	-	-	23.60
69	130	537	M 90	-	23.90
70	135	560	M 95	-	24.50
61 11 71	145	606	M 100	-	29.00

Adjustable Hook Spanner Wrenches

This spanner has the advantage of strength and adjustability. One wrench can be used for bolts of a variety of sizes by simply adjusting the jaw. The handle is strengthened so that the wrench can be used safely with a hammer.

Unit Per Pc

CODE	Circle Diam. mm	Overall Length
61 12 01	35 to 105	270 mm
02	95 to 165	370 mm

Hook Spanner Wrenches

A tool to tighten and loosen round nuts with notches. Sizes fit to the outer diameter of round nuts. Made from selected alloy steel, hooks are hardened and tempered.

Unit Per Pc

CODE	Circle Diam mm	Overall Length
61 12 06	12 to 14	108 mm
07	16 to 20	108
08	25 to 28	136
09	30 to 32	136
10	34 to 38	160
61 12 11	40 to 42	173 mm
12	45 to 50	196
13	52 to 55	208
14	58 to 62	232
15	68 to 75	247
61 12 16	80 to 90	271 mm
17	92 to 100	286
18	110 to 115	333
19	120 to 130	333
20	135 to 145	385
61 12 21	150 to 165	385 mm
22	175 to 195	466
23	200 to 220	466
24	230 to 250	567
25	260 to 280	567

Valve Wheel Wrenches

Claw Type

For opening and closing cargo valves. Claw type wrenches made of manganese bronze. Specify the overall length when ordering.

Unit Per Pc

CODE	Overall Length mm.	For Valve size mm.
61 12 31	460	Up to 130
32	560	100 300
33	660	200 450
34	915	360 and over

Allen Hexagon Wrenches

Made from selected steel. A tool wrench for tightening and loosening hexagon head cap screws.

Unit Per Pc

CODE	Across Flats	CODE	Across Flats
	mm		
61 12 41	1.4	61 12 52	9.0
42	1.5	85	9.5
43	2.0	53	10
44	2.4	54	12
45	2.5	55	14
61 12 46	3.0	61 12 56	16
77	3.5	57	17
47	4.0	58	19
78	4.5	59	21
48	5.0	60	22
61 12 79	5.5	61 12 61	23
49	6.0	62	24
80	6.5	63	26
50	7.0	64	27
83	7.5	65	32
61 12 51	8.0	61 12 66	36
84	8.5		
	Inch		
61 12 67	1/8	61 12 72	5/16
68	5/32	73	3/8
69	3/16	74	7/16
70	7/32	75	1/2
71	1/4	76	9/16

Allen Hexagon Wrench Sets

How to order : CODE

Wrench set, allen hexagon,
SIZE (MINIMUM to MAXIMUM), 8's/Set

Unit Per Set

CODE	Contents	Pcs/Set
61 12 81	mm ... Across Flats ... 2.5, 3, 4, 5, 6, 8, 10, 12	8 s
82	in ... Across Flats ... 1/8, 3/16, 7/32, 1/4, 5/16, 3/8, 7/16, 1/2	8 s

Hexagon Bit Sets

A handy tool kit to tighten and loosen hexagon head cap screws.

How to order : CODE

Hexagon bit set, 6 bits, SIZE,
NUMBER of TOOLS

Unit Per Set

CODE	Hexagon Bit Size	Hexagon Bit Quantity	Number of Tools	Case
61 12 86	1.5 - 5	6's	3's	Plastic
87	3 - 10	6's	6's	"
88	6 - 17	6's	6's	"
89	14 - 27	6's	3's	Steel

Contents

61 12 86

6 Hexagon bits	1.5, 2, 2.5, 3, 4, 5 mm
1 Plug connector	1 Ratchet handle
1 Extension handle	

Contents

61 12 87

6 Hexagon bits	3, 4, 5, 6, 8, 10 mm
1 Plus driver bit	1 Cross bar
1 Minus driver bit	1 Speed drive
1 Plug connector	1 Ratchet handle

61 12 88

6 Hexagon bits	6, 8, 10, 12, 14, 17 mm
1 Plus driver bit	1 Cross bar
1 Minus driver bit	1 Speed drive
1 Plug connector	1 Ratchet handle

61 12 89

6 Hexagon bits	14, 17, 19, 22, 24, 27 mm
1 Extension bar	1 Ratchet handle
1 T type slide handle	

Pipe Wrenches
(Stillson Wrenches)

Straight, Heavy Duty

Powerful all alloy housing and handle. Housing guaranteed not to break or warp. Chrome molybdenum steel jaws will not slip or lock on pipes. The adjusting nut spins smoothly on frames of all sizes.

Unit Per Pc.

CODE	Length mm	For Pipe Size in	CODE	Length mm	For Pipe Size in
61 13 01	150	1/4 - 5/8	**61 13 06**	450	1/2 - 2
02	200	1/4 - 3/4	**07**	600	1/2 - 2-1/2
03	250	1/4 - 1	**08**	900	1/2 - 4
04	300	3/8 - 1-1/4	**09**	1,200	1 - 5
05	350	1/2 - 1-1/2			

45°

45°angle jaws with offset teeth in opposite direction. Teeth are additionally induction hardened. Made of chrome vanadium steel, oil-hardened and tempered.

Unit Per Pc

CODE	Nom. Capacity	Working Capacity mm	Length mm	Weight grm
61 13 11	1"	0 - 42	320	810
12	1-1/2"	0 - 60	430	1,490
13	2"	0 - 70	570	2,820

Ref. : Knipex Model No. 83 20 010 / 015 / 020

S-Type 45°

S type and 45°angled jaws with offset teeth in opposite direction. Teeth are additionally induction hardened. Made of chrome vanadium steel, oil-hardened and tempered.

Unit Per Pc.

CODE	Nom. Capacity	Working Capacity mm	Length mm	Weight grm
61 13 15	1/2"	0 - 35	245	500
16	1"	0 - 42	320	870
17	1-1/2"	0 - 60	420	1,570
18	2"	10 - 70	540	2,540
19	3"	10 - 120	680	4,295

Ref. : Knipex Model No. 83 30 005 / 010 / 015 / 020 / 030

Motor Wrenches

Well adapted for industrial use. Natural, polished finish, rustproof with tight grip jaws.

Unit Per Pc.

CODE	61 13 21	61 13 22
Length	230 mm	280 mm

Speed Wrenches, Adjustable

A tool, that serves as an adjustable wrench and a pipe wrench. The jaws are milled extra deep for speedy operations.

Unit Per Pc.

CODE	Length mm	Maximum Open mm
61 13 26	150 mm	13 mm
27	200 mm	24 mm
28	250 mm	30 mm
29	300 mm	35 mm

Adjustable Wrenches
Heavy Duty (Shifting Spanners)

Drop forged from special alloy steel with thin tapered jaws. A square shoulder on the sliding jaw shank prevents it from loosening during use. The head has a polished finish and the handle is chromed.

Unit Per Pc.

CODE	Length	Maximum Jaw Opening	CODE	Length	Maximum Jaw Opening
61 13 31	100 mm	13 mm	**61 13 35**	300 mm	34 mm
32	150	20	**36**	375	44
33	200	24	**37**	450	53
34	250	29	**38**	600	62

Single Jaw Chain Pipe Wrenches

Drop forged from vanadium alloy steel with a chain made of nickel chrome molybdenum steel. Will fit to objects of any shape : round, square, hexagon, etc. Can be used in close quarters where it would be difficult to use a pipe or wrench. This wrench has ratchet action which enables it to tighten and free up without being removed from the pipe.

Unit Per Pc.

CODE	Nominal Pipe Size	Capacity Pipe mm	Overall Length mm
	Chain Pipe Wrench		
61 13 71	8A - 40A	12 - 50	230
72	8A - 80A	14 - 89	305
73	10A - 100A	17 - 120	425
74	20A - 150A	25 - 170	510
75	25A - 200A	34 - 230	700
61 13 76	25A - 250A	35 - 270	745
77	25A - 300A	35 - 320	745
78	50A - 500A	60 - 510	745
	Extra Chain For Pipe Wrench		
61 13 81	8A - 40A	12 - 50	243
82	8A - 80A	14 - 89	438
83	10A - 100A	17 - 120	514
84	20A - 150A	25 - 170	685
85	25A - 200A	34 - 230	860
61 13 86	25A - 250A	35 - 270	984
87	25A - 300A	35 - 320	1,111
88	50A - 500A	60 - 510	1,867

Internal Pipe Wrenches
"Pipe Buster"

Reduces pipe assembly and disassembly time by 80%. A self-locking, reversible, internal pipe wrench can

be used with ratchets, extensions and impact/air wrenches. Suitable for installing or removing pipes located in tight spots, extremely hot and rusted tight. It won't create busted knuckles, broken pipes or ruined walls, and won't scar chromed pipe, can't damage threads and can remove the most stubborn nipples.

Unit Per Pc.

CODE	For Pipe Size	CODE	For Pipe Size
For Schedule 40		For Schedule 80	
61 13 91	1/2"	**61 13 95**	3/4"
92	3/4"	**96**	1" & 1-1/4"
93	1" & 1-1/4"	**97**	1-1/2" & 2"
94	1-1/2" & 2"		

3. Torque Tools/Torque Wrenches

Torque Tools / Torque Wrenches

A device which shows the force of torque with which a screw or nut is being tightened. It allows one to set screws exactly at a predetermined torque without any effort.

A wide range of models from different manufacturers are available. The most common models are listed below.

Direct Reading Beam Type

For quality control inspection and production. Pivotted handle concentrates load position. For use with a socket wrench.

How to order : CODE

Torque wrench, direct reading beam type, CAPACITY (MINIMUM to MAXIMUM) N.m - cm

Unit Per Pc.

CODE	Model	Capacity min.-max. N.m-cm	Scale N.m-cm	Sq. Drive	Overall L mm	Wgt. kgs
61 14 01	F23N	3 - 23	0.5	9.5	295	0.40
02	F46N	5 - 46	1	9.5	355	0.60
03	F92N	10 - 92	2	12.7	400	0.95
04	F130N	20 - 130	2	12.7	445	1.20
05	F190N	30 - 190	5	12.7	490	1.50
61 14 06	F280N	50 - 280	5	19.0	565	2.20
07	F420N	70 - 420	10	19.0	820	3.50
08	F560N	100 - 560	10	19.0	945	4.00
09	F700N	100 - 700	10	19.0	1,175	6.00
10	F850N	100 - 850	20	25.4	1,410	7.80
61 14 11	F1000N	100 - 1,000	20	25.4	1,640	8.80

Dial Type

Ideal for quality control and inspection, and rugged enough for production work. With stay-set indicator model available. For use with a socket wrench.

How to order : CODE

Torque wrench, dial type, CAPACITY (MINIMUM to MAXIMUM) N.m-cm

Unit Per Pc.

CODE	Model	Capacity min.-max. N.m-cm	Scale N.m-cm	Sq. Drive	Overall L mm	Wgt. kgs
61 14 16	DB6N	0 - 6	0.1	6.3	230	0.40
17	DB12N	1 - 12	0.2	6.3	230	0.40
18	DB25N	3 - 25	0.5	9.5	245	0.40
19	DB50N	5 - 50	0.5	9.5	320	0.60
20	DB100N	10 - 100	1	12.7	400	0.70
61 14 21	DB200N	20 - 200	2	12.7	500	1.00
22	DB280N	30 - 280	5	19.0	690	1.65
23	DB420N	40 - 420	5	19.0	890	2.50

Preset Type

Suitable for high efficiency mass production. By presetting the wrench you can tighten bolts to a desired torque every time. To operate, you first pull the handle until it clicks to the set position. Then you tighten the bolt until the resistance of the wrench stops. When you release the wrench, it is automatically set for the next operation. No need to refer to a dial or meter during use allowing you to increase work speed substantially. For use with a socket wrench.

How to order : CODE

Torque wrench, preset type, CAPACITY (MINIMUM to MAXIMUM) N.m-cm

Unit Per Pc.

CODE	Model	Capacity min.-max. N.m-cm	Scale N.m-cm	Sq. Drive	Overall L mm	Wgt. kgs
61 14 26	QL6N	2 - 6	0.1	6.3	175	0.12
27	QL12N	4 - 12	0.2	6.3	185	0.18
28	QL25N	5 - 25	0.25	9.5	220	0.23
29	QL50N	10 - 50	0.5	9.5	250	0.43
30	QL100N	20 - 100	1	12.7	330	0.67
61 14 31	QL200N	40 - 200	2	12.7	475	1.40
32	QL280N	40 - 280	2	19.0	675	1.80
33	QL420N	60 - 420	2	19.0	975	3.20

Direct Reading Beam Type with Ratchet

High efficient torque wrench with ratchet for quality control and production. Best for use in narrow spaces.

How to order : CODE

Torque wrench, direct reading beam with ratchet, CAPACITY (MINIMUM to MAXIMUM) N.m-cm

Unit Per Pc.

CODE	Model	Capacity min.-max. N.m-cm	Scale N.m-cm	Sq. Drive	Overall L mm	Wgt. kgs
61 14 36	QF60N	6 - 60	1	9.5	455	0.80
37	QF120N	10 - 100	2	12.7	520	1.20
38	QF220N	30 - 220	5	12.7	580	1.80
39	QF320N	40 - 320	5	19.0	655	2.60
40	QF420N	70 - 420	5	19.0	830	3.40
61 14 41	QF560N	100 - 560	10	19.0	950	4.30
42	QF700N	100 - 700	10	19.0	1,165	6.50
43	QF850N	100 - 850	20	25.4	1,400	8.50

Preset Type Torque Driver

For high efficient mass production. Incorporated with a device utilizing a toggle joint. When the set torque is reached, the movement of the toggle joint can be felt by hand. No need to read the scale.

How to order : CODE

Torque driver, preset type. CAPACITY (MINIMUM to MAXIMUM) N.m-cm

Unit Per Pc.

CODE	Model	Capacity min.-max. CN.m-cm	Scale N.m-cm	Overall L mm	Wgt. grm
61 14 46	LTD15CN	2 - 15	0.1	100	50
47	LTD30CN	4 - 30	0.2	100	50
48	LTD60CN	10 - 60	0.5	105	80
49	LTD120CN	20 - 120	1.0	120	125
50	LTD260CN	60 - 260	1.2	140	215
61 14 51	LTD500CN	100 - 500	2.5	150	320
52	LTD1000CN	200 - 1.000	5.0	180	580
53	LTD2000CN	300 - 2.000	5.0	255	1,150

Preset Type Torque Watch Driver

Torque drivers for the highly efficient tightening of small screws such as in watches and cameras. When the set torque is reached, the movement of the toggle joint is felt on the finger. There is no need to read the dial.

How to order : CODE

Torque watch driver preset type. CAPACITY (MINIMUM to MAXIMUM) N.m-cm

Unit Per Pc.

CODE	Model	Capacity min.-max. CN.m-cm	Scale N.m-cm	Overall L mm	Wgt. grm
61 14 56	BMLD15CN	2 - 15	0.1	114	50
57	BMLD30CN	4 - 30	0.2	114	50

Bolt Tension Machine

Used for measuring the axile force of bolts by oil pressure. Use this machine to determine whether the bolt is good or not as well as whether the tightening torque of the bolt is adequate or not by tightening the bolt with the torque wrench. Accuracy : ± 3%.

How to order : CODE

Bolt tension measurer. CAPACITY (MINIMUM to MAXIMUM) kN

Unit Per Pc.

CODE	Model	Capacity min.-max. Ton	Scale Ton	Dimension W x T x H	Wgt. kgs
61 14 61	B-BTM13K	1.2 - 13	0.2	106 x 78 x 217	7.7
62	B-BTM40K	4 - 40	0.5	134 x 82 x 241	9.8
63	B-BTM130K	12 - 130	2	188 x 106 x 287	17.5
64	B-BTM400K	40 - 400	5	280 x 126 x 369	31.0
65	BTM400K	40 - 400	5	260 x 64 x 280	12.6

4. Pliers

Combination Pliers, Slip Joint

Designed to have the maximum capacity for gripping round objects. The jaws are set close to the hinge for better leverage and the handle is curved for better gripping.

Unit Per Pr.

CODE	61 16 01	61 16 02	61 16 03
Length	150 mm	200 mm	250 mm

Thin Bent Nose Pliers

The head of these pliers is bent at a 30° angle and the plier jaws are thinner for easier use in confined areas.

Unit Per Pr.

CODE	61 16 11	61 16 12
Length	175 mm	200 mm

Long Nose Straight Pliers

Designed with a thin and pointed nose for precision work in close quarters.

Unit Per Pr.

CODE	61 16 16	61 16 17
Length	160 mm	200 mm

Plier Wrenches
Plastic Coated Handle

Plier and wrench in a single tool. Excellent for gripping, holding, pressing and bending workpieces. Fast adjustment directly on the workpiece by pushing a button, and no unintentional shift of the gripping jaws and no slipping of the joint. The action of the jaws allows screwed connections to be tightened and released quickly using the ratchet principle.

Unit Per Pr.

CODE	Working Capacities Inch	Working Capacities mm	Length mm	Weight grm
61 16 21	1-3/8"	to 35	180	260
22	1-3/4"	to 46	250	540
23	2-3/8"	to 60	300	725

Ref. : Knipex Model No. 86 03 180 / 250 / 300

Water Pump Pliers w/Positions
Five Adjustment (Channel Locks)

Designed with narrow angled jaws for work in confined spaces.

Unit Per Pr.

CODE	61 16 26	61 16 27
Length	250 mm	300 mm

Heavy Water Pump Pliers
Five Adjustment

Provides strong gripping power in all set positions. Jaw opens to a maximum size of 45 mm.

Unit Per Pr.

CODE	Length	CODE	Length
61 16 29	165 mm	61 16 31	300 mm
30	250 mm	32	400 mm

Gripping Pliers for Plastic Pipe
Plastic Coated Handle

Ideal for tightening and releasing plastic pipe joints, round union nuts, etc. from 25 up to 80 mm diam. 25-position adjustable slip joint and made of chrome vanadium electric

steel, oil-hardened and tempered. Model No.81 13 250 is furnished with plastic jaws for careful installation up to 75 mm diam.

With Plastic Jaws

Unit Per Pr

CODE	Working Capacity Diam. mm	Length mm	Weight grm	Remark
61 16 35	25 - 80	250	355	-
36	10 - 75	250	355	w/jaws

Ref. : Knipex Model No. 81 03 250 81 13 250

Vise Grip Combination Pliers
(Mole Grip Wrenches)

A universal tool which serves as an adjustable end wrench, locking wrench, pipe wrench, vise, clamp, plier and toggle press. Has a double lever action that locks jaws to the work. Locks with a grip that holds until the lever is snapped open. Works in close quarters at any angle.

Unit Per Pr

CODE	Length	CODE	Length
61 16 41	125 mm	61 16 43	200 mm
42	175 mm	44	250 mm

Small Water Pump Pliers
with Groove Joint, Plastic Coated Handle

Non-slip joint and easy, convenient engagement in 4 different positions. Made of forged from chrome vanadium electric steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Capacities		Length mm	Weight grm
	For Pipes Diam. mm	For Nuts Across Flats mm		
61 16 46	17	14	125	100

Ref. : Knipex Model No. 90 01 125

Side Cutting Pliers

A belt or pocket tool developed for difficult working situations. (For example : overhead electric work in masts, etc.) Forged high grade tool steel with powerful leverage and keen cutting blades. Insulated handles tested to withstand 1,000 volts.

Non-Insulated Handle Insulated Handle

Unit Per Pr.

Non-Insulated Handle		Insulated Handle	
CODE	Length	CODE	Length
61 16 50	125 mm	61 16 56	125 mm
51	150	57	150
52	175	58	175
53	200	59	200
54	250	60	250

Flat Nose Pliers
Insulated Plastic Body

Made of plastic material, fibreglass-reinforced, handles with soft plastic zone. Fully insulating to reduce risk of short circuit up to AC 1,000V and DC 1,500V. Insulation standard : IEC 60900 DIN EN 60900. Length : 180 mm.

61 16 61	Pliers, flat nose, insulated, plastic body, length 180 mm	Pr.

Ref. : Knipex Model #98 62 01

Side Cutting Pliers with Spring
Plastic Covered Handle

A side cutting plier with a built-in spring to open the jaws easily when pressure on the handle is relaxed.

Useful tool for electricians.

Unit Per Pr

CODE	61 16 66	61 16 67	61 16 68
Length	150 mm	175 mm	200 mm

Side Cutting & Reamer Pliers
Plastic Covered Handle

This tool combines the qualities of a side cutting plier with a reaming blade for lead, conduit or vinyl tubes.

Unit Per Pr

CODE	61 16 71	61 16 72	61 16 73
Length	150 mm	175 mm	200 mm

Mini Combination Pliers
Plastic Covered Handle

Jaw opening springs, full polished head. Induction hardened cutting edges, slip resistant PVC handle. Material: Hardened and tempered CrV steel.

61 16 75	Pliers, combination, mini, plastic covered handle, 115 mm	Pr.

Round Nose Pliers
Plastic Covered Handle

Designed for quick wiring jobs and detailed wiring where a small round tipped wire is essential. Made from a special alloy steel.

Unit Per Pr.

CODE	61 16 81	61 16 82
Length	125 mm	150 mm

Mini Long Round Nose Pliers
Plastic Covered Handle

Jaw opening springs, full polished head. Induction hardened cutting edges, slip resistant PVC handle, flat-square jaws for gripping and forming. Material: Hardened and tempered CrV steel.

61 16 84	Pliers, round nose, mini long, plastic covered handle, 115 mm	Pr.

Long Needle Nose Pliers

Plastic Covered Handle

With a long, half-round, tempered nose for very fine work in assembling electric apparatus, etc.

Unit Per Pr.

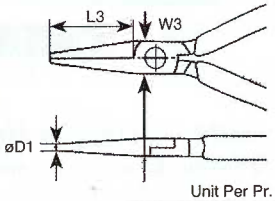
CODE	61 16 86	61 16 87
Length	125 mm	150 mm

Insulated Round Nose Pliers

Resistance up to 1,000 Volts

Conformed to IEC 60900 / DIN EN 60900

For forming wire loops by precision ground, short, round jaws. Made of special tool steel, oil-hardened and tempered.



Unit Per Pr.

CODE	Dimensions			Length mm	Weight grm
	L3	W3	D1		
61 16 89	30.0	18.0	3.0	160	175

Ref. : Knipex Model No. 22 06 160

Snipe Nose Pliers

Insulated Plastic Body

Made of plastic material, fibreglass-reinforced, handles with soft plastic zone. Fully insulating to reduce risk of short circuit up to AC 1,000V and DC 1,500V. Insulation standard : IEC 60900 DIN EN 60900. Length : 220 mm.

61 16 90	Pliers, snipe nose, insulated, plastic body, length 220 mm	Pr.

Ref. : Knipex Model #98 62 02

Bent Nose Pliers

Plastic Covered Handle

Curved needle spring tempered nose pliers for use in narrow places. Can be used without having to turn or twist your hand in close quarters.

61 16 91	Pliers, bent nose plastic covered handle 150 mm	Pr.

Long Nose Side Cutting Pliers

Plastic Covered Handle

Long thin tip for work in narrow confined areas. An ideal tool for quick repair and electronic works.

Unit Per Pr.

CODE	Length	CODE	Length
61 16 94 95	125 mm 150 mm	61 16 96	200 mm

Insulated Long Nose Pliers

Resistance up to 1,000 Volts

The essential pliers for electrical installation work in narrow confined areas. Made of VDE insulated handle which can withstand 1,000 volts.

61 16 97	Pliers, long nose, insulated, L: 150 mm	Pr.
61 16 98	Pliers, long nose, insulated, L: 200 mm	Pr.

Duckbill Pliers

Plastic Covered Handle

Made from chrome-molybdenum steel. Long handle provides powerful leverage.

61 17 01	Pliers, duckbill plastic covered handle 200 mm	Pr.

Flat Nose Pliers

Plastic Covered Handle

Designed with flat narrow jaws for holding or bending wires, etc. inside narrow and restricted places.

Unit Per Pr.

CODE	Length	CODE	Length
61 17 05 06	125 mm 150 mm	61 17 07	175 mm

Mini Long Flat Nose Pliers

Plastic Covered Handle

Jaw opening springs, full polished head. Induction hardened cutting edges, slip resistant PVC handle, flat-square jaws for gripping and forming. Material: Hardened and tempered CrV steel.

61 17 09	Pliers, flat nose, mini long, plastic covered handle, 115 mm	Pr.

Diagonal Cutting Pliers

Plastic Covered Handle

Sharp, hardened edges with narrow jaws enable you to cut wires inside tight places.

Unit Per Pr.

CODE	Length	CODE	Length
61 17 10 11	100 mm 125 mm	61 17 12	150 mm

Heavy Duty Diagonal Cutting Pliers

Plastic Covered Handle

A tool to cut heavy wire with little effort. Made from high quality alloy steel.

Unit Per Pr.

CODE	61 17 16	61 17 17	61 17 18
Length	125 mm	150 mm	175 mm

Mini Diagonal Cutting Pliers

Plastic Covered Handle

Jaw opening springs, full polished head. Induction hardened cutting edges, slip resistant PVC handle. Designed to cut wire with ease. Material: Hardened and tempered CrV steel.

61 17 21	Pliers, diagonal cutting, mini, plastic covered handle, 115 mm	Pr

Insulated Diagonal Strippers

Resistance up to 1,000 Volts
Conformed to IEC 60900 / DIN EN 60900

The essential plier for electrical installation work, and furnished with precision stripping holes for single (solid) conductors of 1.5 and 2.5 mm². Induction hardened precision blades for soft wire up to 4.0 mm diam., cutting edge hardness approx. 60 HRC. Made of high grade special tool steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Cutting Capacities mm²	Cutting Capacities AWG	Length mm	Weight grm
61 17 23	1.5 + 2.5	15 + 13	160	210

Ref. : Knipex Model No. 14 26 160

Insulated Diagonal Cutters

Resistance up to 1,000 Volts
Conformed to IEC 60900 / DIN EN 60900

Furnished with precision cutting edges for soft and hard wire, and creates clean cutting at cutting edge tips, also in case of thin copper wires. Cutting edges are additionally induction hardened, cutting edge hardness approx. 62 HRC. Narrow head style for use in confined areas. Made of vanadium electric steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Cutting Capacities Copper / Plastics	Cutting Capacities Nail / Wire pin	Cutting Capacities Wire rope strand/ Steel wire	Length mm	Weight grm
61 17 25	3.0	2.3	1.5	125	120
26	4.0	2.5	1.8	140	160
27	4.0	2.8	2.0	160	210
28	4.0	3.0	2.5	180	255

Ref. : Knipex Model No. 70 06 125 / 140 / 160 / 180

Cable Shoe Pliers

A tool for pressing cable shoes on electric cables of sizes 1.25, 2.0, 5.5 and 8 mm sq. An essential tool for radio repairers and electricians. Length 250 mm.

61 17 30	Pliers, cable shoe 1.25 mm - 8 mm/sq.	Pr.

Cable Shoe Clamping Tool Kits

Specially designed for marine use. A steel kit with a clamping pliers and 1,000 cable shoes of 10 different sizes.

61 17 32	Cable shoe and its clamping tool kit	Set

Crimping Pliers

with Changer Magazine

Just one tool for the most common crimping applications. Made of chrome vanadium electric steel in special quality, oil-hardened. Crimping dies changed quickly and easily without any additional tool. Length : 250 mm.

Five interchangeable dies in round magazine :

- for non-insulated open plug type connectors (plug width 4.8 + 6.3 mm) from 0.5 - 6 mm².
- for insulated terminals, plug connectors and butt connectors from 0.5 - 6 mm².
- for insulated and non-insulated end sleeves (ferrules) from 0.25 - 6 mm².
- for insulated and non-insulated end sleeves (ferrules) with 10 / 16 / 25 mm².
- for non-insulated crimp terminals. Tube and compression cable lugs in accordance with DIN 46234 and DIN 46235 and non-insulated crimp, butt and press connectors in accordance with DIN 46341 and DIN 46267.

61 17 33	Pliers, crimping, with changer magazine, length 250 mm	Set

Ref. : Knipex Model No. 97 33 02

Hydraulic Cable Shoe Pliers

For non-insulated terminals. The following four sizes are available. Please specify the size required when ordering.

Specifications

Applicable Cable Shoe Size	Wire mm² (AWG)	Weight grm
14 22 38 60	10.52 - 16.78 (6) 16.78 - 26.66 (4) 26.66 - 42.42 (2) 42.42 - 60.57 (1/0)	2,000

61 17 34	Pliers, cable shoe hydraulic for 10.52 - 60.57 mm² wire size	Pr.

Electric Cable Strippers

Strips the outer vinyl cover from electric wires without damaging the copper wire underneath. These strippers come with an insulated handle. A very useful tool for engineers and electricians.

How to order : CODE

Electric cable stripper, KIND of CABLE, CABLE SIZE (MINIMUM - MAXIMUM)

Unit Per Pr.

CODE	Kind of Cable	Cable Size
61 17 36	Single	0.5, 1.2, 1.6, 2.0 mm
37	"	1.0, 1.6, 2.0, 2.6, 3.2 mm
38	Strand	0.9, 1.25, 2.0, 3.5, 5.5 mm
39	Parallel	0.75 mm² x 2C, 1.25 mm² x 2C

Weicon Cable & Wire Strippers

Accurate, fast and safe stripping of all common round cables and wires with variety of performance ranges.

Unit Per Pc

CODE	Model	Application	Performance Range
61 17 29	Cable Stripper 4-28H	Accurate, fast and safe stripping of all common round cables of 4-28 mm Ø. No damage of the inner conductors due to infinitely variable adjustment of the cutting depth.	4 - 28 mm Ø with Hook knife
61 17 31	Cable Stripper S4-28 Multi	Accurate, fast and safe stripping of all common round cables of 4-28 mm Ø. Stripping of all standard flexible and solid cables with a cross-diameter between 0.5 and 6 mm².	4 - 28 mm Ø 0.5 - 6 mm²
61 17 35	Cable Scissors No. 35	For cutting and stripping of Cu/Al conductors as well as for crimping of terminals from 0.5 to 4 mm². The blades are equipped with micro-toothing. This achieves a flush cut and the slipping of the cable is prevented.	Cu/Al conductors 35 mm²
61 17 40	Coax Stripper No. 2	Ideal for two- or three-step stripping of coaxial cables of 4.8 – 7.5 mm outer diameter. Also strips flexible cables such as 3 x 0.75 mm², 10 mm² and 16 mm².	Coaxial 4.8 - 7.5 mm Ø NYM 3 x 0.75 mm² Flexible 10+16 mm²
61 17 55	Duo-Crimp No. 300	Three tools in one: Wire Stripper for inner insulations from 0.5-6.0 mm², crimping of terminals with two crimping ranges: 0.5 mm² - 2.5 mm² (18-15 AWG) and 4 mm - 6.0 mm² (14-10 AWG) and built-in side cutter for max. 6.0 mm².	0.5 - 6.0 mm²
61 17 61	Multi-Stripper No. 400	New tool for cable and wire stripping for all common round cables.	8 - 13 mm Ø 0.5 mm², 0.75 m², 1.5 mm², 2.5 mm² 4.0 mm² and 6.0 mm²

Unit Per Pc

CODE	Model	Application	Performance Range
61 17 62	Wire Stripper No.5	Fully insulated automatic wire stripper for all common stranded and solid conductors. Adjustable length stop of 5 to 12 mm (removable if required). Easily accessible built-in side cutter for max. 2 mm Ø.	0.2 - 6.0 mm² (24 - 10 AWG)

Name of Mfr. : Weicon GmbH & Co. KG

Wire Strippers

Plastic Coated Handle

For single, multiple and fine stranded conductors with plastic or rubber insulation max. 5.0 mm diam. or respondent 10.0 mm² cable cross section. Easy adjustment to the required diameter of solid or stranded wire with knurled screw and lock nut. Made of special tool steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Length mm	Stripping Capacities			Weight grm
		Diam. mm	mm²	AWG	
61 17 41	160	5.0	10.0	7	135

Ref. : Knipex Model No. 11 01 160

Insulated Wire Strippers

Resistance up to 1,000 Volts

Conformed to IEC 60900 / DIN EN 60900

For single, multiple and fine strand conductors with plastic or rubber insulation max. 5.0 mm diam. or respondent 10.0 mm² cable cross section. Easy adjustment to the required diameter of the solid or stranded wire with knurled screw and lock nut. Made of special tool steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Stripping Capacities			Length mm	Weight grm
	Diam. mm	mm²	AWG		
61 17 42	5.0	10.0	7.0	160	165

Ref. : Knipex Model No. 11 06 160

Electricians' Pliers

Plastic Coated Handle

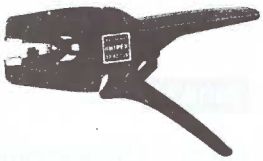
The ideal pliers for cable work, for gripping and bending wire, and for cutting soft, medium and hard wire. Precision cutting edges additionally induction hardened, cutting edge hardness approx. 60 HRC. Furnished with precision stripping holes, and for crimping end sleeves (ferrules). Made of high grade special tool steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Stripping Capacities	Length mm	Weight grm
61 17 43	0.5 - 0.75 / 1.5 / 2.5 mm²	160	110
44	AWG 10 / 12 / 14	160	110

Ref. : Knipex Model No. 13 01 160 / 13 01 614

Automatic Insulation Strippers

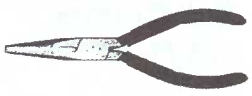


Fully automatic adjustment to all single-, multi- and fine-stranded conductors with standard insulation throughout the entire capacity range from 0.03 to 10.0 mm². With recessed wire cutter for Cu and Al conductors, stranded up to 10 mm² and single wire up to 6 mm². Handle with soft-plastic zone for a steady grip, body: plastic, fibreglass-reinforced, and blade: special tool steel, oil-hardened. Length : 195 mm.

61 17 45	Stripper, insulation, automatic, 0.03 – 10 mm², length 195 mm	Pr.

Ref. : Knipex Model No. 12 42 195

Insulation Strippers
with Opening Spring, Plastic Coated Handle



Insulation stripper for stripping thin wires, furnished with opening spring. Made of special tool steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Stripping Capacities Diam. mm	Length mm	Weight grm
61 17 46	0.5	160	110
47	0.6	160	110
48	0.8	160	110

Ref. : Knipex Model No. 15 51 160 / 15 61 160 / 15 81 160

Electronics Wire Strippers
with Opening Spring, Plastic Coated Handle

For single, multiple and fine stranded cables with 0.1 up to 0.8 mm diam. with plastic or rubber insulation. Easy adjustment to the required diameter of solid or stranded wire with knurled screw and lock nut. Made of special tool steel, oil-hardened and tempered.

Unit Per Pr.

CODE	Stripping Capacities Diam. mm	Length mm	Weight grm
61 17 49	0.1 - 0.8	140	100

Ref. : Knipex Model No. 11 92 140

Bulldog End Cutting Pliers

Drop forged and heat-treated in industrial finish. Stout jaws and wide cutting edges are adapted for various carpentry tasks.

Unit Per Pr.

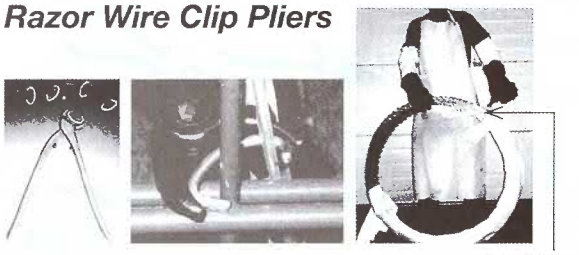
CODE	Length	CODE	Length
61 17 50	120 mm	**61 17 53**	175 mm
51	150 mm	**54**	240 mm
52	180 mm		

Flat Nose Japanese Type Pliers

Unit Per Pr.

CODE	Length	CODE	Length
61 17 56	150 mm	**61 17 59**	240 mm
57	180 mm	**60**	300 mm
58	210 mm		

Razor Wire Clip Pliers



Clip Pliers

61 17 65	Razor wire clip pliers	Pr.

5. Scissors and Knives

Hand Snips,
Straight or Curved Edge

Forged of special steel for cutting tin plate. The blades have a smooth, strong edge that will retain their sharpness. The straight edge blades are for straight cutting and the curved blades are for cutting curved lines or intricate patterns.

Straight Edge

Curved Edge

Unit Per Pr.

Straight		Curved	
CODE	Length mm	CODE	Length mm
61 17 70	180	**61 17 81**	180
71	210	**82**	210
72	240	**83**	240
73	270	**84**	270
74	300	**85**	300
61 17 75	330	**61 17 86**	330
76	360	**87**	360
77	390	**88**	390
78	420	**89**	420
79	450	**90**	450

Tweezers

Made from stainless steel, and used for picking up small objects that are not easily handled with the hands. Overall length 125 mm.

61 17 91

61 17 92

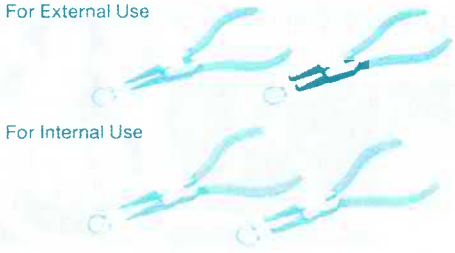
61 17 93

Unit Per Pr.

CODE	Tip Style	Grip Style
61 17 91	Sharp	Smooth
92	Rounded	Serrated
93	Curved	Smooth

Stop Ring Pliers

These stop ring pliers are used for inserting or removing external/internal snap rings. They automatically open or close just by gripping the handles. There are two types of pliers, one for external, the other for internal use.



External Ring Pliers

How to order : CODE

Plier, stop ring, external, STRAIGHT or BENT nose, RING SIZE

Unit Per Pr

CODE	For External Ring Size	Overall Length
Straight Nose		
61 18 01	3 - 15 mm	125 mm
02	10 - 25	140
03	19 - 40	175
04	32 - 80	236
05	50 - 100	270
06	100 - 130	400
07	130 - 200	500
Bent Nose		
61 18 11	3 - 15 mm	135 mm
12	10 - 25	135
13	19 - 40	165
14	32 - 80	220
15	50 - 100	270
16	100 - 130	400
17	130 - 200	500

Internal Ring Pliers

How to order : CODE

Plier, stop ring, internal, STRAIGHT or BENT nose, RING SIZE

Unit Per Pr

CODE	For Internal Ring Size	Overall Length
Straight Nose		
61 18 21	6 - 15 mm	140 mm
22	15 - 25	140
23	19 - 65	180
24	32 - 80	246
25	50 - 100	270
26	100 - 130	400
27	130 - 200	500
Bent Nose		
61 18 31	6 - 15 mm	135 mm
32	12 - 25	135
33	19 - 65	170
34	32 - 80	230
35	50 - 100	270
36	100 - 130	400
37	130 - 200	500

Cloth Scissors

Made of cutlery steel, hardened and tempered. Individually tested by hand.

Unit Per Pr

CODE	Overall Length mm	CODE	Overall Length mm
61 18 41	210	61 18 44	255
42	225	45	270
43	240	46	300

Electricians Knives

A well tempered cutlery steel blade with a strong joint and a solid well-proportioned handle.

61 18 51	Knife, electrician	Pc.

Heavy Duty Knives with Leather Case

A 120 mm, high carbon, cutlery steel blade. Comes with a leather case.

61 18 55	Knife, heavy duty w/leather case	Pc.

6. Cutters/Shears

Bolt Cutters with Plastic Coated Handle

Precision cutting edges for soft and hard wire as well as piano wire, and cuts bolts, nails, rivets, etc. up to 5.2 mm dia (Model 71 31 200) and up to 6.0 mm dia (Model 71 31 250). Made of chrome vanadium heavy-duty steel, forged, oil-hardened. 60 % less effort required compared to conventional high-leverage diagonal cutters.

Unit Per Pr

CODE	Length mm	CODE	Length mm
61 18 58	200	61 18 59	250

Ref. : Knipex Model No. 71 31 200 for 200 mm / No. 71 31 250 for 250 mm

Bolt Cutters, Straight Edge (Bolt Clippers)

For cutting mild steel, rods, bolts, wire, etc. Jaws are drop forged of special tool steel. Generally recommended for all around work with soft materials. Jaws are replaceable.

Complete Cutter

Unit Per Pr

CODE	Length mm	Maximum Cut Dia.
61 18 60	300	5 mm
61	350	6
62	450	7
63	600	10
64	750	13
61 18 65	900	16
66	1,050	18

Spare Jaw for Straight Bolt Cutter

Unit Per Pc

CODE	Length mm	Maximum Cut Dia.
61 18 71	300	5 mm
72	350	6
73	450	7
74	600	10
75	750	13
61 18 76	900	16
77	1,050	18

Bolt Cutters, Straight Edge

Insulated handle type is tested to withstand 1,000 volts.

Insulated Handle

61 18 80	Cutter, bolt straight edge, 620 mm, cutting capacity 8 mm diam. handle insulated	Pr.
81	Spare jaw for insulated bolt cutter, 620 mm	Pc.

Non-Insulated Handle

61 18 83	Cutter, bolt straight edge, 620 mm, cutting capacity 8 mm diam. handle non-insulated	Pr.
84	Spare jaw for non-insulated bolt cutter, 620 mm	Pc.

Bolt Cutters, Angle Edge

Designed for cutting mild steel rods, bolts, wire, etc. at a raised angle. Even if the bolt is set against a flat surface, it is possible to use these cutters because they will fit flush against the surface for a straight cut.

Complete			Spare Jaw for Angle Edge Bolt Cutter		
		Unit Per Pr			Unit Per Pc
CODE	Length mm	Maximum Cut Dia.	CODE	Length mm	Maximum Cut Dia.
61 18 90	300	5 mm	61 18 93	300	5 mm
91	450	7	94	450	7
92	600	10	95	600	10

Wire Rope Cutters

Designed specially for cutting wire ropes. The cutting edges pass each other for complete shear action resulting in a clean, sharp cut. A notched jaw holds the wires in place while cutting and minimizes the crushing and deformation of the wires.

Complete			Spare Jaw for Wire Rope Cutter		
		Unit Per Pr			Unit Per Pc
CODE	Length mm	Maximum Cut Dia.	CODE	Length mm	Maximum Cut Dia.
61 19 01	600	10 mm	61 19 06	600	10 mm
02	750	14	07	750	14
03	900	16	08	900	16
04	1,050	20	09	1,050	20

Cable Cutters

Designed for electric cables, of copper, aluminium, etc. Notched jaw holds and cuts cables in a clean and sharp way.

Complete

CODE	Model No.	Length mm	Maximum Cut Dia.
			Unit Per Pr
61 19 20	1	450	20 mm
21	2	750	30 mm
22	3	1,050	50 mm

Spare Jaw for Cable Cutters

CODE	Model No.	Length mm	Maximum Cut Dia.
			Unit Per Pc
61 19 25	1	450	20 mm
26	2	750	30 mm
27	3	1,050	50 mm

Cable Cutters

Same as the above cutters but the insulated handle type is tested to withstand 1,000 volts.

Insulated Handle

61 19 31	Cutter, cable 535 mm, cutting capacity 20 mm dia. handle insulated	Pr.
32	Spare jaw for insulated cable cutter, 535 mm	Pc.

Non-Insulated Handle

61 19 33	Cutter, cable 535 mm, cutting capacity 20 mm dua. handle non-insulated	Pr.
34	Spare jaw for non-insulated cable cutter, 535 mm	Pc.

Ratchet Type Cable Cutters

Insulated Handle

For cutting copper and aluminium single conductors as well as multiple stranded cables. Insulated with multi-component grips to withstand up to 1,000 Volts. Two-stage, three-stage ratchet-drive with high leverage enables easy cutting in one-hand and two-hand operation. *Not suitable for cutting steel and wire ropes.

Two-Stage Ratchet Drive

Three Stage Ratchet Drive

Unit Per Pr

CODE	Length mm	Ratchet Drive	Cutting Capacities			Weight grm
			Max.Dia mm	mm²	MCM	
61 19 37	250	2-Stage	32	240	500	652
61 19 38	280	2-Stage	52	380	750	835
61 19 39	320	3-Stage	60	600	1,200	830

MCM : Thousands of circular mils, same as kcmil.
Ref. : Knipex Model No. 95 36 250 / 95 36 280 / 95 36 320

Portable Midget Cutters

A portable tool for cutting spring wire of a diameter of up to 4 mm. The jaws are riveted to the handle so they are not replaceable. The handles are knurled and covered in plastic. These cutters are easy to handle as they weigh only 300 grms and are of a length of only 200 mm.

61 19 36	Cutter, midget portable 200 mm	Pr.

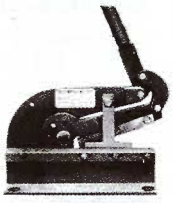
Rod Cutters

A heavy duty, improved bench type rod and bolt cutter. The handle end is covered by rubber to avoid slipping during use. Capable of cutting rods and bolts of a diameter of up to 16 mm.

		Unit Per Pr			Unit Per Pc
CODE	Length mm	Maximum Cut Dia.	CODE	Length mm	Maximum Cut Dia.
61 19 50	766	10 mm	61 19 55	766	10 mm
51	1,090	13	56	1,090	13
52	1,290	16	57	1,290	16

Metal Bench Shears

A heavy duty, improved, bench type iron sheet and rod cutter. This unit can be permanently mounted to a bench or bolted to a plank. The cutting lever can be operated with one hand, leaving the other hand free to feed and hold in place the material which is being cut.

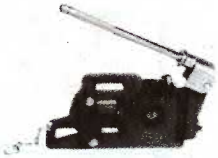


Unit Per Set

CODE	Blade Length mm	Cutting Capacity mm		Size mm	Weight kgs
		Iron Sheet	Iron Round	L x H	
61 19 64	120	3.0	6	370 x 300	9.5
65	160	4.0	6	400 x 325	11.5
60	180	3.2	13	370 x 300	35
61	200	5.0	8	495 x 350	22
62	250	6.0	8	485 x 335	35
63	300	3.2	13	485 x 335	13

Hydraulic Wire Rope Cutters

Designed for manually cutting wires with hydraulic power. Gives a clean cut with a few strokes of the handle without requiring any outside power. Can be carried to the job and placed anywhere, no firm base is required. Essential for cutting and splicing wire rope. Be sure to unscrew the die plug before use and to retighten it after use.



Unit Per Set.

CODE	Maximum Cut Diam mm	Dimensions mm	Weight kgs
61 19 70	20	310 x 90 x 152	10
71	30	380 x 105 x 180	15
72	40	400 x 120 x 200	20
61 19 73	50	485 x 130 x 220	30
74	60	630 x 175 x 270	70
75	100	1,000 x 600 x 360	200

Gasket and Washer Cutters

Designed for cutting gaskets or washers from leather, paper, or rubber sheets up to a diameter of 600 mm/24". The knife and center are made of tool steel, are well tempered, and adjustable. A tool box is furnished with the cutter.

61 20 01	Cutter, gasket and washer, set	Set

7. Packing Hooks

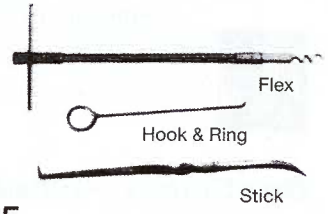
Packing Hook Set

The shank consists of one inner spiral shaft wrapped with an outer spiral of steel wire laid in the opposite direction. The flexible shaft has a solid handle and the hook is carefully tempered and pointed.

61 20 04	Packing hook set, complete	Set

Packing Hooks

Individual packing hooks from the above set.



How to order : CODE

Packing hook, NAME, LENGTH

Unit Per Pc.

CODE	Name	Length mm	For Packing Size mm
61 20 06	Flex	185	Flex 3.2 ~ 6.4
07		215	" 6.4 ~ 9.6
08		255	" 9.6 ~ 16.0
09		380	" 16.0 ~ 25.4
10		600	" 25.4 ~ 38.1
11		800	" 38.1 ~ 50.8
61 20 12	Stick	240	
13	Hook & Ring	200	

Single Wheel Pipe Cutters

Equipped with either a heavy duty cutter wheel or a thin blade wheel which are forged from tool steel and assembled in solid steel bushed hubs.

The cutter has powerful, malleable alloy frames which insure perfect tracking. Extra wheels available.

Pipe Cutter

Unit Per Set

CODE	For Pipe Size in Inches	Overall Length
61 20 20	1/8 - 1-1/4"	335 mm
21	1/8 - 2"	435
61 20 22	1/2 - 3"	540

Spare Wheel

Unit Per Pc.

61 20 23	1/8 - 1-1/4" , 1/8 - 2"	O.D. 32 mm
24	1/2 - 3"	" 35

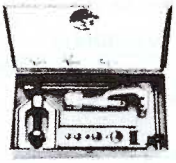
Chain-Type Pipe Cutters

Designed for cutting large sized pipes easily. By cranking the lever, ratchet action tightens the cutting blades against the pipe while continually increasing the cutting pressure on the pipe. Because of the ratcheting action only a small amount of force is required on the lever itself.

61 20 25	Cutter, pipe, chain-type 75 to 250 mm	Pc.

Cutting & Flaring Tool Sets

Designed for cutting or flaring copper, brass or aluminium tubes. The set consists of one cutter, flaring bar and yoke.



Unit Per Set

CODE	Capacity of Cutting & Flaring
61 20 30	mm . . . 5 to 12 with Cutter
31	in . . . . 3/16 to 5/8 with Cutter
32	mm . . . 12 to 20 without Cutter

Copper & Brass Tube Cutters

Designed for the cutting and flaring of small copper, brass or aluminium tubes. The cut will be absolutely clean (no distortion or burr) and ready for soldering. Extra blades are available.

Unit Per Set — Unit Per Pc.

CODE	For Tube Size O.D. mm	CODE For Extra Blade
61 20 35	3 - 30 mm	**61 20 45**
36	5 - 45	**46**
37	6 - 60	**47**

8. Tube Expanders

Tube Flaring Expanders

For condenser, heat exchanger and similar types of tubes. Made of special selected and hardened tool steel. When ordering, please select the largest size of expander which will fit for the inner tube diameter.

Unit Per Pc.

CODE	Enters I.D. tube & Expands to		Square Shank mm
	mm	Equiv. in	
61 20 51	6.4 to 7.5	1/4 to 5/16	8
52	9.5 to 11	3/8 to 7/16	8
53	13 to 15	1/2 to 19/32	8
54	16 to 18.5	5/8 to 3/4	8
55	19 to 22	3/4 to 7/8	9.5
61 20 56	20 to 25.5	7/8 to 1	9.5
57	25 to 29.5	1 to 1-3/8	9.5
58	29 to 33.5	1-1/8 to 1-5/16	12.7
59	32 to 36.5	1-1/4 to 1-7/16	12.7
60	35 to 40	1-3/8 to 1-9/16	12.7

9. Screwdrivers

Screwdrivers, Wood Handle

Heavy Duty

Tungsten alloy steel blades are pierced through a hard wood handle. The end is reinforced with a large nut that permits hammering. When ordering, please indicate the blade length for the slotted type, not the overall length. For phillips type screwdrivers, please order according to the indicated number.

How to order : CODE

Screwdriver, wood handle, heavy duty, BLADE LENGTH (Slotted), or NO. (Phillips)

- Slotted Screwdriver **+ Phillips Screwdriver**

Unit Per Pc.

CODE	Blade Length mm	Blade Width	CODE	No.	Blade Length mm
61 22 01	50	4.5 mm	**61 22 11**	No. 0	75
02	75	5.5	**12**	No. 1	75
03	100	6.0	**13**	No. 2	100
04	125	7.0	**14**	No. 3	150
05	150	8.0	**15**	No. 4	200
61 22 06	200	9.0			
07	250	10.0			
08	300	10.0			

General Purpose

Tungsten alloy steel blades are set securely in hard wood handles. The required size must be ordered according to the blade length for the slotted type, not by the overall length. For phillips type screwdrivers, please order according to the indicated number.

How to order : CODE

Screwdriver, wood handle, general purpose, BLADE LENGTH (Slotted), or NO. (Phillips)

- Slotted Screwdriver **+ Phillips Screwdriver**

Unit Per Pc.

CODE	Blade Length mm	Blade Width	CODE	No.	Blade Length mm
61 22 31	50	4.5 mm	**61 22 41**	No. 0	75
32	75	5.5	**42**	No. 1	75
33	100	6.0	**43**	No. 2	100
34	125	7.0	**44**	No. 3	150
35	150	8.0	**45**	No. 4	200
61 22 36	200	9.0			
37	250	10.0			
38	300	10.0			

Screwdrivers, Plastic Handle

Heavy Duty

Tungsten alloy steel blades are interlocked firmly to plastic handles which are hammer-proof and unbreakable. Handles are insulated to withstand up to 1,000 AC voltage for insulated type. The required size must be ordered according to the blade length for the slotted type, not by the overall length. For phillips type screwdrivers, please order according to the indicated number.

Insulated Handle

How to order : CODE

Screwdriver, plastic handle, insulated heavy duty, BLADE LENGTH (Slotted), or NO. (Phillips)

- Slotted Screwdriver **+ Phillips Screwdriver**

Unit Per Pc.

CODE	Blade Length mm	Blade Width	CODE	No.	Blade Length mm
61 22 61	50	4.5 mm	**61 22 71**	No. 00	75
62	75	5.5	**72**	No. 0	75
63	100	6.0	**73**	No. 1	75
64	125	7.0	**74**	No. 2	100
65	150	8.0	**75**	No. 3	150
61 22 66	200	9.0	**61 22 76**	No. 4	200
67	250	10.0			
68	300	10.0			

Non-insulated Plastic Handle

How to order : CODE

Screwdriver, plastic handle, non-insulated, heavy duty, BLADE LENGTH (Slotted), or NO. (Phillips)

- Slotted Screwdriver

+ Phillips Screwdriver

Unit Per Pc

CODE	Blade Length mm	Blade Width
61 21 81	50	4.5 mm
82	75	5.5
83	100	6.0
84	125	7.0
85	150	8.0
61 21 86	200	9.0
87	250	10.0
88	300	10.0

CODE	No.	Blade Length mm
61 21 91	No. 00	75
92	No. 0	75
93	No. 1	75
94	No. 2	100
95	No. 3	150
61 21 96	No. 4	200

Screwdrivers, Plastic Handle

Square Blade

Tungsten alloy steel square blade, heat-treated and chromed. The required size must be ordered according to the blade length for the slotted type, not by the overall length. For Phillips type screwdrivers, please order according to the indicated number.

How to order : CODE

Screwdriver, plastic handle, square blade, BLADE LENGTH (Slotted), or NO. (Phillips)

- Slotted Screwdriver

+ Phillips Screwdriver

Unit Per Pc

CODE	Blade Length mm	Blade Width
61 22 90	75	5.5 mm
91	100	6.0
92	150	8.0
87	200	8.0
88	250	8.0
61 22 89	300	10.0

CODE	No.	Blade Length mm
61 22 95	No. 1	75
96	No. 2	100
97	No. 3	150
98	No. 4	200

Electrician's Screwdrivers

Designed with a large wood handle for electricians continuous lining works. When ordering, please indicate the blade length for the slotted type, not the overall length.

How to order : CODE

Screwdriver, electrician, wood handle, BLADE LENGTH (Slotted), or NO. (Phillips)

- Slotted Screwdriver

Unit Per Pc

CODE	Blade Length mm	Blade Width
61 23 01	50	7.0 mm
02	75	5.5
03	100	5.5

CODE	No.	Blade Length mm
61 23 04	125	9.0 mm
05	150	6.0
06	200	6.0

+ Phillips Screwdriver

Unit Per Pc

CODE	Blade Length mm	No.
61 23 11	75	No. 1
12	100	
13	150	

CODE	Blade Length mm	No.
61 23 08	100	No. 2
14	150	
15	200	
61 23 09	150	No. 3

Stubby Screwdrivers

Wood or Plastic Handle

For work in close quarters. The plastic handle screwdrivers are more popular than the wood ones. Plastic handle screwdrivers will be supplied unless specified otherwise.

Wood Handle

Plastic Handle

How to order : CODE

Screwdriver, stubby, WOOD, or PLASTIC HANDLE, BLADE LENGTH (Slotted), or NO. (Phillips)

Wood Handle

Plastic Handle

Unit Per Pc

CODE	No.	Blade Length mm
61 23 21	Slotted	38
22	(+) No. 1	38
23	(+) No. 2	38

CODE	No.	Blade Length mm
61 23 24	Slotted	38
25	(+) No. 1	38
26	(+) No. 2	38

Screwdrivers, Plastic Ratchet Handle

Can be used in several ways. The handle can tighten and revolve freely back like a ratchet handle or it can operate in the normal way when put in a neutral ratchet gear.

How to order : CODE

Screwdriver, ratchet, plastic handle, BLADE LENGTH (Slotted), or NO. (Phillips)

- Slotted Screwdriver

+ Phillips Screwdriver

Unit Per Pc

CODE	Blade Length mm	Blade Width
61 23 41	100	5.0 mm
42	100	6.0

CODE	No.	Blade Length mm
61 23 43	No. 1	100
44	No. 2	100

Ratchet Screwdrivers

with Interchangeable Bits

Supplied with four sizes of magnetic interchangeable bits. They are stored inside the handle.

Unit Per Set

CODE	Blade Length mm	Overall Length mm	Bit's Size
61 23 46	112	227	-5 x 25 mm / -7 x 25 mm #1 x 25 mm / #2 x 25 mm

Hexagon Nut Drivers

The wood handle with a heat-treated on plastic handle and chromed blade. The size must be ordered according to the opening across flats.

Wood Handle

Plastic Handle

Unit Per Pc

CODE	Opening mm	Blade Length mm	Overall Length mm
	Wood Handle		
61 23 51	4.0	75	170
52	5.0	115	210
53	5.5	115	210
54	6.0	115	220
55	7.0	125	230
61 23 56	8.0	125	230
57	9.0	125	250
58	10.0	125	250
59	11.0	125	250
60	12.0	150	292
61 23 61	13.0	150	292
62	14.0	150	292
63	17.0	150	313
	Plastic Handle		
61 23 91	4.0	75	155
67	5.0	75	155
68	5.5	75	155
69	6.0	75	155
70	7.0	75	155
61 23 92	8.0	75	155
71	9.0	75	155
72	10.0	75	155
93	11.0	75	155
94	12.0	75	155
61 23 95	13.0	75	155
96	14.0	75	155
97	17.0	75	155

Hexagon Nut Driver Sets

Deep socket type nut drivers provided as a set with a steel holding rack. The set consists of 7 nut drivers ranging from 5 mm to 12 mm in size.

61 23 66	Nut driver set, 5 mm - 12 mm, 7 pcs	Set

Flexible Blade Nut Drivers

The flexible blade is made of a specially designed spring which will bend and allow you to set nuts around corners and in places where straight blades cannot be used. When ordering, please specify the size, not by the bolt size, but by the size between the two parallel walls of the nut driver socket.

Unit Per Pc

CODE	Opening mm	For Bolt Size ISO mm	Overall Length mm
61 23 75	5.5	3	226
76	7	4	226
77	8	5	226

Screwdrivers with Gripping

Heat-treated, hardened, alloy steel blades. Plastic handle and precision ground tips. Positive gripping mechanism. Can be worked on screws in hard-to-reach places with the assurance that the screw will stay on the blades.

- Slotted Screwdriver **+ Phillips Screwdriver**

Unit Per Pc

CODE	Blade Length mm	Blade Width	CODE	No.	Blade Length mm
61 23 81	100	4.5 mm	61 23 87	No. 00	75
82	100	2.6	88	No. 20	100
83	150	4.5			
84	150	2.6			

Offset Screwdrivers

For work in close quarters. Made from selected alloy steel. Mechanic and phillips points drivers are available. Chrome plate finished.

Unit Per Pc

CODE	No.	Blade Diameter mm	Overall Length mm
61 24 01	-5 x -6	6.4	127
02	-8 x -9	9.0	152
61 24 03	No.1 & 2	6.4	127
04	No.3 & 4	9.0	152
61 24 05	No.1 & -5	5.0	125
06	No.2 & -6	6.0	125
07	No.3 & -8	8.0	150

Screwdriver Sets, Watch Makers'

For precision work with small screws. The end of the handle rotates, permitting your fingers to stay on the end during screwing work. Set supplied in a plastic case.

Unit Per Set

CODE	Blade	Contents	Set
61 24 11	Slotted	Blade width mm 0.9, 1.2, 1.8, 2.3, 3.0, 3.5	6 Pcs
61 24 12	Slotted & Phillips	Blade width mm & No. 0.9 1.2, 1.8, 2.3 mm No.00, No.0	6 "

Spark Testing Screwdriver Sets

In Vinyl Sheath

For spark testing of low voltage:
100 - 220V - AC 100 - 350V - DC
6 various interchangeable bits

61 24 16	Screwdriver, spark testing, Low-voltage 6's	Set

For spark testing of high voltage:
2,500 - 15,000V - AC
6 various interchangeable bits

61 24 17	Screwdriver, spark testing, High-voltage 6's	Set

Automatic Screwdrivers with Ratchet

These screwdrivers work by pushing the handle downward and causing a crank drive inside the ratchet shaft to spin the blade. When the handle is released, the blade extends to its original position. By repeatedly pushing the handle you can set loose screws quickly with a very simple operation. When not in use the interchangeable bits can be stored inside of the handle. The gear blade can be set to rotate in either direction by changing the ratchet gear allowing you to remove screws as well as insert them.

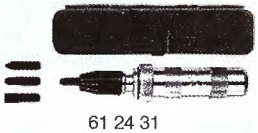
Unit Per Set

CODE	Extend Length	Handle Length	Bit Contents
61 24 21	240 mm	102 mm	Plastic handle, -6, +#1, #2, & one gimlet
22	300	84	Plastic handle, -6, +#1, #2, & one gimlet
23	380	100	Wood handle, -6, +#1 & #2
24	440	100	Wood handle, -6, +#1 & #2
25	620	120	Wood handle, -7, +#2 & #3

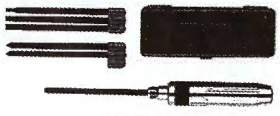
Hammering Screwdrivers

Impact Type

Designed to work with screws that are set tight due to freezing or corrosion. By hammering the head of the screwdriver, a sudden, sharp pressure is applied to the screw causing it to be jarred loose. Supplied with interchangeable bits for rotation in the left or right direction.



61 24 31



61 24 32

Unit Per Set

CODE	No. of Bit	Blade Diam	Overall Length	Bit Contents
61 24 31	4's	32 mm	190 mm	- 10 mm + No.2 3 & 4
61 24 32	6's	26 mm	240 mm	- 5, 6, 7 mm + No.1, 2 & 3

Detachable Screwdriver Sets

Detachable drill bits with plastic handle in a handy plastic case. The drill bits are attached and detached manually by screwing bit chuck at handle.

Unit Per Set

CODE	No. of Bits	Bit Size	Bit Length	Overall Length
61 24 41	4's	-3 / -5 No.1 & 2	90 mm	162 mm
42	5's	-3 / -5 No.1 & 2 Auger	100 mm	182 mm
43	5's	-3 / -4 / -6 No.1 & 2	125 mm	216 mm

Pozidriv Screwdrivers

This unique shape of the bit provides excellent driving control with less operator fatigue. The Pozidriv screw is incorporated with visible ribs in the groove, so Phillips drivers should not be used with Posidriv screws.

Unit Per Pc.

CODE	Blade Diam mm	No.	Blade Length mm
61 24 51	5	PZ1	75
52	6	PZ2	100
53	8	PZ3	150

Long Blade Screwdrivers

Extra long blade screwdrivers with plastic handle.

Unit Per Pc.

CODE	Blade Width or No.	Blade Diam.	Blade Length
61 24 56	9.0 mm	8 mm	450 mm
61 24 57	No.2	6 mm	450 mm
61 24 58	No.3	8 mm	450 mm

10. Hammers

Ball Pein Hammers

Handled

The perfect ball pein hammers for all industries. Accurately balanced. Tough drop forged head with a selectively hardened face and pein. Fine quality, lacquer finished, hickory handles shaped for ease in use.

Unit Per Pc.

CODE	No.	Weight Gram	CODE	No.	Weight Gram
61 25 01	1/4	110	**61 25 06**	1-1/2	675
02	1/2	225	**07**	2	900
03	3/4	330	**08**	2-1/2	1,100
04	1	450	**09**	3	1,350
05	1-1/4	550			

Blacksmiths' Sledge Hammers Double Face

with or without Handle

This double head hammer with smooth faces can be furnished with or without a handle. When ordering, please specify whether a handle is required or not. The hammer-head will be furnished without a handle unless otherwise specified.

With Handle ***Without Handle***

Unit Per Pc.

CODE	No.	Weight kgs	CODE	No.	Weight kgs
61 25 21	2	0.9	**61 25 41**	2	0.9
22	3	1.3	**42**	3	1.3
23	4	1.8	**43**	4	1.8
24	5	2.2	**44**	5	2.2
25	6	2.7	**45**	6	2.7

(to be continued)

With Handle			Without Handle		
					Unit Per Pc.
CODE	No.	Weight kgs	CODE	No.	Weight kgs
61 25 26	8	3.6	**61 25 46**	8	3.6
27	10	4.5	**47**	10	4.5
28	12	5.4	**48**	12	5.4
29	14	6.3	**49**	14	6.3
30	15	6.7	**50**	15	6.7
61 25 31	16	7.2	**61 25 51**	16	7.2
32	18	8.1	**52**	18	8.1
33	20	9.0	**53**	20	9.0
34	22	9.9	**54**	22	9.9
35	25	11.0	**55**	25	11.0
61 25 36	30	13.5	**61 25 56**	30	13.5

Smooth & Cross Pein Hammers
with or without Handle

Smooth and cross pein head. Specify whether you need a hammer with or without a handle. The hammer-head will be furnished without a handle unless otherwise specified.

With Handle			Without Handle		
					Unit Per Pc.
CODE	No.	Weight kgs	CODE	No.	Weight kgs
61 25 61	2	0.9	**61 25 81**	2	0.9
62	3	1.3	**82**	3	1.3
63	4	1.8	**83**	4	1.8
64	5	2.2	**84**	5	2.2
65	6	2.7	**85**	6	2.7
61 25 66	8	3.6	**61 25 86**	8	3.6
67	10	4.5	**87**	10	4.5
68	12	5.4	**88**	12	5.4
69	14	6.3	**89**	14	6.3
70	15	6.7	**90**	15	6.7
61 25 71	16	7.2	**61 25 91**	16	7.2
72	18	8.1	**92**	18	8.1
73	20	9.0	**93**	20	9.0
74	22	9.9	**94**	22	9.9
75	25	11.0	**95**	25	11.0
61 25 76	30	14.0	**61 25 96**	30	14.0

Testing Hammers
Handled

For testing and investigating boilers, welding joints, hulls, etc. Designed for detecting structural defects by the sound created from the hammering. Made from specially selected alloy steel with a hickory handle.

CODE	61 26 01	61 26 02	61 26 03
			Unit Per Pc.
No.	1/4	1/2	3/4
Weight	110 grm	225 grm	330 grm

Bell Face-Hand Hammers
with Nail Puller, Handled (Claw Hammers)

Drop forged of specially heat-treated steel. Round bell face enables easier driving of nails close to butting surfaces and in corners.

CODE	61 26 06	61 26 07	61 26 08
			Unit Per Pc.
Weight	330 grm	450 grm	550 grm

Chipping Hammers
Handled

Designed for removing boiler, scale, rust or paint on vessels, etc. Forged from a special grade of steel. Handle made of hard wood.

CODE	Weight	Unit
61 26 11	225 grm	Pc.
12	450 grm	"

Combination Hammers
Handled

Hammer-head made of a combination of iron and hard plastic.

CODE	61 26 16	61 26 17	61 26 18
			Unit Per Pc.
Nos.	1/2	1	2
Weight	0.225 kgs	0.45 kgs	0.9 kgs

Carpenter Hammers
Tubular Steel & Cushion Grip

Tubular steel handle with rubber cushion grip. The head has been designed with one round faced end and one end as a nail puller.

CODE	61 26 21	61 26 22
		Unit Per Pc.
Weight	450 grm	550 grm

Copper Hammers
Handled

A polished face hammer fitted securely to a hard wooden handle.

CODE	No.	Weight kgs	CODE	No.	Weight kgs
					Unit Per Pc.
61 26 41	1/2	0.25	**61 26 45**	3	1.5
42	1	0.5	**46**	4	2.0
43	1-1/2	0.75	**47**	5	2.5
44	2	1.0			

Copper Hammers
with Replaceable Tip and Handle

Copper hammer with replaceable spare tip and handle. The head and the handle can be furnished separately.

Complete

CODE	No.	Weight kgs	CODE	No.	Weight kgs
					Unit Per Pc.
61 26 51	1/2	0.25	**61 26 55**	3	1.35
52	1	0.45	**56**	4	1.8
53	1-1/2	0.65	**57**	5	2.25
54	2	0.9			

Spare Tip		Spare Handle	
CODE	Head No.	CODE	Head No.
61 26 61	1/2	61 26 71	1/2
62	1	72	1
63	1-1/2	73	1-1/2
64	2	74	2
65	3	75	3
61 26 66	4	61 26 76	4
67	5	77	5

Lead Hammers

Handled

A polished face hammer fitted securely to a hard wooden handle.

Unit Per Pc

CODE	No.	Weight kgs	CODE	No.	Weight kgs
61 26 81	1/2	0.25	61 26 85	3	1.5
82	1	0.5	86	4	2.0
83	1-1/2	0.75	87	5	2.5
84	2	1.0			

Brass Hammers

Handled

A polished face hammer fitted securely to a hard wooden handle.

Unit Per Pc

CODE	No.	Weight kgs	CODE	No.	Weight kgs
61 26 91	1/2	0.25	61 26 95	3	1.5
92	1	0.5	96	4	2.0
93	1-1/2	0.75	97	5	2.5
94	2	1.0			

Aluminium Hammers

Handled

A polished face hammer fitted to a hard wooden handle which is light and easy to use for extended periods of time.

Unit Per Pc

CODE	No.	Weight kgs	CODE	No.	Weight kgs
61 27 01	1/2	0.1	61 27 05	4	0.5
02	1	0.2	06	10	1.5
03	2	0.3	07	20	3.0
04	3	0.45			

Plastic Hammers, Handled and Replaceable Tips

Furnished with replaceable round tips of tough plastic.

Complete

Unit Per Pc

CODE	No.	Head Diam. mm	Weight kgs
61 27 21	1/2	25	0.22
22	1	31	0.4
23	1-1/2	38	0.63
24	2	46	0.98

Spare Tip

Unit Per Pc

CODE	No.	CODE	No.
61 27 31	1/2	61 27 33	1-1/2
32	1	34	2

Rubber Hammers

Handled

Soft but tough, non-flaking neoprene head prevents damage to the surface being worked on.

Unit Per Pc

CODE	No.	Head Diam. mm	Weight kgs
61 27 51	1/2	46	0.31
52	3/4	48	0.46
53	1	60	0.58
54	1-1/2	67	0.82

Wood Mallet Hammers

Handled

Head and handle manufactured of selected hardwood. Head finished with a bright varnish.

Unit Per Pc

CODE	Face Diam.	CODE	Face Diam.
61 27 61	50 mm	61 27 63	70 mm
62	60	64	75

Hammer Handles, Hard Wood

Tough hard wood handle shaped and finished for a comfortable, sure grip.

Unit Per Pc

CODE	Length mm	CODE	Length mm
61 27 75	300	61 27 78	600
76	330	79	900
77	450	80	1,200

Handles for Testing and Chipping Hammers:

Unit Per Pc

CODE	For	Hammer Weight
61 27 82	Testing Hammer	110 grm
83		225
84		330
61 27 86	Chipping Hammer	225 grm
85		450

Steel Wedges for Hammer

Used to tightly wedge a wooden handle to a hammer-head.

Unit Per P.

CODE	61 27 91	61 27 92	61 27 93
Size	7 x 16 mm	14 x 16 mm	20 x 27 mm

11. Glass Cutters

Glass Cutters

These glass cutters are for cutting straight plate glass with the use of straight scales. Industrial diamonds are used for the cutting point to ensure easy cutting.

Unit Per Pc

CODE	For Glass Thickness	CODE	For Glass Thickness
61 28 01	2 - 3 mm	61 28 03	5 - 10 mm
02	3 - 5		

Circle Glass Cutters

These glass cutters are designed for cutting round glass pieces in the range between 80 to 600 mm. The cutting points are made of industrial diamonds and on the other end of the glass cutter is a special rubber piece fitted to ensure a correct, even cut.

61 28 05	Glass cutter, max. cutting diam. 600 mm	Pc.

Gauge Glass Cutters

For double glass cutters, you just slide the lever and they can be placed close to the work. With this cutter, more power can be obtained for cutting the hardest types of glass.

Single Type

Double Type

Unit Per Pc.

CODE	Type	Capacity Min. Inside Diam. x Length
61 28 08	Single	8 mm x 510 mm
09	Double	8 mm x 200 mm

12. Bars / Nail Pullers

Carpenters' Pincers
Plastic Coated Handle

Extreme wear resistance and good balance. Made of special tool steel, oil-hardened and tempered.

Unit Per Pc.

CODE	Length mm	Weight grm	CODE	Length mm	Weight grm
61 28 32	160	225	61 28 35	225	435
33	180	325	36	250	600
34	210	415	37	300	900

Ref : Knipex Model No. 50 01 160 / 180 / 210 / 225 / 250 / 300

Claw and Nail Puller Bars

Pull and ply bar with one 90° end and one smoothly curved end to suit use on a variety of surfaces.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
61 28 41	200	61 28 45	330
42	240	46	360
43	260	47	460
44	300		

Claw and Chisel End Bars

Made of forged steel and heat-treated. Curved claw is offset 90°, pointed and polished.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
61 28 51	300	61 28 56	500
52	330	57	540
53	360	58	600
54	390	59	750
55	450	60	900

Straight Pinch and Chisel End Bars

A multi purpose pinch bar.

Unit Per Pc.

CODE	61 28 65	61 28 66	61 28 67
Length mm	600	900	1,200

Gooseneck Type Bars

One end is a pointed chisel and the other is a rounded nail puller.

Unit Per Pc.

CODE	61 28 71	61 28 72	61 28 73
Length mm	600	900	1,200

Crowbars

Iron lever with a forked wedge.

Unit Per Pc.

CODE	Length mm	Weight kgs	CODE	Length mm	Weight kgs
61 28 81	850	4	61 28 84	1,200	8
82	950	5	85	1,350	9
83	1,150	6	86	1,500	10

Giant Nail Pullers

Forged steel shank with hand guard and automatic claw. Overall length : 460 mm.

61 28 90	Nail, puller, giant type, 460 mm	Pc.

13. Chisels

Chisels

Cold Chisel

These chisels are made of tough selected alloy steel which has been carefully tempered to assure toughness and ample strength.

Unit Per Pc.

CODE	Blade Width mm	Length mm	CODE	Blade Width mm	Length mm
61 29 01	6	125	61 29 05	19	190
02	9	140	06	22	200
03	13	160	07	25	215
04	16	175	08	32	225

Cape Chisel

Made from special selected alloy steel. Lacquered body and polished blade.

Unit Per Pc.

CODE	Blade Width mm	Length mm	CODE	Blade Width mm	Length mm
61 29 11	3	150	61 29 14	7.5	175
12	4.5	150	15	9	200
13	6	175	16	13	200

Concrete Chisel

Made from selected alloy steel. Well balanced and finished in blue lacquer with a polished point.

Unit Per Pc.

CODE	Blade Width mm	Length mm	CODE	Blade Width mm	Length mm
61 29 21	9	120	**61 29 25**	22	240
22	13	150	**26**	25	270
23	16	180	**27**	32	300
24	19	210			

Offset Caulking Chisel

Unit Per Pc.

CODE	Length mm	CODE	Length mm
61 29 31	150	**61 29 36**	400
32	200	**37**	450
33	250	**38**	500
34	300	**39**	550
35	350	**40**	600

Cross Cut Cold Chisels
with Wooden Handle

Made with carbon black finish and fitted to a hardened wood handle.

Unit Per Pc.

CODE	**61 29 51**	**61 29 52**	**61 29 53**
Blade Width & Length mm	25 x 125	32 x 140	38 x 150

Cross Cut Hot Chisels
with Iron Handle

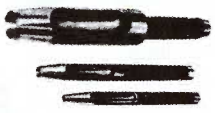
Made from carbon steel with an iron handle.

Unit Per Pc.

CODE	**61 29 57**	**61 29 58**
Blade Width & Length	25 x 125 mm	32 x 140 mm

14. Punches/Stencils

Round Hole Punches



Forged from selected tool steel with a fully polished finish.

Unit Per Pc.

CODE	Hole Diam. mm	CODE	Hole Diam. mm
61 30 01	3	**61 30 26**	28
02	4	**27**	29
03	5	**28**	30
04	6	**29**	31
05	7	**30**	32
61 30 06	8	**61 30 31**	33
07	9	**32**	34
08	10	**33**	35
09	11	**34**	36
10	12	**35**	37
61 30 11	13	**61 30 36**	38
12	14	**37**	39
13	15	**38**	40
14	16	**39**	41
15	17	**40**	42
61 30 16	18	**61 30 41**	43
17	19	**42**	44
18	20	**43**	45
19	21	**44**	46
20	22	**45**	47

(to be continued)

Unit Per Pc.

CODE	Hole Diam. mm	CODE	Hole Diam. mm
61 30 21	23	**61 30 46**	48
22	24	**47**	49
23	25	**48**	50
24	26		
25	27		

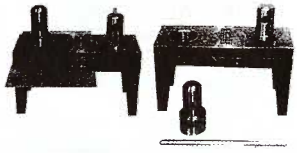
Punching Tool Sets

Used for punching holes in soft brass, copper, and other soft metals as well as leather, canvas, and gasketing materials. A set for 6 to 38 mm is available as standard, size 40 to 55 mm are available on request and make to order.

Combination Size ***Individual Size***

Punching Dies

Punching Table



Unit Per Set

CODE	Hole Size	Contents
		Combination Size
61 30 56	6-38 mm	16 pcs Punching dies (6, 7, 8, 9, 10, 11, 12, 13, 16, 19, 22, 25, 28, 32, 35, 38) 1 pc Punching table
		Individual Size
61 29 81	40 mm	1 pc Punching die 1 pc Punching table (How to use: 1. Lift up the upper plate by turning the supporting pole counterclockwise with lever handle. 2. Insert the material between upper and base plate. 3. Place the padding at opposite side of base plate to make upper plate horizontally. 4. Fasten the plates by turning the supporting pole clockwise. 5. Insert the punching die into the hole and strike the die head.
82	41 mm	
83	42 mm	
84	43 mm	
85	44 mm	
61 29 86	45 mm	
87	46 mm	
88	47 mm	
89	48 mm	
90	49 mm	
61 29 91	50 mm	
92	51 mm	
93	52 mm	
94	53 mm	
95	54 mm	
61 29 96	55 mm	

Center Punches

Forged from special alloy steel. The tips are accurately centered and the knurled finger grip assures accurate handling.

Unit Per Pc.

CODE	**61 30 60**	**61 30 61**	**61 30 62**
Length	100 mm	125 mm	150 mm

Center Punch Sets
Combination

Forged, tempered, alloy steel. Center punches of various sizes available in one compact case.

Unit Per Set

CODE	Contents
61 30 65	9 pcs set, Length 150 mm
66	12 pcs set, Length 150 mm

Pin Rivet Punches

Forged from selected alloy steel. For driving out pins and bushings and lining up bolt and rivet holes. Length : 150 mm.

Unit Per Pc.

CODE	Point mm	CODE	Point mm
61 30 70	2.5	**61 30 74**	5.5
71	3.0	**75**	6.5
72	4	**76**	8
73	5	**77**	10

Pin Punch Sets

Combination

Forged, tempered alloy steel. Each set is furnished in a round wooden case. Pointings available are : 2.5 - 3 - 4 - 5 - 5.5 - 6.5 - 8 & 10 mm in diameter. Length : 150 mm.

61 30 80	Punch set, pin, combination 2.5-10 mm, L:150 mm, 8 pcs/set	Set

Combination Chisel Sets

Forged, tempered alloy steel. Contains 7 different types of chisels in a round plastic case. Shank diameter 8 mm, length 150 mm.

61 30 86	Chisel set, combination 150 mm, 7's	Set

Chisel & Punch Sets

Combination

Forged, tempered alloy steel. Consisting of different chisel and pin punch types in a vinyl case. Length : 150 mm.

Unit Per Set

CODE	Contents
61 30 88	7 pcs set Length 150 mm
89	12 pcs set - " -

Heavy Duty Wad Punches

A heavy-duty tools designed to cut discs of gasket materials. They are most commonly used to create washers by first cutting a disc with a larger sized wad punch and the centre hole with a smaller sized punch.

Unit Per Pc.

CODE	Hole Diam. mm	CODE	Hole Diam. mm	CODE	Hole Diam. mm
61 30 49	6	**61 30 82**	24	**61 31 14**	42
50	7	**83**	25	**15**	43
51	8	**84**	26	**27**	44
52	9	**85**	27	**28**	45
53	10	**87**	28	**29**	46
61 30 54	11	**61 30 90**	29	**61 31 30**	48
55	12	**91**	30	**97**	50
57	13	**92**	31	**98**	55
58	14	**93**	32	**99**	60
59	15	**94**	33	**61 32 00**	65

(to be continued)

Unit Per Pc.

CODE	Hole Diam. mm	CODE	Hole Diam. mm	CODE	Hole Diam. mm
61 30 63	16	**61 30 95**	34	**61 32 10**	70
64	17	**96**	35	**11**	75
67	18	**97**	36	**12**	80
68	19	**98**	37	**13**	85
69	20	**99**	38	**14**	90
61 30 78	21	**61 31 00**	39	**61 32 15**	100
79	22	**12**	40		
81	23	**13**	41		

Letter or Figure Sets

In Steel Box

This machine processed letter set consists of 27 letters and the character "&". The special machine processed figure set consists of 9 pieces 0 to 8 where as the figure "9" is also to be used as "6". The letters/figures are accommodated in a steel case.

Unit Per Set

Letter Sets 27 Pieces		Figure Sets 9 Pieces	
CODE	Size mm	CODE	Size mm
61 31 01	1.5	**61 31 16**	1.5
02	2.0	**17**	2.0
03	2.5	**18**	2.5
04	3.0	**19**	3.0
05	4.0	**20**	4.0
61 31 06	5.0	**61 31 21**	5.0
07	6.0	**22**	6.0
08	8.0	**23**	8.0
09	10.0	**24**	10.0
10	13.0	**25**	13.0
61 31 11	16.0	**61 31 26**	16.0

Stencil Letter and Figure Sets

Adjustable stencils for letters and figures. Due to a special design, the letters and figures may be joined together to form any word, address, etc. as required. The joined figures and letters are accurately spaced and on an even level to assure a perfect print. The size is taken according to the required height of letters and figures.

How to order : CODE

Stencil, LETTER & FIGURE (LETTER or FIGURE), adjustable brass, SIZE, NUMBERS/set.

Unit Per Set

CODE	Size mm	Description	Set
61 31 31	13	76 Pieces A to Z and 0 to 9	Letter & Figure
32	20		
33	25		
34	30		
35	38		
61 31 36	45	76 Pieces A to Z and 0 to 9	Letter & Figure
37	50		
38	60		
39	75		
40	100		
61 31 41	13	26 Pieces A to Z only	Letter
42	20		
43	25		
44	30		
45	38		

(to be continued)

Unit Per Set

CODE	Size mm	Description	Set
61 31 46	45	26 Pieces A to Z only	Letter
47	50		
48	60		
49	75		
50	100		
61 31 51	13	10 Pieces 0 to 9 only	Figure
52	20		
53	25		
54	30		
55	38		
61 31 56	45	10 Pieces 0 to 9 only	Figure
57	50		
58	60		
59	75		
60	100		

15. Anvils / Blacksmith's Tongs

Anvils

Cast Iron Anvils

Made of cast iron and heat-treated with plain surfaces. Finished painted or in its original colour. Available in weights from 10 to 200 kgs.

Unit Per Pc.

CODE	Weight kgs	Overall Length mm	CODE	Weight kgs	Overall Length mm
61 31 65	10	285	61 31 73	60	470
66	15	320	74	70	520
67	20	340	75	80	520
68	25	350	76	90	560
69	30	380	77	100	560
61 31 70	35	400	61 31 78	150	665
71	40	405	79	200	700
72	50	420			

Cast Steel Anvils

Made of cast steel and perfectly heat-treated to assure a long life under heavy working conditions. Painted or furnished in its original colour. Available in weights from 20 to 200 kgs.

Unit Per Pc

CODE	Weight kgs	Overall Length mm	CODE	Weight kgs	Overall Length mm
61 31 85	20	325	61 31 91	80	580
86	30	430	92	100	620
87	40	460	93	120	665
88	50	480	94	150	790
89	60	515	95	200	880
61 31 90	70	530			

Blacksmiths' Tongs

Flat

Round

Unit Per Pr.

CODE	Type	Length mm	CODE	Type	Length mm
61 32 01	Flat	360	61 32 06	Round	360
02		450	07		450
03		550	08		550
04		600	09		600

16. Scrapers / Scribers

Bearing Scrapers

These scrapers are forged and perfectly tempered to assure an absolute true shape for scraping jobs on bearings, valves, etc. Highly polished finish.

1. With Wooden Handle

2. Flat Double End

3. Half Round & Flat End

4. Half Round & Point End

Unit Per Pc.

CODE	Type	Length mm	CODE	Type	Length mm
61 32 20	1. With wooden handle	200	61 32 30	3. Half round & flat end	200
21		250	31		240
22		280	32		300
61 32 25	2. Flat double end	200	33		360
26		240	61 32 35	4. Half round & point end	200
27		300	36		240
28		360	37		300
			38		360

Double End Angle Scrapers

Made of rounded edge tool steel, hammer forged, and oil finished.

Unit Per Pc

CODE	61 32 41	61 32 42	61 32 43
Length	200 mm	250 mm	300 mm

Deck Scrapers with Long Handle

Tempered steel blade of 65 mm width. Furnished with a wooden handle of 1,200 mm length.

61 32 46	Deck scraper with long handle 65 x 1,200 mm	Pc.

Angle Scrapers with Wooden Handle

Forged steel blade of 45 mm width, overall length : 320 mm.

61 32 48	Angle scraper with wooden handle 45 x 320 mm	Pc.

Yacht Type Triangular Scrapers

Triangular shaped 70 mm steel edge with a 300 mm wooden handle.

61 32 50	Triangular scraper, yacht type, 70 x 300 mm	Pc.

Hand Scrapers

Stainless steel blade with plastic body, excellent for removing glue, rust or paint from wood or glass surfaces. Ideal for work in close quarters. Blades can be changed easily.

Unit Per Pc.

Scraper Complete		Spare Blade	
CODE	Blade Width mm	CODE	Blade Width mm
61 32 55	25	**61 32 58**	25
56	45	**59**	45
57	64		

Steel Scribers

Points are made of the best quality steel, and properly tempered with twisted center portions for a solid grip.

Unit Per Pc.

CODE	**61 32 65**	**61 32 66**
Size	200 mm	250 mm

17. Magnets

Strong Hand Magnets

A handy strong magnet for moving or lifting metallic objects (steel, etc.).

Unit Per Pc.

CODE	No.	Size mm H x W x T	CODE	No.	Size mm H x W x T
61 32 80	4.5	85 x 65 x 8	**61 32 82**	10	127 x 93 x 12
81	7.5	105 x 75 x 11	**83**	15	136 x 110 x 15

18. Saws / Hacksaws

Hand Saws

Steel blade, hardened and tempered. Thin back, true taper ground, highly polished.

Unit Per Pc.

CODE	Blade Length mm	CODE	Blade Length mm
61 34 01	450	**61 34 03**	600
02	500	**04**	650

Back Saws (Tenon Saws)

For general use in connection with mitre box and cabinet work. Stiff blade with a heavy steel back. Solid hard wood handle.

61 34 07	Back saw 300 mm	Pc.

Double Blade Saws

For carpentry use. Double blade saw for rip and cross cutting.

Unit Per Pc.

CODE	Blade Length mm	CODE	Blade Length mm
61 34 10	210	**61 34 13**	295
11	240	**14**	320
12	270		

Compass or Keyhole Saws

Steel blade, hardened and tempered. Blade fastened securely to the handle.

61 34 16	Saw, compass, blade length 210 mm	Pc.

Saw Setters

For use on setting saw teeth.

61 34 22	Setter saw Japanese type	Pc.

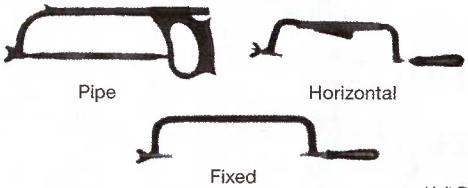
Tiny Hacksaw Frames

Designed for cutting sheet metal, thin tubing or heavy wires in close quarters. Frames are made of bright finished nickel spring wire. Handle depth is 50 mm and the blades are 150 mm x 6 mm.

CODE	Description	Unit
61 34 23	Tiny hack saw frame with 12 blades	Set
24	Tiny hack saw frame with one blade	"
25	Tiny hack saw blades	Doz

Hacksaw Frames

The frames are available in solid type or pipe type. Made of nickel plated steel and polished or buff finished.



Unit Per Pc.

CODE	Type	For Blade Length
61 34 26	Pipe	Adjustable to blades from 250 mm to 300 mm
27	Horizontal	
28	Fixed	Fixed only for 300 mm

Hacksaw Blades

Carbon Steel ..... Recommended for general use by engineers, mechanics, electricians, plumbers and maintenance men.

Tungsten Alloy Steel ..... Resist breakage, longer wearing and give satisfaction where fast, dependable results are essential.

High Speed Steel ..... Heat resistant and suitable for cutting tough alloy steel.

Choose the right blades for the right works.

14 Teeth Per 25.4 mm..... For cutting soft solid steel, iron, rails, brass, bronze, copper and aluminium.

18 Teeth Per 25.4 mm ..... For cutting tool steels, iron pipes and light angle iron.

24 Teeth Per 25.4 mm..... For cutting drill rods, medium sheet metal, tubing and solid brass.

32 Teeth Per 25.4 mm ..... For cutting thin sheet metal and thin wall tubing.

How to order : CODE

Hacksaw blade, MATERIAL, LENGTH, TEETH per INCH

Unit Per Doz

CODE			Length mm	Teeth Per Inch
Carbon Steel	Tungsten Alloy Steel	High Speed Steel		
61 34 31	61 34 41	61 34 51	250	14
32	42	52	250	18
33	43	53	250	24
34	44	54	250	32
61 34 35	61 34 45	61 34 55	300	14
36	46	56	300	18
37	47	57	300	24
38	48	58	300	32

Machine/Power Saw Blades

Please indicate length and teeth per 25.4 mm.

Tungsten Alloy Steel

How to order : CODE

Machinesaw blade, tungsten alloy steel, LENGTH, THICKNESS, TEETH per INCH

Unit Per Pc.

CODE	Specification		Thickness mm	Teeth Per Inch
	Length mm	Width mm		
61 34 61	300	25	1.25	9
62	300	25	1.25	10
63	300	25	1.25	14
61 34 64	300	25	1.65	9
65	300	25	1.65	10
66	300	25	1.65	14
61 34 67	350	25	1.25	8
68	350	25	1.25	9
69	350	25	1.25	10
61 34 70	350	25	1.65	8

High Speed Steel

How to order : CODE

Machinesaw blade, high speed steel, LENGTH, THICKNESS, TEETH per INCH

Unit Per Pc.

CODE	Specification		Thickness mm	Teeth Per Inch
	Length mm	Width mm		
61 34 76	300	25	1.25	9
77	300	25	1.25	10
78	300	25	1.25	14
61 34 79	300	25	1.65	9
80	300	25	1.65	10
81	300	25	1.65	14
61 34 82	350	25	1.25	8
83	350	25	1.25	9
84	350	25	1.25	10
61 34 85	350	31	1.25	9
86	350	31	1.25	10
61 34 87	350	25	1.65	8
88	350	25	1.65	9
89	350	25	1.65	10
61 34 90	350	31	1.25	9
91	350	31	1.25	10

19. Pin Vises / Hand Drills

Steel Pin Vises

For holding drills, taps, needles, files, etc. Jaw hardened and nickel chromed.

Unit Per Pc.

Type	CODE	No.	Maximum Jaw open mm	Overall Length mm
	61 35 01	No. 1	0 ~ 0.6	105
	02	2	0 ~ 0.9	108
	03	3	0 ~ 1.2	120
	04	4	0 ~ 1.2	100
	61 35 05	No. 5	1.3 ~ 2.2	104
	06	6	2.3 ~ 3.2	108
	07	7	3.3 ~ 4.2	112
	08	8	4.3 ~ 5.2	116
	61 35 09	No. 4A	0 ~ 1.2	110
	10	5A	1.3 ~ 2.2	115
	11	6A	2.3 ~ 3.2	120
	12	7A	3.3 ~ 4.2	125
	13	8A	4.3 ~ 5.2	130

Hand Chuck Vises

with Wood Handle

Will hold larger diameter tools than the steel pin vise. The 3 jaw chuck locks tight to any device with the indicated diameter.

Unit Per Pc.

CODE	61 35 17	61 35 18
No.	No. 1	No. 2
Jaw Opening	0 - 4 mm	0 – 6 mm

Straight Hand Drills

Three Jawed Chuck

Designed for light drilling work with a 3 jaw-chuck. Used with straight drills maximum up to 10 mm in diameter.

61 35 30	Drill, hand straight 3-jaw chuck	Pc.

Straight Breast Drills

Two-Gear & Two-Jaw

Two speed drill in one set. Will operate with straight shank drills up to 12.5 mm in diameter.

61 35 31	Drill, breast, straight 2 gear & 2 jaw	Pc.

Ratchet Type Braces

Open ratchet type, finished in high grade chrome. To be operated with straight shank drills of up to 13 mm in diameter.

61 35 32	Brace, ratchet type up to 13 mm	Pc.

20. Auger Bits / Gimlets

Auger Bits

Rafting Type

This rafting auger has a head of the flat cut type.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
61 35 36	6.5	**61 35 42**	21
37	8	**43**	24
38	9	**44**	30
39	12	**45**	36
40	15	**46**	39
61 35 41	18		

Ship Head

Widely used for construction and repair works. Made from special bit steel, heat treated and fully polished.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
61 35 51	8	**61 35 55**	18
52	10	**56**	21
53	12	**57**	24
54	15		

Machine Auger Bits

Used for large timber work and heavy construction. Made from special bit steel for use with electric drills. Shank is straight and round.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
61 35 61	6	**61 35 66**	21
62	9	**67**	24
63	12	**68**	27
64	15	**69**	30
65	18		

Japanese Gimlets

For marking or pre-holing for screws on a wooden board.

61 35 71	Gimlet, Japanese	Pc.

21. Planes / Wood Gouges

Bench Jack Planes

Cutter end and side size adjustable. Cutter size: 40 mm & 50 mm.

Unit Per Set

CODE	**61 36 01**	**61 36 02**	**61 36 03**
Width	40 mm	45 mm	50 mm

Wood Butt Chisels

The blade and socket are forged in one piece. High grade steel. Heat-treated and tempered. Select hard wood handle.

Unit Per Pc.

CODE	Blade Width mm	CODE	Blade Width mm
61 36 10	3	**61 36 15**	18
11	6	**16**	24
12	9	**17**	30
13	12	**18**	36
14	15	**19**	42

Wood Gouges

Made from high grade steel, heat-treated and tempered. Select hard wood handle.

Unit Per Pc.

CODE	Blade Width mm	CODE	Blade Width mm
61 36 25	6	**61 36 28**	15
26	9	**29**	18
27	12	**30**	24

22. Trowels / Putty Knives

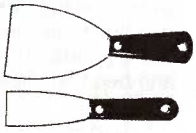
Trowels

Polished mounting securely fastened to the handle. Polished spring steel blades.

Unit Per Pc.

Heart type		Point Type	
CODE	Blade Length mm	CODE	Blade Length mm
61 36 51	145	**61 36 57**	150
52	150	**58**	165
53	160	**59**	180
54	170	**60**	195
55	180	**61**	210
61 36 56	190	**61 36 62**	225
		63	240
		64	255

Putty Knives



High carbon, cutlery steel, oil hardened blade, tempered and glaze finished.

Unit Per Pc.

CODE	Blade Width mm	CODE	Blade Width mm
61 36 71	25	**61 36 75**	75
72	40	**76**	90
73	50	**77**	100
74	65		

23. Shovels

Shovels

Square

Blade is forged in one piece from a solid bar of special treated steel for heavy duty work.

Unit Per Pc.

CODE	Overall Length mm	Blade Size Width x Length mm
61 36 85	970	240 x 300
86	1,050	250 x 367
87	1,070	270 x 395

Polycarbonate

Made from polycarbonate shovel with wooden handle. Much lighter than conventional steel shovel, but has temperature resistance and impact resistance. Overall length is 1,200 mm.

61 36 89	Shovel, polycarbonate, square, overall length 1,200 mm.	Pc.

24. Tool Belts

Electrician's Tool Belts

A high-quality leather belt with pouches specially designed for use by electricians.

61 36 91	Leather belt for electrician, With 3 tool pockets	Pc.
92	" with 4 tool pockets	"

Electrician's Tool Bags

Tools are sold separately. Available in leather and canvas.

Leather

Canvas

61 36 95	Electrician's tool bag, leather	Pc.
96	Electrician's tool bag, canvas	"

25. Pipe Benders

Pipe Benders

Made of malleable steel with preset jaws which are equipped with receiving grooves for holding the pipe to assure accurate, good fitting bends. This bender is designed with a fitting support and bending shoe so the pipes do not kink or flatten.

Unit Per Pc.

CODE	For Pipe Size		Handle Length mm
	Gas	Conduit	
61 37 01	10A	5/8 in	1,200
02	15A	3/4	1,200
03	20A	1	1,500
04	25A	1-1/4	1,700
05	30A	1-1/2	1,800
61 37 06	40A	2 in	2,000
07	50A	2-1/2	2,100

Hydraulic Pipe Benders

Portable

Designed for bending rigid conduit pipes, steel pipes, etc. Capable of making a full bend of up to 90° of 20A to 100A pipes.

Unit Per Set

CODE	Power Tons	Weight Kgs	Standard Attached Shoes
61 37 11	10	60	20A, 25A, 32A, 40A & 50A
12	20	150	65A, 80A & 100A

26. Screw Clamps / Vises

C-Type Screw Clamps

Drop forged from strong special steel and heat-treated. The screws are made from tough, wrought steel, heat-treated and threaded for strength and rapid adjustment.

Unit Per Pc.

CODE	Opening mm	CODE	Opening mm
61 37 16	25	**61 37 21**	125
17	38	**22**	150
18	50	**23**	200
19	75	**24**	250
20	100	**25**	300

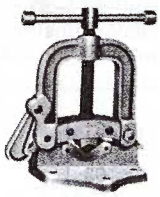
Hand Vises

Drop forged from strong special steel. For holding tools, etc. firmly by hand. The opening size is about the same size as the jaw width.

Unit Per Pc.

CODE	Opening	Overall Length mm	CODE	Opening	Overall Length mm
61 37 51	25 mm	100 mm	**61 37 53**	38 mm	150 mm
52	32	125			

Pipe Vises



Both upper and lower jaws are made of specially selected tool steel and will not wear out. The vise frame is made of malleable iron. The base has a flat bottom and can be mounted on any plain surface.

Unit Per Set

CODE	Nominal Size	Capacity mm	Height mm
61 37 55	50	10 - 60.5	240
56	80	10 - 77	280
57	105	10 - 102	335
58	130	10 - 128	390
59	170	10 - 166	480

Pipe Vises with Stand

This portable pipe vise has been designed for use in areas where a permanent installed vise is not available. Has a folding stand which keeps good balance during working operation.

Unit Per Set

CODE	For Pipe Hold Size	Height mm	Weight kgs
61 37 62	8A - 50A	1,100	12.5
63	10A - 90A	1,180	17.0

Clamp Base Vises

A handy portable vise. The body is made of cast iron and the jaws are made from a solid cube of steel.

Unit Per Pc.

CODE	Jaws	
	Width mm	Opening mm
61 37 65	40	40
66	50	50
67	63	57
68	75	60

Parallel Bench Vises

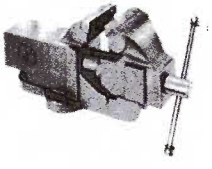
Square Cylinder

The body of this square cylinder bench vise is made of forged cast iron. The jaws are made of a replaceable alloy steel. This vise is convertible between stationary and swivel type by simply attaching or removing the swivel base assembly.

Unit Per Pc.

CODE	Jaws			Weight kgs
	Width mm	Opening mm	Depth mm	
61 37 70	57	60	39	2.7
71	65	65	44	3.9
72	77	82	50	5.6
73	90	92	61	9.5
74	103	117	76	14.6
61 37 75	116	135	79	19.8
76	128	162	82	22.5
77	152	200	90	31.1
78	206	240	100	38.8
79	255	300	140	68.4

Round Cylinder

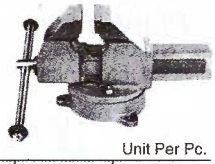


The body and slidings are made of specially selected, shock resistant high quality cast iron. Built for heavy duty use and designed for accuracy. The jaws are made of heat-treated steel and are replaceable. Handles have finger protecting rubber grommets on each end. This vise can be also used in connection with a swivel base.

Unit Per Pc.

CODE	Jaws			Weight kgs
	Width mm	Opening mm	Depth mm	
61 37 81	85	85	65	10
82	110	110	83	18
83	127	125	95	26
84	153	150	100	36
85	215	200	114	85

With Swivel Base



These vises can easily be rotated on their base by turning a clasp and then fixed in the most convenient position for the job.

Unit Per Pc.

CODE	Jaws		Length mm	Height mm	Weight kgs
	Width mm	Opening mm			
61 37 86	100	135	370	190	14.5
87	140	180	470	230	27.0

Swivel Bases, Assembly

Sturdily constructed, the swivel base vises 61 37 73 and larger rotate a full 360°, while 61 37 72 and smaller rotate only 280°. They can be positively locked by simple adjustment of the locking attachment.

For 61 37 70 - 72
Vise size 280°

For 61 37 73 - 79
Vise size 360°

61 37 88	Swivel base assembly for 61 37 70 – 72, 280°	Pc.
89	Swivel base assembly for 61 37 73 – 79, 360°	"

Vise Jaw Pads

Magnet Type

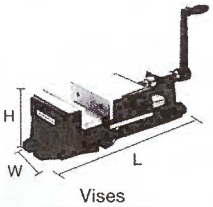
Protect fine work in vises with corrugated jaw facings. A piece of aluminium angle with two magnets make the piece stick fast to the jaw, converting any reed vise jaw face to a smooth and soft surface. 3 sizes available. When you request the vise jaw pads fixed with screw, please specify exact dimensions of screw size, number of screws and distance of screws.

Unit Per Pr.

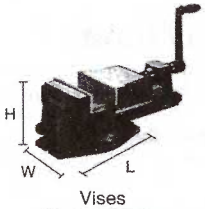
CODE	Width	Material	CODE	Width	Material
61 37 91	100 mm	Aluminium	**61 37 93**	150 mm	Aluminium
92	125 mm				

Milling Vises

Suitable to hold small parts for milling on the milling machine. F type : Fixed base, K type : with Swivel base.



Vises
Milling F Type



Vises
Milling K Type

Unit Per Pc.

CODE	Jaw	Body	Max. Clamping Power (kN)	Weight Kgs
	W x Open x Depth mm	L x W x H mm		
F Type (Fixed Base)				
61 37 41	102 x 65 x 35	310 x 123 x 84	7.84	8
42	132 x 82 x 37	382 x 148 x 98	9.80	12
43	153 x 112 x 43	465 x 183 x 109	12.74	21
44	204 x 146 x 63	608 x 233 x 145	16.66	43
K Type (with Swivel Base)				
61 37 46	102 x 65 x 35	310 x 123 x 84	7.84	8
47	132 x 82 x 37	382 x 148 x 98	9.80	12
48	153 x 112 x 43	465 x 183 x 109	12.74	21
49	204 x 146 x 63	608 x 233 x 145	16.66	43

27. Tool Boxes / Part Cabinets

Handy Tool Sets

Basic tool set furnished in a carrying case contains the necessary tools for mechanics to perform daily maintenance activities.

61 38 01

61 38 02

Contents in One Set

61 38 01		61 38 02	
Diagonal Cutting Plier	125 mm	Diagonal Cutting Plier	150 mm
Long Nose Plier	150 mm	Long Nose Plier	150 mm
Side Cutting Plier	150 mm	Side Cutting Plier	150 mm
Screwdriver Set (handle in neon)		Tweezers	
Handle only		Adjustable Wrench	150 mm
Tweezers	150 mm	Screwdriver 5.5 x	100 mm
Adjustable Wrench	150 mm	Screwdriver 4.5 x	100 mm
Soldering Iron, 100V 30W		Screwdriver 2.6 x	100 mm
Solder, Paste, Punch,		Phillips Screwdriver	100 mm
Chisel, Pencil, Duster-Cloth		Nut Driver	5.5 mm
		Alignment Driver	150 mm
		File (Flat and Round)	
		Soldering Iron, 100V 60W	
		Solder Tip Cleaner	
		Heat Sink	
		Solder Aid (2-Pcs.)	
		Convex Rule, Solder	

61 38 01	Handy tool set carrying case Contains 14 tools	Set
61 38 02	Handy tool set carrying case Contains 20 tools	"

Tool Boxes

Various types of tool boxes and tool cabinets made of steel or plastic are available.

Steel Tool Boxes

Spare Parts Box

Suitcase

Quonset

V-Type

Unit Per Pc.

CODE	Shape	Dimensions in mm Length x Width x Height
61 38 05	Spare Parts Boxes	200 x 150 x 100
06		350 x 200 x 200
07		400 x 400 x 150
08		400 x 400 x 300
09		800 x 400 x 300
61 38 10	Suitcase	260 x 135 x 75
11		300 x 160 x 75
12		360 x 200 x 75
61 38 13	Quonset	260 x 120 x 100
14		290 x 150 x 100
15		350 x 150 x 100
61 38 16	V-Type	540 x 210 x 190
17		700 x 210 x 190

Plastic Tool Boxes

Rectangular box with Drawers

V-Type

Unit Per Pc.

CODE	Shape	Dimensions in mm Length x Width x Height
61 38 19	Rectangular Box with Drawers	420 x 240 x 330
20	V-Type	450 x 270 x 230

Parts Cabinets

Transparent, hard plastic drawers encased in a steel frame. The front of the drawers are transparent making it easy to locate the contents.

Plastic Drawer

Unit Per Set

CODE	Drawers	Size W x D x H mm
61 38 21	10	243 x 238 x 253
22	15	358 x 238 x 253
23	24	358 x 238 x 379
61 38 24	40	487 x 238 x 500
25	72	487 x 238 x 880
26	72	555 x 275 x 880
61 38 27	21	440 x 275 x 570
28	36	574 x 272 x 690
29	48	574 x 272 x 880

Steel made drawers encased in a steel frame.

Steel Drawer

Unit Per Set

CODE	Drawers	Size W x D x H mm
61 38 31	10	245 x 240 x 255
32	15	360 x 240 x 255
33	24	360 x 240 x 380
34	40	477 x 240 x 465
35	72	475 x 240 x 870

Plastic Parts Cases

Suitcase type parts case made of plastic. The inside is divided into small compartments.

61 38 36

61 38 37

Unit Per Pc.

CODE	Size W x D x H mm	Compartments
61 38 36	333 x 228 x 72	16
37	360 x 252 x 104	15

Plastic Multi Tool Boxes

Suitable for storing small parts, hand tools, bolts, etc. dividing the size or colour of each item.

Unit Per Pc.

CODE	Colour	Capacity ltr	Size mm Width x Depth x Height
61 38 41	Red	1.0	113 x 201 x 75
42	Blue		

(to be continued)

Unit Per Pc.

CODE	Colour	Capacity ltr	Size mm Width x Depth x Height
61 38 43	Blue	2.4	150 x 201 x 125
44	Yellow		
61 38 45	Blue	5.1	143 x 401 x 140
46		10.3	225 x 400 x 175
47		22.3	450 x 400 x 175

Tools & Parts Cabinets

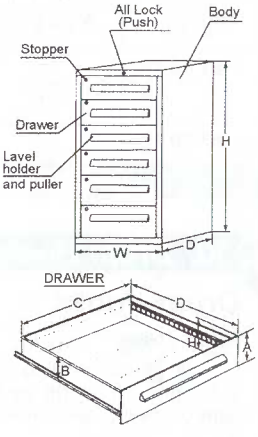
Designed, engineered and built to industrial standards to withstand continuous and rugged service. Suitable for use in marine storage systems. As a wide range of fabrications of models are possible, please ask or write for catalogues before ordering.

Master Tools & Parts Cabinets

The system cabinet consists of 4 standard body sizes and 5 standard drawer sizes, and by their combination, adjusting the drawer rail position, many types of cabinets can be fabricated.

Storing capacity is up to 1,000 kgs. Comes equipped with a device to prevent the cabinet from moving when the ship is pitching and rolling.

The standard sizes of the bodies and drawers are as follows.



Cabinet Body

How to order : CODE

Master tools & parts cabinet body, steel, HEIGHT, WIDTH, DEPTH

Unit Per Pc.

CODE	Height mm	Width mm	Depth mm
61 38 51	902	713	711
52	1,002	713	711
53	1,202	713	711
54	1,402	713	711

Cabinet Drawer Only

How to order : CODE

Master tools & parts cabinet drawer, steel, SIZE A, C and D mm

Unit Per Pc.

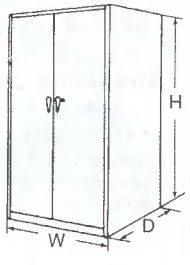
CODE	A mm	B mm	C mm	D mm	H mm
61 38 55	150	90	600	600	125
56	200	140	600	600	175
57	250	140	600	600	225
58	300	200	600	600	275
59	350	200	600	600	325

Master Tools & Parts Lockers

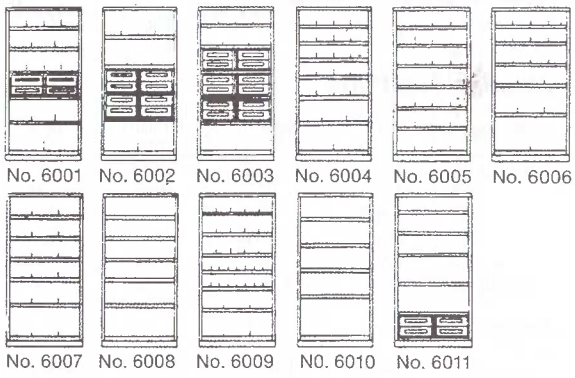
Equipped with full height locking doors, adjustable shelves, and separators. There are 11 standard models whose inside arrangements are illustrated below.

Locker Size

H mm	W mm	D mm
1,800	900	600



ELEVEN TYPE LOCKER



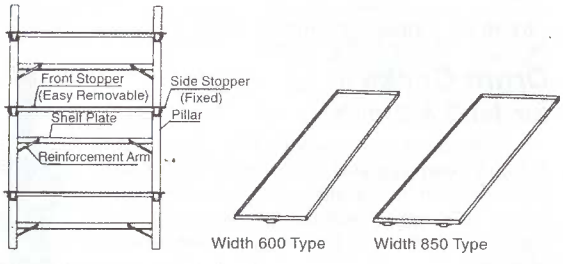
Master Tools & Parts Locker

Unit Per Set

CODE	Type No.	Weight kgs	CODE	Type No.	Weight kgs
61 38 61	6001	145	**61 38 67**	6007	124
62	6002	152	**68**	6008	112
63	6003	179	**69**	6009	142
64	6004	134	**70**	6010	105
65	6005	136	**71**	6011	133
61 38 66	6006	125			

Shelves:

Standard types are illustrated below, but the number of plates can vary. Also, free spacing plates are available. Specify the type required by the shelf and frame dimensions listed below.



How to order : CODE

Shelves, steel, WIDTH, DEPTH, and HEIGHT mm

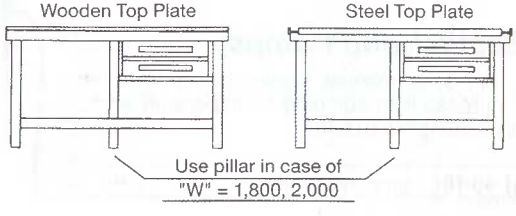
Shelf

Unit Per Set

CODE	Width mm	Depth mm	Height mm	Weight Kgs	Capacity Kgs
61 38 75	1,200	600	2,300	124	540
76	1,200	850	2,300	160	360
77	1,400	600	2,300	137	490
78	1,400	850	2,300	178	330
79	1,600	600	2,300	149	440
61 38 80	1,600	850	2,300	196	300

Work Benches

Heavy duty design for use in the Engine Room. Wooden top plate and steel top plate types are available.



How to order : CODE

Work bench, steel, TYPE of TOP PLATE, WIDTH, DEPTH and HEIGHT mm

Wooden Top Plate

Unit Per Set

CODE	Width mm	Depth mm	Height mm	Weight Kgs
61 38 85	1,000	700	800	154
86	1,500	700	800	189
87	1,800	700	800	222
88	2,000	700	800	234
89	2,000	1,000	800	270
61 38 90	1,800	1,000	800	256

Steel Top Plate

Unit Per Set

CODE	Width mm	Depth mm	Height mm	Weight Kgs
61 38 91	1,000	700	800	165
92	1,500	700	800	202
93	1,800	700	800	237
94	2,000	700	800	251
95	2,000	1,000	800	280
61 38 96	1,800	1,000	800	265

28. Drum Opening Spanners / Drum Cocks

Drum Opening Spanners

Malleable Steel

A tool designed for opening drums, plugs and caps in an easier, quicker and safer way.

61 40 01	Spanner, drum opening	Pc.

Drum Cocks

for 1-1/2 & 2 inch

Drum cock has inversive fittings, one of a 1-1/2" thread size and the other of a 2" thread size. Will fit to all kinds of drums and can safely hold oil, gasoline, kerosene, alcohol, light varnishes, clear lacquers, and solvents of all kinds.

61 40 04	Cock, drum oil, adjustable 1-1/2 & 2 inch	Pc.

29. Drum Pumps

Rotary Hand Pumps

Economical and durable barrel and refueling pump unit complete with spout, suction pipe and bung attachment. Most often used for dispensing light to medium grade cutting and lubricating oils, solvents, and fuels.

61 40 06	Rotary hand pump 3/4 inch	Pc.
61 40 07	" 1 "	"

Plastic Hand Pumps

A plastic, manual, suction pump; used for all purpose light pumping or dispensing work. Overall length 540 mm.

61 40 10	Pump, hand, plastic	Pc.

Plastic Hand Pumps for Drum

Same as above but of a larger size. Overall length is 1,200 mm.

61 40 11	Pump, hand plastic for drum	Pc.

Wing Pumps, Hand Operated

This semi-rotary pump will produce a steady stream of liquid. A double blade impeller assures a high pumping rate with greater efficiency. To be installed between pipes.

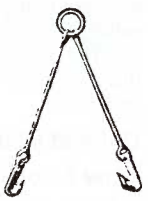
Unit Per Pc.

CODE	Pipe Size mm	Capacity per Minute ltr	Weight Kgs
61 40 14	15	14	4.7
15	20	18	6
16	25	28	8
61 40 17	32	36	12
18	40	54	17
19	50	75	27

30. Drum Hooks / Lifting Clamps

Drum Hooks

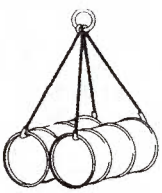
For 1 Drum



Designed for lifting drum barrels with a hanging drum rib by hooks. Hooks with wire or chain can be made to order if required.

61 40 25	Drum hook, chain, for one drum	Set

For 2 Drums



Quadruple chain sling with master link & drum hooks for lifting two drum barrels simultaneously.

61 40 26	Drum hook, chain, for 2 drums	Set

Clamps

Drum Clamp

Designed to accommodate a large variety of drums with or without the lids removed. Drums can be lifted from a horizontal or vertical position and can also be reversed.

Max. Jaw Opening mm	Capacity Tons	Weight Kgs
18	0.5	2

61 40 28	Clamp, drum, capacity 0.5 ton	Pc.

Steel Plate Clamp

Suitable for use in the vertical lifting of steel plates. Please specify the model type required based upon the size of the jaw opening and the lifting capacity of the clamp.

Unit Per Pc.

CODE	Capacity Tons	Max. Jaw Opening	Eye ID mm	Weight Kgs
61 40 30	0.5	22	35	1.5
31	1	28	46	3
32	2	35	61	6
33	3	41	74	9
34	5	54	92	18

Steel Structure Clamp

Suitable for use in lifting steel structures such as H, I, [, L and T shaped steel. Please specify the model type required based upon the size of the jaw opening and the lifting capacity of the clamp.

Unit Per Pc.

CODE	Capacity Tons	Jaw Opening mm	Eye ID mm	Weight Kgs
61 40 37	1	1 - 13	23	1.5
38	2	3 - 22	30	3.7
39	3	22 - 45	36	8.1

31. Hose Bands / Pipe Clamps

Hose Bands

An extremely flexible one piece hose band that gives perfect circumference contact even on irregular surfaces. Made from galvanized steel and stainless steel sealed by gear drive principle, this heavy duty clamp will assure a leak proof seal. When ordering, please indicate the outside diameter of the corresponding hose.

Steel

Unit Per Pc.

CODE	Size mm	CODE	Size mm	CODE	Size mm
61 40 51	8-14	**61 40 55**	22-32	**61 40 59**	68 - 85
52	11-17	**56**	32-44	**60**	77 - 95
53	13-20	**57**	46-56	**61**	87 - 112
54	15-24	**58**	58-75		

Stainless Steel

Unit Per Pc.

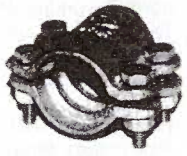
CODE	Size mm	CODE	Size mm	CODE	Size mm
61 40 65	8-14	**61 40 69**	22-32	**61 40 73**	68 - 85
66	11-17	**70**	32-44	**74**	77 - 95
67	13-20	**71**	46-56	**75**	87 - 112
68	15-24	**72**	58-75		

Hose Bands

Extra Heavy Duty

Double Bolt

Made from malleable iron.



Interlock

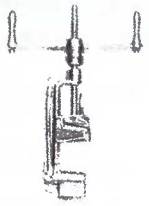
Made from structural steel.

Unit Per Pc.

Double Bolt Type				Interlock Type	
CODE	For Hose O.D. mm	CODE	For Hose O.D. mm	CODE	For Hose O.D. mm
61 37 94	30 - 40	**61 40 86**	140-153	**61 40 92**	31.0 - 35.0
99	35 - 45	**61 38 40**	155-165	**93**	40.0 - 44.0
61 38 00	40 - 50	**61 40 87**	165-175	**94**	47.5 - 52.5
03	45 - 55	**61 38 48**	170-180	**95**	56.5 - 60.5
04	50 - 60	**49**	180-190	**96**	73.0 - 77.0
61 40 80	60 - 65	**61 40 88**	195-205		
61 38 18	65 - 75	**61 38 50**	200-210		
61 40 81	78 - 85	**61 40 89**	215-225		
82	85 - 95	**61 38 60**	220-230		
83	90 - 100	**72**	230-240		
61 38 30	100 - 110	**61 38 73**	240-250		
38	115 - 125	**61 40 90**	285-300		
39	135 - 145				

Banding Clamps & Tools

These products have a wide range of applications for hose and pipe fastening and are used in almost all industries. Tensioning tools, band, buckles, performed clamps, hose couplings, mounting brackets, accessories and spare parts offer a universal and economical fastening system. The products will connect, clamp, fasten, secure and fix hose, pipe, cables, signs, boards, etc.



Banding Tool

Banding Band

Banding Buckle

Banding Screw Buckle

Banding Tool : Tensioning capability over 1 ton weight 2 kgs.

Banding Band : 30 mtrs/roll of 5 sizes stainless steel made.

Banding Buckle : 100 pcs/box of 5 sizes stainless steel made.

Banding Screw Buckle : 50 and 25 pcs/box 4 sizes.

CODE	Description		Unit
61 41 01	Banding Tool		Set
		Width x Length	
61 41 03	Banding Band, S.Steel	6.4 mm x 30 Mtrs	Roll
04	"	9.5 " x 30 "	"
05	"	12.7 " x 30 "	"
06	"	16.0 " x 30 "	"
07	"	19.0 " x 30 "	"
		Width x Pcs	
61 41 09	Banding Buckle, S.Steel	6.4 mm x 100 Pcs	Box
10	"	9.5 " x 100 "	"
11	"	12.7 " x 100 "	"
12	"	16.0 " x 100 "	"
13	"	19.0 " x 100 "	"
		Width x Pcs	
61 41 15	Banding Screw, Buckle	6.4 mm x 50 Pcs	Box
16	"	9.5 " x 50 "	"
17	"	12.7 " x 25 "	"
18	"	16.0 " x 25 "	"
19	"	19.0 " x 25 "	"

Straub Couplings

A very useful clamp for connecting pipes easily and quickly without using pipe fittings or doing welding work. Designed for use with casing, rubber sleeve, bolt nut and washers. A grip type and flexible type are available.

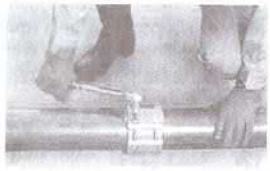
Grip Type

Flex Type

Main Material	Stainless Steel SUS 316, 304 & Galvanized	
Rubber Sleevs	EPDM	For Seawater, Air, Inert Gas, etc.
	NBR	For Oil, Organic Gas
Working Pressure	Up to 16 kgs/cm²	

EPDM denotes Ethylene Propylene Diene Rubber

NBR denotes Acrylonitrile-butadiene Rubber



How to order : CODE

Pipe coupling, Straub, grip type(Grip-L or Metal Grip), MATERIAL of SLEEVE, NOMINAL SIZE

Unit Per Pc.

Straub-Grip-L Type

Rubber (EPDM) Sleeve			Rubber (NBR) Sleeve		
CODE	Nominal Size	Pipe OD mm	CODE	Nominal Size	Pipe OD mm
61 41 20	20A	26 - 28	**61 41 26**	20A	26 - 28
21	25	33 - 35	**27**	25	33 - 35
22	32	37 - 39	**28**	32	37 - 39
23	40	47 - 49	**29**	40	47 - 49
31	50	57 - 61	**41**	50	57 - 61
61 41 32	65	74 - 78	**61 41 42**	65	74 - 78
33	80	87 - 93	**43**	80	87 - 93
34	100	112 - 118	**44**	100	112 - 118
35	125	137 - 142	**45**	125	137 - 142
36	150	165 - 171*	**46**	150	165 - 171*
61 41 24	200	217 - 221**	**61 41 30**	200	217 - 221**
25	250	270 - 276***	**37**	250	270 - 276***

Working Pressure: * 13 bar, ** 10 bar, *** 4 bar

Unit Per Pc.

Straub-Metal-Grip Type - Significantly stronger design

Rubber (EPDM) Sleeve			Rubber (NBR) Sleeve		
CODE	Nominal Size	Pipe OD mm	CODE	Nominal Size	Pipe OD mm
61 41 38	150	165 - 171*	**61 41 47**	150	165 - 171*
39	200	217 - 221**	**48**	200	217 - 221**
40	250	270 - 276***	**49**	250	270 - 276***

Working Pressure: *16 bar (SUS304), **16 bar (SUS304), ***12 bar (Galvanized)

How to order : CODE

Pipe coupling, Straub, flex type, MATERIAL of SLEEVE, NOMINAL SIZE

Unit Per Pc.

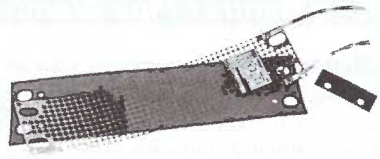
Straub-Flex Type

Rubber (EPDM) Sleeve			Rubber (NBR) Sleeve		
CODE	Nominal Size	Pipe OD mm	CODE	Nominal Size	Pipe OD mm
61 41 59	40A	47 - 50	**61 41 69**	40A	47 - 50
50	50	57 - 61	**60**	50	57 - 61
51	65	74 - 78	**61**	65	74 - 78
52	80	87 - 93	**62**	80	87 - 93
53	100	112 - 118	**63**	100	112 - 118
61 41 54	125	137 - 142	**61 41 64**	125	137 - 142
55	150	165 - 171	**65**	150	165 - 171
56	200	211 - 221*	**66**	200	211 - 221*
57	250	263 - 273**	**67**	250	263 - 273**
58	300	314 - 324***	**68**	300	314 - 324***

Working Pressure:* 10 bar, ** 8 bar, *** 7 bar

Fire Proof Jackets for Straub Coupling

The Fire Proof Jacket can be added to Straub Couplings that have already been installed, quickly and easily upgraded to the Fire-Fence version, in case fire protection is required. Available for models Straub-Metal-Grip and Straub Grip-L. Please specify the size of coupling when ordering.



How to order : CODE

Straub-FireFence Upgrade Kit to Straub-Metal-Grip or Straub-Grip-L coupling, NOMINAL SIZE

Unit Per Pc.

Straub-FireFence Upgrade Kit

to Straub-Grip-L Couplings			to Straub-Metal-Grip Couplings		
CODE	Nominal Size	Pipe OD mm	CODE	Nominal Size	Pipe OD mm
61 42 71	20A	26.9	**61 42 83**	20A	26.9
72	25	33.7	**84**	25	33.7
73	32	38.0	**85**	32	38.0
74	40	48.3	**86**	40	48.3
75	50	60.3	**87**	50	60.3
61 42 76	65	76.1	**61 42 88**	65	76.1
77	80	88.9	**89**	80	88.9
78	100	114.3	**90**	100	114.3
79	125	139.7	**91**	125	139.7
80	150	168.3	**92**	150	168.3
61 42 81	200	219.1	**61 42 93**	200	219.1
82	250	273.0	**94**	250	273.0

Straub Clamps

A clamp for the quick repair of pit holes, punctures or splits in steel pipe. Repairs leaks on water, gas, oil and pressure steam lines up to normal working pressure 16 kgf/cm². The features are the same as the Straub Couplings. Coupling material is Stainless Steel SUS316.

How to order : CODE

Pipe clamp, Straub, MATERIAL of SLEEVE, NOMINAL SIZE

Unit Per Pc.

Straub-Open-Flex Type

Rubber (EPDM) Sleeve			Rubber (NBR) Sleeve		
CODE	Nominal Size	Pipe OD mm	CODE	Nominal Size	Pipe OD mm
61 41 79	40A	47 - 50	**61 41 89**	40A	47- 50
70	50	57 - 61	**80**	50	57- 61
71	65	74 - 78	**81**	65	74- 78
72	80	87 - 93	**82**	80	87 - 93
73	100	112 - 118	**83**	100	112 - 118
61 41 74	125	137 - 142	**61 41 84**	125	137 - 142
75	150	165 - 171	**85**	150	165 - 171
76	200	211 - 221*	**86**	200	211 - 221*
77	250	263 - 273**	**87**	250	263 - 273**
78	300	314 - 324***	**88**	300	314 - 324***

Working Pressure:* 10 bar, ** 8 bar, *** 7 bar

Rapid Response Clamps

The fastest and easiest way to temporarily repair pipe leaks and bursts. Taking less than 60 seconds to install by one operator and featuring a fully self contained design, which does not require the use of tools. Made from marine-grade stainless steel and featuring an innovative patented design, the system features a choice of three grades of material in the lip-seal, making it suitable for water, potable water, steam, gas and most chemicals/petroleum liquids.

It fits pipe sizes ranging from 1.5" - 36" (DN38 mm - DN930 mm) and is available in four clamp widths, with each covering a wide range of diameters. It is a reusable repair clamp and can be applied to pressurized pipes up to 20 bar. Clamps are all ABS approved.

Material Specification

Casing	Stainless Steel SS 316
Lip-Seal	Nitrile, Neoprene or Therban
Working Temperature	Up to 165 DEG C

How to order : CODE

Rapid Response Clamp, NOMINAL SIZE, CLAMP WIDTH, SEAL (NITRILE, NEOPRENE or THERBAN)

Unit Per Pc.

CODE	Pipe Dia to Seal mm (inch)	Clamp Width (mm)	Effective Seal Width (mm)	Number of Cam Lock Handles
61 53 01		70	40	Single (1)
02	38 - 75	148	118	Double (2)
03	(1.5" - 3")	210	180	Triple (3)
04		272	242	Quad (4)
61 53 09		70	40	Single (1)
10	75 - 100	148	118	Double (2)
11	(3" - 4")	210	180	Triple (3)
12		272	242	Quad (4)
61 53 13		70	40	Single (1)
14	100 - 220	148	118	Double (2)
15	(4" - 8")	210	180	Triple (3)
16		272	242	Quad (4)
61 53 17		70	40	Single (1)
18	220 - 350	148	118	Double (2)
19	(8" - 14")	210	180	Triple (3)
20		272	242	Quad (4)

(to be continued)

Unit Per Pc.

CODE	Pipe Dia to Seal mm (inch)	Clamp Width (mm)	Effective Seal Width (mm)	Number of Cam Lock Handles
61 53 21		70	40	Single (1)
22	350 - 500	148	118	Double (2)
23	(14" - 20")	210	180	Triple (3)
24		272	242	Quad (4)

*Larger sizes up to DN930 (36") are available upon request.
Name of Mfr.: World Wide Metric Inc.

Fire Resistant Couplings Teekay Axilock-FP

The Teekay Axilock-FP represents the ultimate in high security fire protected mechanical pipe couplings. With its unique internal fire sleeve and double casing design, it is plain to see why this coupling is the primary pipe connection of choice in the marine and naval market sectors. The Axilock-FP has been tested to military standards for shock and fire resistance and is fully compliant with current IACS regulations, including ISO19921/19922 fire testing and ISO1182 non-combustibility testing.

- Available in two types for material selection, Type I(AISI 304) and Type IV(AISI 316L). Type approved by all the major marine classification bodies so please specify the ship classification when ordering.

Material Specification

	Type I	Type IV
Casing	AISI 304/DIN 1.4301	AISI 316L/DIN 1.4301
Fasteners	Alloy Steel, PTFE Coated	AISI 316 / 316L
Gasket	EPDM (NBR is available on request)	
Working Pressure	16 Bar	

How to order : CODE

Pipe coupling, TEEKAY Axilock-FP, Fire Resistant, NOMINAL SIZE, MATERIAL (Type I or Type IV), GASKET (EPDM or NBR), and SPECIFY THE SHIP'S CLASSIFICATION

Unit Per Pc.

CODE	Pipe OD (mm)	O.D. Tolerance (mm)	CODE	Pipe OD (mm)	O.D. Tolerance (mm)
61 42 30	21.3	21.0 - 21.6	**61 42 51**	98.0	97.0 -100.0
31	26.9	26.6 - 27.3	**52**	101.6	100.5 -103.5
32	28.0	27.7 - 28.4	**53**	104.0	103.0 -106.0
33	30.0	29.7 - 30.4	**54**	108.0	107.0 - 110.0
34	33.7	33.3 - 34.1	**55**	110.0	109.0 - 112.0
61 42 35	35.0	34.7 - 35.4	**61 42 56**	114.3	113.0 - 116.0
36	38.0	37.0 - 39.0	**57**	118.0	117.0 - 120.0
37	42.4	41.4 - 43.4	**58**	127.0	126.0 - 129.0
38	44.5	43.5 - 45.5	**59**	129.0	128.0 - 131.0
39	48.3	47.3 - 49.3	**60**	133.0	132.0 -135.0
61 42 40	54.0	53.0 - 55.0	**61 42 61**	139.7	139.0 - 142.0
41	57.0	56.0 - 58.0	**62**	141.3	140.5 -143.5
42	60.3	59.0 - 62.0	**63**	144.0	143.0 -146.0
43	63.0	62.0 - 65.0	**64**	154.0	153.0 -156.0
44	67.0	66.0 - 69.0	**65**	159.0	158.0 - 161.0
61 42 45	70.0	69.0 - 72.0	**61 42 66**	165.0	164.0 - 167.0
46	73.0	72.0 - 75.0	**67**	168.3	167.0 -170.0
47	76.1	75.0 - 78.0	**68**	170.0	169.0 - 172.0
48	82.5	81.5 - 84.5	**69**	193.7	193.0 -196.0
49	84.0	83.0 - 86.0	**70**	219.1	218.0 -221.0
61 42 50	88.9	88.0 - 91.0			

Note: Working pressure for pipe OD 193.7 mm and 219.1 mm is 12 Bar
Name of Mfr.: Teekay Couplings Ltd.

Repair Clamp Joints for Elbow Pipe

To protect and repair the leakage on cracked or welded elbow (tee, cross) pipes line.

Unit Per Pc.

EPDM GASKET

CODE	Size	Length mm	W/P kgf/cm²	T.Q. (N.m)
61 40 08	15A	26.3	18	3 - 5
09	20A	26.3	18	3 - 5
12	25A	26.3	18	3 - 5
13	32A	26.3	18	3 - 5
20	40A	26.3	16	3 - 5
61 40 21	50A	41.8	16	12 - 15
22	65A	41.8	15	12 - 15
23	80A	52.4	15	20 - 25
24	100A	52.4	15	20 - 25
27	125A	52.4	15	30 - 32
61 40 29	150A	57.5	16	30 - 32
35	200A	57.5	10	32 - 35
36	250A	57.5	10	32 - 35
40	300A	57.5	10	45 - 50
41	350A	57.5	10	45 - 50
61 40 42	400A	57.5	10	55 - 60
43	450A	57.5	7	55 - 60
44	500A	57.5	7	65 - 70

Name of Mfr. : Youngnam Metal Co., Ltd.

Unit Per Pc.

NBR GASKET

CODE	Size	Length mm	W/P kgf/cm²	T.Q. (N.m)
61 40 45	15A	26.3	18	3 - 5
46	20A	26.3	18	3 - 5
47	25A	26.3	18	3 - 5
48	32A	26.3	18	3 - 5
49	40A	26.3	16	3 - 5
61 40 50	50A	41.8	16	12 - 15
62	65A	41.8	15	12 - 15
63	80A	52.4	15	20 - 25
64	100A	52.4	15	20 - 25
76	125A	52.4	15	30 - 32
61 40 77	150A	57.5	16	30 - 32
78	200A	57.5	10	32 - 35
79	250A	57.5	10	32 - 35
91	300A	57.5	10	45 - 50
97	350A	57.5	10	45 - 50
61 40 98	400A	57.5	10	55 - 60
99	450A	57.5	7	55 - 60
61 41 00	500A	57.5	7	65 - 70

Name of Mfr. : Youngnam Metal Co., Ltd.

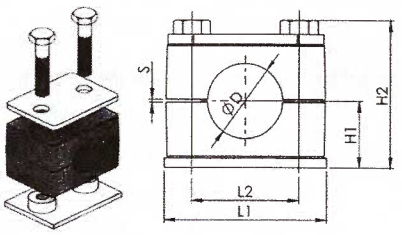
Tube Clamps

Tube clamps help prevent the loosening of joints and welds by reducing noise, absorbing shock and dampening vibration. In addition to preventing vibration transmission, they provide solid support that eases the stress caused by unequal movements in tubing installations. Clamp kits for each series include: clamp body, weld plate, cover plate and bolts.

Clamps are available in metric and imperial sizes. Hardware available in Metric or UNC Thread, as well as steel or stainless steel.

Standard Series (According to DIN 3015/1)

For average load and moderate vibration installations. Ideal for mobile equipment, machine tools and instrumentation plumbing applications.



Materials

Clamp body : Polypropylene
Cover plates : Galvanized steel (ST-37)
Screws/Bolts : Galvanized steel (ST-37)
Weld plates : Phosphated steel (ST-37)
"Kits are also available with Stainless steel hardware."

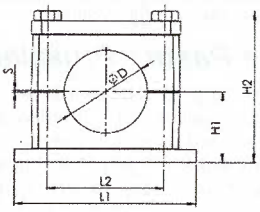
Unit Per Pc.

CODE	Size D mm	Nom.	Inch	Dimensions mm L1	L2	H1	H2	S
Group S1								
61 38 74	6	-	-	36	20	16.5	37	0.4
81	6.4	-	1/4					
82	8	-	5/16					
83	9.5	-	3/8					
84	10	R 1/8	-					
97	12	-	-					
Group S2								
61 38 98	12.7	-	1/2	42	26	19.5	43	0.6
99	13.5	R 1/4	-					
61 39 00	14	-	-					
01	15	-	-					
02	16	-	5/8					
03	17.2	R 3/8	-					
04	18	-	-					
Group S3								
61 39 05	19	-	3/4	50	33	21	46	0.6
06	20	-	-					
07	21.3	R 1/2	-					
08	22	-	7/8					
09	23	-	-					
10	25	-	-					
11	25.4	-	1					
Group S4								
61 39 12	26.9	R 3/4	-	60	40	24	52	0.6
13	28	-	-					
14	30	-	-					
Group S5								
61 39 15	32	-	1-1/4	71	52	32	68	0.8
16	33.7	R 1	-					
17	35	-	-					
18	38	-	1-1/2					
19	40	-	-					
20	42	R 1-1/4	-					
Group S6								
61 39 21	44.5	-	1-3/4	86	66	36	76	0.8
22	48.3	R 1-1/2	-					
23	50.8	-	2					
Group S7								
61 39 24	57.2	-	2-1/4	122	94	51.5	107	0.8
25	60.3	R 2	-					
26	63.5	-	2-1/2					
27	70	-	2-3/4					
28	73	-	-					
29	76.1	R 2-1/2	3					
Group S8								
61 39 30	88.9	R 3	3-1/2	148	120	64	132	0.8
31	101.6	-	4					

Name of Mfr. : World Wide Metric

Heavy Series (According to DIN 3015/2)

For higher load and vibration installations. Applications include primary metal manufacturing and heavy-duty construction or mining equipment.



Materials

Clamp body : Polypropylene
Cover plates : Galvanized steel (ST-37)
Screws/Bolts : Galvanized steel (ST-37)
Weld plates : Phosphated steel (ST-37)
"Kits are also available with Stainless steel hardware."

Unit Per Pc.

CODE	Size D mm	Nom.	Inch	Dimensions mm				
				L1	L2	H1	H2	S
Group H1								
61 39 32	6	-	-					
33	6.4	-	1/4					
34	8	-	5/16					
35	9.5	-	3/8					
36	10	R 1/8	-					
37	12	-	-					
38	12.7	-	1/2	74	33	24	55	0.6
39	13.5	R 1/4	-					
40	14	-	-					
41	15	-	-					
42	16	-	5/8					
43	17.2	R 3/8	-					
44	18	-	-					
Group H2								
61 39 45	19	-	3/4					
46	20	-	-					
47	21.3	R 1/2	-					
48	22	-	7/8					
49	25	-	-	86	45	32	71	0.6
50	25.4	-	1					
51	26.9	R 3/4	-					
52	28	-	-					
53	30	-	-					
Group H3								
61 39 54	32	-	1-1/4					
55	33.7	R 1	-					
56	35	-	-					
57	38	-	1-1/2	100	60	38	83	0.6
58	40	-	-					
59	42	R 1-1/4	-					
Group H4								
61 39 60	44.5	-	1-3/4					
61	48.3	R 1-1/2	-					
62	50.8	-	2					
63	55	-	-					
64	57	-	2-1/4	140	90	54.5	117	2
65	60.3	R 2	-					
66	63.5	-	2-1/2					
67	65	-	-					
68	70	-	2-3/4					
Group H5								
61 39 69	73	-	2-7/8					
70	76.1	R 2-1/2	3					
71	80	-	-	180	122	70	150	2
72	82.5	-	3-1/4					
73	88.9	R 3	3-1/2					

(to be continued)

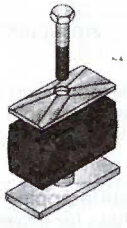
Unit Per Pc.

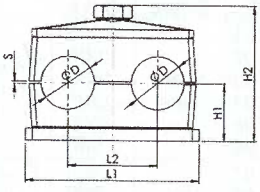
CODE	Size D mm	Nom.	Inch	Dimensions mm				
				L1	L2	H1	H2	S
Group H6								
61 39 74	100	-	-					
75	101.6	R 3-1/2	-					
76	108	-	4-1/4					
77	114.3	R 4	-	226	168	99	211	2
78	127	-	5					
79	133	-	5-1/4					
Group H7								
61 39 80	139.7	R 5	-					
81	152.4	-	6					
82	159	-	6-1/4	270	205	115	245	3
83	165	-	6-1/2					
84	168.3	R 6	-					
Group H8								
61 39 85	177.8	-	7					
86	193.7	-	7-5/8					
87	216	-	8-1/2	340	265	160	339	3
88	219.1	R 8	-					
Group H9								
61 39 89	244.5	-	-					
90	273	R 10	-	520	395	235	489	8
91	323.9	R 12	-					
Group H10								
61 39 92	355.6	R 14	-	680	534	295	609	18
93	406.4	R 16	-					

Name of Mfr. : World Wide Metric

Twin Series (According to DIN 3015/3)

For installations with closely placed lines. Ideal for general industrial use and mobile applications with moderate vibration.





Materials

Clamp body : Polypropylene
Cover plates : Galvanized steel (ST-37)
Screws/Bolts : Galvanized steel (ST-37)
Weld plates : Phosphated steel (ST-37)
"Kits are also available with Stainless steel hardware."

Unit Per Pc.

CODE	Size D mm	Nom.	Inch	Dimensions mm				
				L1	L2	H1	H2	S
Group T1								
61 39 94	6	-	-					
95	6.4	-	1/4					
96	8	-	5/16					
97	9.5	-	3/8	37	20	16.5	41	0.6
98	10	R 1/8	-					
99	12	-	-					
Group T2								
61 40 00	12.7	-	1/2					
61 41 02	13.5	R 1/4	-					
08	14	-	-					
14	15	-	-	55	29	18.5	44.5	0.7
90	16	-	5/8					
97	17.2	R 3/8	-					
99	18	-	-					

(to be continued)

Unit Per Pc.

CODE	Size D mm	Nom.	Inch	Dimensions mm L1	L2	H1	H2	S
Group T3								
61 42 00	19	-	3/4					
18	20	-	-					
19	21.3	R 1/2	-					
20	22	-	7/8	70	36	23.5	54.5	0.7
24	23	-	-					
25	25	-	-					
26	25.4	-	1					
Group T4								
61 42 27	26.9	R 3/4	-					
28	28	-	-	85	45	25.5	58.5	0.7
29	30	-	-					
Group T5								
61 42 95	32	-	1-1/4					
96	33.7	R 1	-					
97	35	-	-	110	56	32	71.5	0.7
98	38	-	1-1/2					
99	40	-	-					
61 43 00	42	R 1-1/4	-					

Name of Mfr. : World Wide Metric

32. Carborundom Paste

Grinding & Lapping Compound
(Valve Compounds)

For precision lapping, fitting, surfacing, polishing and other general use in machine shops. Universally used for grinding valves. Supplied in 450 grm tin. Please specify grit number when ordering.

Unit Per Tin

CODE	Grade	Grit #	Applications
61 42 01	Micro Fine	3000	Precision lapping and high profile polishing to mirror finishing of metal parts.
02		2000	
03		1500	
04		1200	
05		1000	
06		800	
61 42 07	Very Fine	600	Fine surface lapping, fine polishing for protection seating of valves, bearing and matting components.
08		500	
61 41 91		400	
61 42 09	Fine	320	Surface finishing, e.g. valve seats, bearings, bushings, etc.
10		280	
61 41 92	Medium	240	Surface lapping/reseating exhaust and intake valves.
61 42 11	Fine	220	
61 42 12	Medium	180	Cleaning of corroded bolt threads & sharpening shears, etc.
13		150	
61 41 93	Coarse	120	Spot removal of uneven surfaces e.g. conditioning of new gears for smooth running.
61 42 14		100	
15		80	
61 41 94		60	
61 42 16	Very Coarse	50	Fast removal of high spots and very rough metal surfaces.
61 41 95		40	
61 42 17		36	

Nozzle Lapping Paste

High grade Silicon Carbide abrasive paste for nozzle lapping. Supplied in 60 grm/tin. Please specify grit number when ordering.

Unit Per Tin

CODE	Grade	Grit
61 42 21	Fine	1200
61 42 22	Medium	1000
61 42 23	Coarse	800

Name of Mfr.: Skatool Marine

Blue Paste - Prussian Blue

For lapping of bearings, high pressure valves, etc. Improved type on red lead for prevision lapping work. A jelly-like paste made of super corpuscular dyes furnished in tubes.

61 41 96	Blue paste, 120 grm/tube	Tub

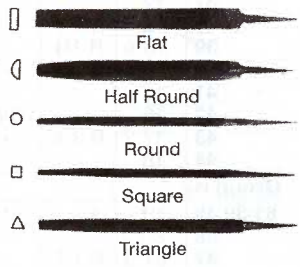
Tapping Paste

Used for precision tapping and fitting. It is also a very useful paste for cutting marks, using tapes, drills, reamers, etc.

61 41 98	Tapping paste 1 kg	Tin

33. Files

Machinist Files



The illustration right shows the types of files commonly available. These files have double cut teeth as is most common for use under heavier pressure where a fine finish is not required. Single cut files for smoother finishes are also available upon request. Specify from the following tables the type of file required based upon the type of work to be done and the material being used.

How to order : CODE

File, SHAPE, TYPE of CUT, LENGTH

Flat Files - Double Cut

Used by engineers for all kinds of works.

Unit Per Pc.

CODE	Cut	Length mm	CODE	Cut	Length mm
61 43 01	Bastard (荒)	150	**61 43 15**	Smooth (細)	150
02		200	**16**		200
03		250	**17**		250
04		300	**18**		300
05		350	**19**		350
06		400	**20**		400
61 43 08	Second Cut (中)	150	**61 43 21**	Dead Smooth (油)	150
09		200	**22**		200
10		250	**23**		250
11		300	**24**		300
12		350	**25**		350
13		400	**26**		400

Half Round Files - Double Cut

Used mostly in 200, 250 & 300 mm length on concaved surfaces.

Unit Per Pc.

CODE	Cut	Length mm	CODE	Cut	Length mm
61 43 28		150	61 43 42		150
29		200	43		200
30	Bastard	250	44	Smooth	250
31		300	45		300
32	(荒)	350	46	(細)	350
33		400	47		400
61 43 35		150	61 43 49		150
36	Second	200	50	Dead	200
37	Cut	250	51	Smooth	250
38		300	52		300
39	(中)	350	53	(油)	350
40		400	54		400

Round Files - Double Cut

Used on curved surfaces and for enlarging round holes. Sometimes called a rattail file.

Unit Per Pc.

CODE	Cut	Length mm	CODE	Cut	Length mm
61 43 56		150	61 43 70		150
57		200	71		200
58	Bastard	250	72	Smooth	250
59		300	73		300
60	(荒)	350	74	(細)	350
61		400	75		400
61 43 63		150	61 43 77		150
64	Second	200	78	Dead	200
65	Cut	250	79	Smooth	250
66		300	80		300
67	(中)	350	81	(油)	350
68		400	82		400

Square Files - Double Cut

These types of files are mainly used for enlarging rectangular holes.

Unit Per Pc.

CODE	Cut	Length mm	CODE	Cut	Length mm
61 43 84		150	61 44 01		150
85		200	02		200
86	Bastard	250	03	Smooth	250
87		300	04		300
88	(荒)	350	05	(細)	350
89		400	06		400
61 43 91		150	61 44 08		150
92	Second	200	09	Dead	200
93	Cut	250	10	Smooth	250
94		300	11		300
95	(中)	350	12	(油)	350
96		400	13		400

Triangle Files - Double Cut

Used for cleaning and smoothing out corners and angles. Not suitable for saw filling due to the sharp edges.

Unit Per Pc.

CODE	Cut	Length mm	CODE	Cut	Length mm
61 44 15		150	61 44 29		150
16		200	30		200
17	Bastard	250	31	Smooth	250
18		300	32		300
19	(荒)	350	33	(細)	350
20		400	34		400
61 44 22		150	61 44 36		150
23	Second	200	37	Dead	200
24	Cut	250	38	Smooth	250
25		300	39		300
26	(中)	350	40	(油)	350
27		400	41		400

Wood or Lead Rasps

Used for working with wood or with lead piping. Specify what shaped rasp you require and whether it is for use with wood or lead material.

Unit Per Pc.

WOOD			LEAD		
CODE	Shape	Length mm	CODE	Shape	Length mm
61 45 01		150	61 45 15		150
02	Flat	200	16	Flat	200
03		250	17		250
04	(平)	300	18	(平)	300
05		350	19		350
06		400	20		400
61 45 08		150	61 45 22		150
09	Half	200	23	Half	200
10	Round	250	24	Round	250
11		300	25		300
12	(半丸)	350	26	(半丸)	350
13		400	27		400

Needle File Sets

File sets which are used for precision work. Available in sets consisting of 5 to 12 pieces. Please specify the number of pieces you require in a set as well as the length and the cut of the files as shown in the tables below.

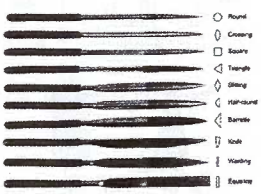
How to order : CODE

Needle file set, LENGTH, NUMBERS/set, TYPE of CUT

Unit Per Set

CODE	Cut	Contents
215 mm / 5 pcs Set		
61 45 31	2nd Cut	Flat, Half Round, Round, Square and Triangle
32	Smooth	
33	D.Smooth	
200 mm / 8 pcs Set		
61 45 34	2nd Cut	Flat, Half Round, Round, Square Triangle, Mill, Shinogi, and Oval
35	Smooth	
36	D.Smooth	
185 mm / 10 pcs Set		
61 45 37	2nd Cut	Added Knife Edge and Half Round to 8 pcs Set
38	Smooth	
39	D.Smooth	
170 mm / 12 pcs Set		
61 45 40	2nd Cut	Added Oval, Half Moon Shape to 10 pcs Set
41	Smooth	
42	D.Smooth	

Electroplated Diamond Needle File Set



The electroplated diamond needle file set is used by metal workers for precise filing on stone, metal, glass and sculptures. They are also ideal for delicate filing, shaping and creating inside cuts. Files are electroplated uniformly using 150# ~ 240# diamond grit onto high grade steel. Different 10 file shapes included in these sets offer a variety of use for different applications : Equaling, Half-round, Triangle, Square, Round, Warding, Crossing, Knife, Barrette and Slitting. Size : 4 x 160 mm.

61 45 43	File set, needle, electroplated diamond, 10's	Set

Double Saw Files

For filing saw blade teeth and various types of circular saws.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
61 45 51	75	**61 45 54**	150
52	100	**55**	175
53	130	**56**	200

File Handles

Well balanced and shaped handle made of moisture absorbing hard wood.

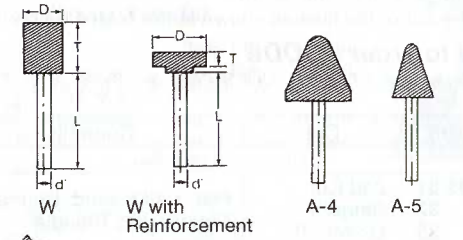
Unit Per Pc.

CODE	**61 45 60**	**61 45 61**	**61 45 62**
Length	100 mm	125 mm	150 mm

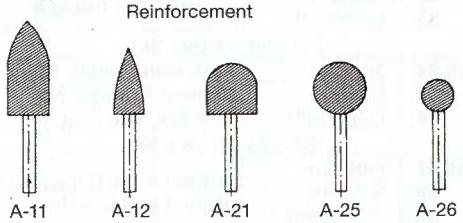
34. Grinding Wheels / Disc Paper

Mounted Wheels

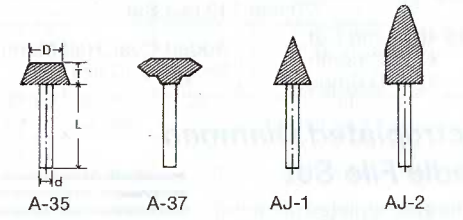
The mounted wheels are designed for use when ordinary grinding wheels cannot be used. Used in connection with air or electric drilling machines of 6 mm capacity. Please specify the number of the required shape.



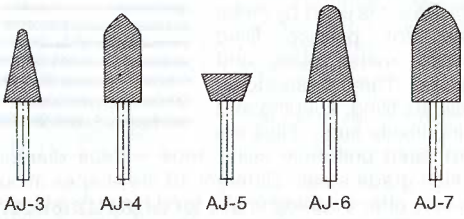
W | W with Reinforcement | A-4 | A-5



A-11 | A-12 | A-21 | A-25 | A-26



A-35 | A-37 | AJ-1 | AJ-2



AJ-3 | AJ-4 | AJ-5 | AJ-6 | AJ-7

How to order : CODE

Mounted wheel with 6 mm dia shank, TYPE of SHAPE, SIZE D, T, and d mm

Unit Per Pc.

CODE	Size mm D	T	d	L	CODE	Size mm D	T	d	L
Shape W					**Shape A-12**				
61 45 65	16	16	6	40	**61 45 87**	16	32	6	40
66	16	25	6	40	**Shape A-21**				
67	16	32	6	40	**61 45 88**	25	25	6	40
68	19	19	6	40	**Shape A-25**				
69	19	25	6	40	**61 45 89**	25	25	6	40
61 45 70	19	38	6	40	**Shape A-26**				
71	25	25	6	40	**61 45 90**	16	16	6	40
72	25	38	6	40	**Shape A-35**				
73	25	50	6	40	**61 45 91**	25	10	6	40
74	32	19	6	40	**Shape A-37**				
61 45 75	32	32	6	40	**61 45 92**	32	8	6	40
76	38	19	6	40	**Shape AJ-1**				
77	38	25	6	40	**61 45 93**	19	25	6	40
78	38	38	6	40	**Shape AJ-2**				
79	50	25	6	40	**61 45 94**	19	38	6	40
Shape W with Reinforcement					**Shape AJ-3**				
61 45 80	32	6	6	40	**61 45 95**	19	38	6	40
81	38	6	6	40	**Shape AJ-4**				
82	38	13	6	40	**61 45 96**	19	45	6	40
83	50	13	6	40	**Shape AJ-5**				
Shape A-4					**61 45 97**	25	13	6	40
61 45 84	32	32	6	40	**Shape AJ-6**				
Shape A-5					**61 45 98**	25	50	6	40
61 45 85	19	28	6	40	**Shape AJ-7**				
Shape A-11					**61 45 99**	25	50	6	40
61 45 86	22	50	6	40					

Hand Grinders

With a large strong built frame, heavy duty clamp and adjustable screw. The wheel has medium grit and operates accurately due to a well balanced gear.

Unit Per Pc.

CODE	Wheel size	CODE	Wheel size
61 46 01	100 x 25 mm	**61 46 03**	150 x 25 mm
02	125 x 25		

Grinding Wheel Dressers

Designed for dressing the round grinding stone. Cutter is attached to the bush of the hardened steel case and the bush rotates on the shaft. Attached dust-proof washer is inserted on both sides of the bush to prevent intrusion of sand grains.

CODE	Item	Unit
61 46 06	Dresser Grinding Wheel	Set
07	Wheel Extra for Grinding Dresser 50's	Pkt
08	Wheel Extra Block Type for Grinding Dresser	Set

Disc Sanding Paper, Abrasive

Designed for use with portable, grinding machines on all kinds of surfaces (rust & paint removing, feather edging, etc.). Each individual cutting grain is firmly anchored in a resin type adhesive which will withstand high grinding heat.

How to order : CODE

Disc paper, abrasive, DIAM mm, GRIT #

Unit Per Pc.

CODE	Grit	CODE	Grit	CODE	Grit
Diam. 100 mm					
61 46 11	16	**61 46 16**	40	**61 46 21**	120
12	20	**17**	50	**22**	150
13	24	**18**	60	**23**	180
14	30	**19**	80	**24**	220
15	36	**20**	100	**25**	240
Diam. 125 mm					
61 46 26	16	**61 46 31**	40	**61 46 36**	120
27	20	**32**	50	**37**	150
28	24	**33**	60	**38**	180
29	30	**34**	80	**39**	220
30	36	**35**	100	**40**	240
Diam. 150 mm					
61 46 41	16	**61 46 46**	40	**61 46 51**	120
42	20	**47**	50	**52**	150
43	24	**48**	60	**53**	180
44	30	**49**	80	**54**	220
45	36	**50**	100	**55**	240
Diam. 180 mm					
61 46 56	16	**61 46 61**	40	**61 46 66**	120
57	20	**62**	50	**67**	150
58	24	**63**	60	**68**	180
59	30	**64**	80	**69**	220
60	36	**65**	100	**70**	240

Grit Numbers are classified as follows:
Coarse Grit No. 16 – 40
Medium Grit No. 50 – 120
Fine Grit No. 150 – 240

Emery Cloth, Abrasive

Excellent for hand polishing metals. Size : 230 x 280 mm.

Unit Per Sht.

CODE	Grit	CODE	Grit	CODE	Grit
61 46 81	30	**61 46 87**	100	**61 46 93**	280
82	36	**88**	120	**94**	320
83	40	**89**	150	**95**	400
84	50	**90**	180		
85	60	**91**	220		
61 46 86	80	**61 46 92**	240		

Emery Tape, Abrasive

Easy to use by simply tearing off the required length of strip. Used for metal cleaning and polishing jobs. The grain is selected aluminium oxide attached to a flexible cloth strap. Length of tape (roll) : 36.5 mtr.

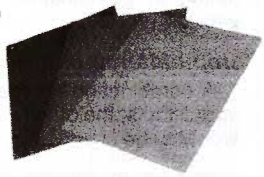
How to order : CODE

Emery tape, abrasive, WIDTH mm, GRIT #

Unit Per Rol.

CODE	Grit	CODE	Grit	CODE	Grit
Width 25 mm					
61 47 01	30	**61 47 05**	80	**61 47 09**	180
02	40	**06**	100	**10**	240
03	50	**07**	120	**11**	320
04	60	**08**	150	**12**	400
Width 40 mm					
61 47 13	30	**61 47 17**	80	**61 47 21**	180
14	40	**18**	100	**22**	240
15	50	**19**	120	**23**	320
16	60	**20**	150	**24**	400
Width 50 mm					
61 47 25	30	**61 47 29**	80	**61 47 33**	180
26	40	**30**	100	**34**	240
27	50	**31**	120	**35**	320
28	60	**32**	150	**36**	400

Sandpaper, Abrasive

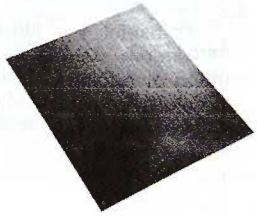


Ideal abrasive for hand sanding wood, paint fillers, paint under coats and varnishes. Sheet size : 230 x 280 mm.

Unit Per Sht.

CODE	Grit	CODE	Grit	CODE	Grit
61 47 51	40	**61 47 55**	100	**61 47 59**	220
52	50	**56**	120	**60**	240
53	60	**57**	150	**61**	320
54	80	**58**	180	**62**	400

Sandpaper, Wet & Dry

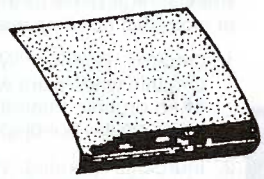


Flexible and more durable to sand irregular shapes than most other sandpaper thanks to closed-coat abrasive bonding with a waterproof resin. The abrasive particles are bonded with a waterproof adhesive that permits the use of water, oil, and other lubricants. To be used on metal, wood plastic fillers to gain a smooth finish. Sheet size: 230 x 280 mm.

Unit Per Sht.

CODE	Grit	CODE	Grit	CODE	Grit
61 47 37	80	**61 47 43**	240	**61 47 49**	600
38	100	**44**	280	**50**	800
39	120	**45**	320	**63**	1,000
40	150	**46**	360	**64**	1,200
41	180	**47**	400	**65**	1,500
61 47 42	220	**61 47 48**	500	**61 47 81**	2,000

Silicon Paper, Abrasive Waterproof (Crocus Paper)



Designed for hand sanding lacquers and under coats together with water. Used in marine and auto body refinishing. Will leave no scratch marks. The flexible cloth is coated with selected silicon carbide grain. Size : 230 x 280 mm.

Unit Per Sht.

CODE	Grit	CODE	Grit	CODE	Grit
61 47 66	80	**61 47 71**	220	**61 47 76**	400
67	100	**72**	240	**77**	500
68	120	**73**	280	**78**	600
69	150	**74**	320	**79**	700
70	180	**75**	360	**80**	800

*Grit No. 120 is recommended for general sanding.

Carborundum Oil Stones

Carborundum oil stone :

For carpenters and engineers. May be used dry or with oil or water. Sufficiently porous to assure a good grinding or cutting action in combination with wax or oil.

Combination stone :

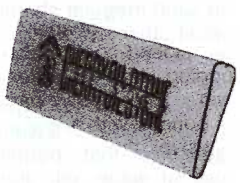
A combination of two grit sizes. One side coarse for very dull tools, the other one with a fine grit for clean edging work. May be used wet or dry.

Unit Per Pc.

CODE	No.	Dimensions mm
61 47 85	3	100 x 25 x 13
86	24	115 x 38 x 16
87	29	150 x 50 x 25
88	0	205 x 50 x 25
89	Combination	205 x 50 x 25

Carborundum Round Edge Slips

A useful abrasive carborundum stone for grinding or edging of tools with curved edges. Maybe used dry or with a moderate application of oil.



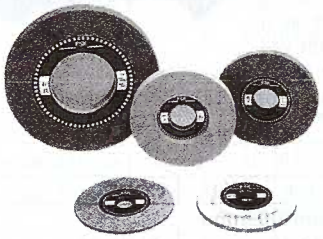
Unit Per Pc.

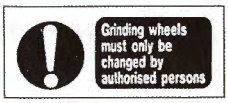
CODE	No.	Dimensions mm
61 47 91	20	100 x 25 x 6.4 x 1.6
92	13	115 x 45 x 13 x 3
93	14	115 x 45 x 10 x 3
94	15	115 x 45 x 6.4 x 1.6

Abrasive Wheels

Abrasive wheels of various constructions for marine use in machine working and reconditioning parts. These wheels are generally used for cutting, deburring, blending and cleaning operations, and for surfacing finished hard steel, stainless steel, aluminium, carbon and brass. Abrasive wheels, regardless of the type, are constructed by organic or inorganic bonding methods.

1. Organic Bonded Wheels (Resinoid Bonded Wheel) Organic wheels are wheels which are bonded by means of an organic material such as resin, rubber, shellac or other similar bonding agents.
2. Inorganic Bonded Wheels (Vitrified Bonded Wheels) Inorganic wheels are wheels which are bonded by means of an inorganic material such as clay, glass, porcelain, sodium silicate, magnesium oxychloride, or metal. Wheels bonded with clay, glass, porcelain, or related ceramic materials are characterized as "vitrified bonded wheels."





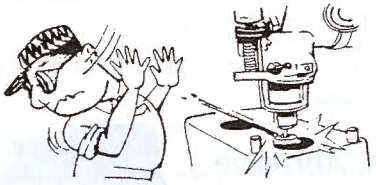
Grinding Wheel Speed

Note of Caution when ordering grinding wheels :

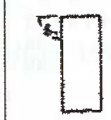
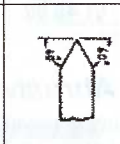
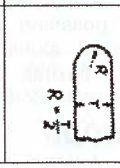
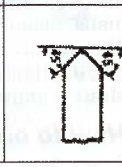
Surface meter per minutes (SMPM) is the distance in meters that any one abrasive grain on the peripheral surface of a grinding wheel travels in 1 minute.

Smpm = 3.1416 x Diameter in Meter x rpm

The speed at which a grinding wheel works is important because use at too slow a speed wastes abrasive without getting much useful work in return, where as an excessive speed may result in hard grinding action and may introduce the danger of breakage. The grits, grade and structures recommended for specific grinding operations are usually based on the assumption that approximately the recommended speeds will be employed. If for some reason they can not be, then the grade at least must usually be changed to suit the particular condition.



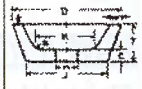
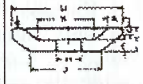
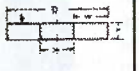
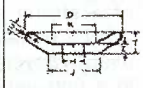
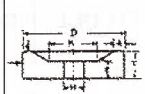
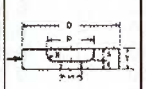
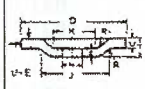
Standard Shapes of Wheel Faces

No.	Shape	No.	Shape	No.	Shape
A		D		N	
B		E		M	
C		F		P	

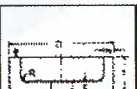
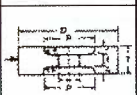
Identification Symbols for Abrasive Wheels. (ISO. JIS)

	No. 1 Straight Wheels	A	305 x 25 x 127	C	60	K	8	V	8J	2,000 mtr/min.
No.	Shape	Face	Size	Kind of Abrasive	Grain Size	Grade	Structure	Kind of Bond	Bond Modification	Max. Speed
1	Straight	A	OD x T x HD	A (=Brown Alumina)	Coarse	Soft	Dense	V= Vitrified	1L	1,500
2	Cylinder				10 ↑ 240	↑ E	↑ 0		2Q	
0	Discs	B			12 ↑ 280	F	1			2,000
3	Single Taper		OD = Outside Diam.	WA (=White Alumina)	14 ↑ 320	G		B= Resinoid	4T	
4	Double Taper	C			16 400	H	2		4U	
5	Recessed One Side				20 500	I	3			2,400
6	Straight Cup				24 600	J	4	BF= Resinoid	5O	
7	Double Recessed	D		PA (=Pink Alumina)	30 700	K	5			
8	Safety				36 800	L	6	Reinforced	5L	2,700
9	Double Cup	E	T = Thickness		46 1,000	M	7		5S	
10	Dovetail			C (=Black Silicon Carbide)	54 1,200	N	8	R= Rubber	6V	3,000
11	Flaring Cup	F			60 1,500	O	9		8J	
12	Dish		HD = Hole Diam.		70 2,000	P				3,600
13	Saucer	N		GC (=Green Silicon Carbide)	80 2,500	Q	10 ↓	RF= Rubber Reinforced	8M	
16	Cone & Plug				90 3,000	R	11			
20	Relieved				100 Very	S	12 ↓		9L	4,800
27	Depressed Center Offset Type	M			120 Fine ↓	T	13		91L	
28	Depressed Center U				150	U	14			
30	Cutting	P			180	V			G7	6,000
					220	W ↓	Open			
						X				
						Y				
						Z				
						Hard				

Definitions and Limitations of Wheel Shapes

Type No.	Name and Dimension	Illustration	Type No.	Name and Dimension	Illustration
1	Straight D x T x H		11	Flaring Cup D x T x H E ≧ T/5, K > 7 Flange Dia +2R	
2	Cylinder D x T x W W ≦ T		12	Dish D x T x H K > Flange Dia	
0	Discs D x T x H W > T		13	Saucer D x T x H K > Flange Dia	
3	Single Taper D x T x H		16	Cone & Plug	
4	Double Taper D x T x H		20	Relieved D x T x H E ≧ T/2, K > Flange Dia	
5	Recessed One Side D x T x H E ≧ T/2		27	Depressed Center Offset Type D x U x H	

(to be continued)

6	Straight Cup D x T x H E ≧ T/5, W ≦ E		28	Depressed Center UD x U x H	
7	Double Recessed D x T x H E ≧ T/2		30	Cutting D x T x H	
8	Safety				
9	Double Cup				
10	Dovetail				

When ordering abrasive wheels, please refer to the aforementioned "identification symbols for abrasive wheels" and specify the following points.

How to order : 61-48-20

Shape ..... Straight, Disc, Recessed, etc.
Face ..... A, B, C.....etc.
Size ..... Outside diameter x Thickness x Hole diam.
Kind of Abrasive ..... Aluminium oxide or Silicon carbite
Grain size..... 36 or 46 ...
Grade..... K or L ...
Structure..... 3 or 4 ...
Kind of Bond..... Vitrified or Resinoid
Detailed Bond Type..... 8J
Max. Speed ..... R.P.M. 2,000, 4,000.....etc.

Grinding Wheel Standard Surface Speed Table

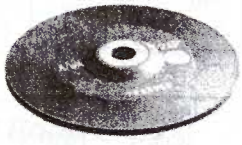
Dia mm / R.P.M.	305	355	405	455	510	610	660
	12"	14"	16"	18"	20"	24"	26"
R.P.M.	m / min.	m / min.	m / min.	m / min.	m / min.	m / min.	m / min.
1300	1200	1500	1700	1900	2100	2400	2700
1400	1300	1600	1800	2000	2200	2600	2900
1500	1400	1700	1900	2200	2400	2800	
1600	1500	1800	2000	2300	2600	3000	
1700	1600	1900	2200	2400	2700	3200	
1800	1700	2000	2300	2600	2900	3400	
1900	1800	2100	2400	2700	3000	3600	
2000	1900	2200	2500	2900	3300		
2100	2000	2300	2700	3000	3500		
2200	2100	2500	2800	3300	3700		
2300	2200	2600	2900	3400	3800		
2400	2300	2700	3100	3600	4000		
2500	2400	2800	3200				
2600	2400	2900					
2700	2500	3000					
2800	2600						
2900	2700						
3000	2800						

Some common types of abrasive wheels are described below with their respective specifications.

Resinoid Offset Grinding Wheels

Grain No. 36

Grain size No. 36 is widely used on ships for all purpose grinding and cutting jobs. Surface meter per minute 4,300.



How to order : CODE

Wheel, grinding, offset, resinoid, grain No. 36, OUT DIAM x THICKNESS x HOLE DIAM mm, 4,300 mtr/min.

Unit Per Pc.

CODE	Outer Diam. mm	Thickness mm	Hole Diam. mm
61 48 01	100	3	15
02		4	
03		6	
61 48 04	125	3	22
05		4	
06		6	
61 48 07	150	3	22
08		6	
09		8	
61 48 10	180	3	22
11		6	
12		8	
61 48 13	205	6	22
14		8	
61 48 15	230	6	22
16		8	

Resinoid Cut-Off Wheels

These resin bond cutting wheels have a big advantage over rubber cut-off wheels. They resist very high cutting heats, have an aggressive cutting action, and a longer disc life. Grain No. 36 (medium grain) is recommended for general purpose ships use.

How to order : CODE

Wheel cut-off, resinoid, grain No. 36, OUT DIAM x THICKNESS x HOLE DIAM mm, 4,300 mtr/min.

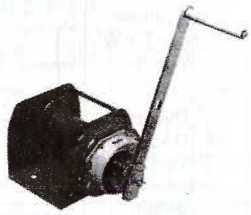
Unit Per Pc.

CODE	Outer Diam. mm	Thickness mm	Hole Diam. mm
61 48 51	75	1.5	9.53
52		2.0	
61 48 53		1.5	12.7
54		2.0	
61 48 55	100	1.5	9.53
56		2.0	
61 48 57		1.5	12.7
58		2.0	
61 48 59		2.0	15.88
61 48 60	150	1.5	9.53
61		2.0	
61 48 62		1.5	12.7
63		2.0	
61 48 64	180	2.0	22.23
61 48 65	205	2.0	15.88
66		2.5	
61 48 67		2.0	22.23
68		2.5	
61 48 69	255	2.0	22.23
70		2.5	
61 48 71		2.0	25.40
72		2.5	
61 48 73	305	2.0	22.23
74		2.5	
61 48 75		2.0	25.4
76		2.5	
61 48 77	355	2.5	25.4
78		3.0	
61 48 79		2.5	30.0
80		3.0	
61 48 81	405	3.0	25.4
82		3.5	
61 48 83		3.0	30.0
84		3.5	

35. Winches/Chain Hoists

Portable Hand Winches

Portable hand winches for light lifting, lowering, or hoisting. Complete with an automatic safety brake. Made of a strong steel frame with a solid center drum. Can be used in any position. Available in a non-geared type or with ratchet gears.



Unit Per Set

CODE	Lifting Capacity kgs	Reeling Up Length mtr	Applicable Rope Diam mm	Weight kgs
	Non-geared Type			
61 49 01	100	30	5.0	7.5
02	300	30	6.3	12.0
03	500	40	6.3	14.0
04	1,000	40	8.0	18.5
05	2,000	40	9.0	25.0
06	3,000	40	12.5	44.0

(to be continued)

Unit Per Set

CODE	Lifting Capacity kgs	Reeling Up Length mtr	Applicable Rope Diam mm	Weight kgs
Ratchet Geared Type				
61 49 11	100	30	5.0	7.5
12	300	30	6.3	12.0
13	500	40	6.3	14.0
14	1,000	40	8.0	18.5
15	2,000	40	9.0	25.0
16	3,000	40	12.5	44.0

Link Chain Hand-Lever Hoists

This lightweight, extremely durable portable chain hoist is easy to operate in pulling, hoisting, and hauling jobs on deck or when moving machinery parts in the engine room. The ratchet action enables you to hoist easily with short handle strokes and the load is constantly supported while lifting by a braking mechanism. The handle is operated in the same way when lowering the load. The hoist is steadily lowered and the ratchet system again assures that the handle will not spring loose and injure the operator. All hoists are tested at weights 50 % over the mentioned capacity for safety reasons.

Unit Per Set

CODE	Capacity Tons	Standard Chain Mtr	Min. Distance Between Hooks	Weight kgs
61 50 01	3/4	1.5	295 mm	6.9
02	1-1/2	1.5	325	9.7
03	3	1.5	395	16.3
04	6	1.5	590	26.7

Spur-Gear Chain Hoists

Specially heat-treated and proof tested steel chain hoists equipped with a safety guard. These hoists can be operated at any angle and are equipped with a slip steel bolt which allows easy replacement of the load chains. The load wheel operates on precision ball bearings which are sealed with lubrication inside to eliminate the adverse effect of particles and dust on the moving parts. The top, bottom hooks and the crosshead are drop forged and the bottom hook is swivel type to allow easy turning of the load. These hoists have superior working capacities.

Unit Per Set

CODE	Capacity In Tons	Standard Lift mtr	Minimum Distance Between Hooks	Required Hand Power kgs	Weight kgs
61 50 06	1/2	2.5	305	30	11
07	1	2.5	345	35	13
08	1-1/2	2.5	395	38	19
09	2	3.0	445	39	28
61 50 10	3	3.0	500	45	38
11	5	3.0	670	34	55
12	10	3.5	780	54	95
13	15	3.5	1,130	52	195
61 50 14	20	3.5	1,220	54 x 2	310
15	30	3.5	1,300	52 x 2	440
16	40	3.5	1,450	53 x 2	680
17	50	3.5	1,600	53 x 2	900

Non-Spark Chain Hoists

Specially designed for LNG–LPG vessels and tankers, but also essential for factories handling explosive materials. Made of beryllium material except for the gears which are tightly covered by copper alloy casings assuring no-sparking during operation.

How to order : CODE

Hoist, chain, non-spark, beryllium copper alloy, LIFTING CAPACITY tons

Unit Per Set

CODE	Lift. Cap. Ton	Lift. Cap. mtr	Tested Cap. Ton	Min. Dist. Hooks mm	Weight kgs
Beryllium Copper Alloy					
61 50 21	0.5	2.5	0.75	330	15.9
22	1	3	1.5	390	35.2
23	2	3	3	520	44
24	3	3	4.75	690	65
25	5	3	7.5	710	102

Trolleys

Plain Trolley

Geard Trolley

Plain and geared type trolleys are available. They are adaptable running rails of 9 varieties in width and are easy to set up even on running rails with a rugged surface. Equipped with closed type high grade bearings. Running wheels are suitable for both I-Beam and H-Beam running rails.

How to order : CODE

Trolley, TYPE, LIFTING CAPACITY tons

Unit Per Pc.

CODE	Capacity Ton	Fit Beam Size (mm)				Wt Kgs
		Width		Height		
		Min	Max	Min	Max	
Plain Trolley						
61 50 31	1/2	75	125	100	150	6.0
32	1	75	125	125	250	10.0
33	2	100	150	150	400	18.5
34	3	100	150	180	400	26.0
35	5	125	175	250	450	44.0
Geared Trolley						
61 50 36	1	75	125	125	250	14.0
37	2	100	150	150	400	23.5
38	3	100	150	180	400	33.5
39	5	125	175	250	450	53.5

36. Gear Pullers / Bearing Pullers

Gear & Wheel Pullers

2-Arm

Designed for moving hard to pull gears, bearings or pulleys which are stuck from rust or over friction. Easy to set up and operate, just hook over the gears or wheel and tighten the screw. Will pull anything that is within arms reach and the maximum weight capacity. The arms and yokes are made of forged steel and the steel forcing screw is hardened to avoid flaring or thread damage.

How to order : CODE

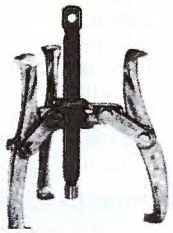
Puller, gear & wheel, 2-arm, TYPE, MAXIMUM SPREAD mm

Unit Per Set

CODE	Maximum Spread mm	Maximum Reach mm	Capacity Tons	Weight kgs
	Pullers Type "G"			
61 50 50	75	55	2	0.4
51	100	70	4	0.8
52	150	100	6	1.8
53	200	240	8	3.8
54	250	250	10	6.0
61 50 55	300	275	12	9.0
56	375	320	15	11.0
57	450	370	18	15.0
58	600	575	24	45.0
	Pullers Type "GL"			
61 50 61	100	150	4	1.0
62	150	190	6	2.3
63	200	275	8	4.4
64	250	300	10	7.0
65	300	350	12	10.0
61 50 66	375	400	15	13.0
67	450	440	18	16.0

Gear & Wheel Pullers

3-Arm



Drop forged from vanadium steel. This rigid 3 arm puller has been designed for situations where the use of a 2 arm puller is not possible.

How to order : CODE

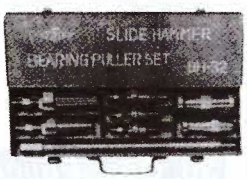
Puller, gear & wheel, 3-arm, MAXIMUM SPREAD mm

Unit Per Set

CODE	Maximum Spread mm	Maximum Reach mm	Capacity Tons	Weight kgs
61 50 70	125	140	5	3
71	200	200	10	6
72	300	270	20	17
73	375	290	25	30
74	450	320	30	48

Bearing Puller Sets

for Inner Ring



The slide hammer bearing puller set has been designed for removing "hard-to-pull" bearings without damaging the bearing housing. Expansion grippers are available from No. 00 to 06. These numbers 00 to 06 are indicating the last two numbers of the bearing number. When ordering, please make sure to indicate the last two bearing figures to get the right tools for your work. The expansion grippers are drop forged from vanadium alloy steel, heat-treated and chrome plated.
Remarks : Sold by set only.

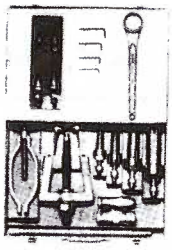
Components

1 Sliding hammer	5 Grippers, no. 00-06
1 Steel case	

61 50 81	Bearing puller set for inner ring 5 grippers no. 00-06 in steel case	Set

Bearing Puller Kits

for Inner & Outer Ring



This bearing puller kit has been designed to remove the inner and outer bearing rings from bearings mounted to various fittings, shafts, etc. Made of drop forged, heat-treated vanadium alloy steel. This bearing kit is available from No. 00 to 12. These 2 figures indicate the last two numbers of the bearing. For example : Bearing series No. 6004 to be ordered : No. 04.

Components

1 Sliding hammer	8 Grippers, no. 00-12
1 Standard puller	1 Opening stopper
1 One end ring spanner	1 Hexagon wrench
1 Steel case	

61 50 82	Bearing puller kit for inner & outer ring, 8 grippers no. 00-12 in steel case	Set

Hydraulic Bearing Pullers

Designed for the removal of frozen bearings, wheels and other gears of various sizes without hammering or heating. 2 and 3 arm coupling pullers are available in a capacity from 10 to 20 and 50 tons. They are light in weight and of a compact design. Any hand or motor pump with a sufficient oil capacity may be connected to the puller.

Puller, bearing, hydraulic 2 arm.

How to order : CODE

Puller, bearing, hydraulic 2-arm, CAPACITY tons, complete with ram, pump & hose

Unit Per Set

	CODE	**61 50 85**	**61 50 86**	**61 50 87**
2 ARM	Capacity Tons	10	20	50
	Maximum Reach mm	210	315	490
	Maximum Open mm	250	350	500
	Applicable Ram Stroke	150 mm 255 mm	126 mm	153 mm 300 mm

Puller, bearing, hydraulic 3 arm.

How to order : CODE

Puller, bearing, hydraulic 3-arm, CAPACITY tons complete with ram, pump & hose

Unit Per Set

	CODE	**61 50 90**	**61 50 91**	**61 50 92**
3 ARM	Capacity Tons	10	20	50
	Maximum Reach mm	210	314	490
	Maximum Open mm	300	420	600
	Applicable Ram Stroke	150 mm 255 mm	126 mm	153 mm 300 mm

Hydraulic Pumps for Bearing Puller

The hydraulic pumps listed below are the most suitable types for use with the above mentioned hydraulic bearing pullers.

Unit Per Pc.

CODE	Capacity up to	Max. Required Pressure	Tank Oil Capacity
61 50 95	20 ton	700 kgf/cm²	700 cc
97	50 ton		1,500 cc

High Pressure Rubber Hose for Hydraulic Bearing Puller

High pressure hydraulic hose for use with the above mentioned hydraulic bearing pullers. Their specifications are as follows.

Unit Per Pc.

CODE	Hose Size x Length	Coupling	Max. Working Pressure
61 51 01	6 mm x 2 mtr	PT 3/8	700 kgf/cm²
02	6 mm x 4 mtr	PT 3/8	
03	6 mm x 6 mtr	PT 3/8	

37. Hydraulic Jacks

Portable Hydraulic Jacks

Made with a forged steel base, tool steel pump piston, and a high quality pump cup packing. A bronze guide bearing is used at the bottom of the precision ground ram. The ram cap is steel forged. Fixed with a hardened release, lowering valve. The handle is a knurled, interlocking type.

Unit Per Set

CODE	Capacity Tons	Height		Weight kgs
		Closed	Extended	
61 51 11	2	180 mm	360 mm	2.6
12	4	188	382	3.5
13	5	230	470	5.3
14	7	230	465	6.7
15	10	240	480	7.9
61 51 16	15	245	495	10.1

Ratchet Type Journal Jacks

Designed with tremendous power in a compact space for short powerful lifts. Made of heat-treated alloy steel forgings with special bronze nuts. The ratchet mechanism is fully enclosed. Each jack is furnished with a heat-treated steel lever bar.

Unit Per Set

	CODE	Capacity Tons	Height		Weight kgs
			Closed	Extended	
Lower	**61 51 20**	15	255 mm	380 mm	12
	21	25	255 mm	380 mm	16
	22	35	280 mm	410 mm	24
	23	50	290 mm	420 mm	31
	24	100	310 mm	415 mm	75
Middle	**61 51 25**	10	280 mm	430 mm	12
	26	25	395 mm	645 mm	21
	27	30	350 mm	550 mm	26
	28	35	410 mm	660 mm	32
	29	50	445 mm	695 mm	43
Higher	**61 51 30**	25	485 mm	815 mm	25
	31	35	535 mm	885 mm	38
	32	50	555 mm	905 mm	49

Unit Per Set

Hydraulic Jacks

Useful for operating a variety of hydraulic tools. It is most suitable as a hydraulic opener for ships hatch covers but is also used for a variety of purposes at shipyard construction and factory job sites.

Lifting and lowering tests are executed at 100 % rated capacity. Horizontal capacity is guaranteed at up to 1/20 of the total rated capacity. The cylinder and piston are made of heat-treated, reinforced chromemolybdenum steel and the inner linings of the cylinder piston and the rod are plated with hard chrome. The couplings and screws for attachments are interchangeable. A wide variety of series and models are available. Please specify lifting capacity tons and stroke mm when ordering.

Returning System by Spring Force

1. Available for horizontal extending or inverse operation (like press).
2. Requires only one piece of connecting rubber hose.

How to order : CODE

Hydraulic jack, spring return type, CAPACITY tons, STROKE mm

Unit Per Pc.

CODE	61 51 36	61 51 37	61 51 38	61 51 39
Capacity (ton)	10	10	20	20
Stroke (mm)	35	150	50	125
Closed Height (mm)	140	308	154	295
Outer Diam. (mm)	57	57	86	86
Weight (kgs)	2.6	5.3	5.8	11
Pump Applicable	61 51 56	61 51 57	61 51 56	61 51 57

Unit Per Pc.

CODE	61 51 40	61 51 41	61 51 42	61 51 43
Capacity (ton)	30	50	50	50
Stroke (mm)	125	25	50	150
Closed Height (mm)	312	100	220	320
Outer Diam. (mm)	102	127	127	127
Weight (kgs)	16.8	8.6	19	28
Pump Applicable	61 51 57	61 51 56	61 51 57	61 51 59

Returning System by Hydraulic Force

1. Horizontal extension or inverse extension (like press) feasible, because of hydraulic returning.
2. Most adequate for remote controlled operation. (Requires 2 pieces of hose, for returning purpose)
3. No damage occurs in Guide-part, even when strokes are extended to maximum.

How to order : CODE

Hydraulic jack, hydraulic return type, CAPACITY tons, STROKE mm

Unit Per Pc.

CODE	61 51 46	61 51 47	61 51 48	61 51 49
Capacity (ton)	10	20	20	20
Stroke (mm)	150	55	150	300
Closed Height (mm)	338	205	390	540
Outer Diam. (mm)	57	86	86	86
Weight (kgs)	6	8.4	16	20
Pump Applicable	61 51 62	61 51 62	61 51 62	61 51 63

Unit Per Pc.

CODE	61 51 50	61 51 51	61 51 52	61 51 53
Capacity (ton)	50	50	100	100
Stroke (mm)	150	300	150	300
Closed Height (mm)	377	602	462	613
Outer Diam. (mm)	127	127	170	170
Weight (kgs)	33.9	51.8	69	86
Pump Applicable	61 51 63	61 51 64	61 51 64	61 51 65

Hydraulic Pumps for Hydraulic Jack

A wide range of hydraulic pumps are available, the two most common types which are applicable to the Jacks described in the former chapter are as follows:

Hand-Operated Pumps for Spring Return Jack

Widely used as the hydraulic source for the 720 kgf/cm² hydraulic jack group. The main body is of forged special steel, has long durability, with safety valve recessed. Pumps are classified according to effective oil volumes into 5 categories (0.3, 0.7, 0.9, 1.3, 2.3 litres respectively). Oil volumes are the base for pump selection. Applicable to spring return system jacks.

How to order : CODE

Hydraulic pump for spring return jack, OIL VOLUME ltr

Unit Per Set

CODE	Usable Oil Volume ltr	Max. Working Pressure kgf/cm²		Output Volume per Stroke cc		Connection Thread PT	Weight kgs
		Low	High	Low	High		
61 51 56	0.3	30	720	5	1.0		3.5
57	0.7	30	720	11	2.0		7.2
58	0.9	30	720	11	2.0	3/8	7.9
59	1.3	30	720	11	2.0		9.1
60	2.3	30	720	24	2.0		13.8

Hand-Operated Pumps for Hydraulic Return Jack

To be used as the hydraulic source for the hydraulic return jack of 720 kgf/cm² series. Has a high and low automatic control-valve, the low pressure pump operates up to the loading of 30 kgf/cm². This means larger output volume and higher speed without loss of capacity. As the safety-valve is recessed inside, operation is assured. Applicable to hydraulic spring return jacks.

How to order : CODE

Hydraulic pump for hydraulic return jack, OIL VOLUME ltr

Unit Per Set

CODE	Usable Oil Volume ltr	Max. Working Pressure kgf/cm²		Output Volume per Stroke cc		Connection Thread PT	Weight kgs
		Low	High	Low	High		
61 51 62	0.9	30	720	11	2.0		9.0
63	1.3	30	720	11	2.0		10.1
64	2.3	30	720	24	2.0	3/8	14.8
65	6.0	30	720	24	2.0		20.5

High Pressure Hose for Hydraulic Jacks

Available in 3 sizes of rubber or nylon made, fitted with coupling. Length of 2 mtrs.

How to order : CODE

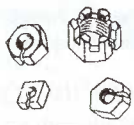
High pressure hose with coupling for hydraulic jack, SIZE mm x 2 mtr

Unit Per Pc.

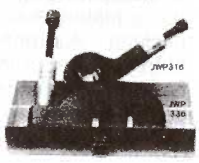
CODE	Size	Pressure Kgf/cm²	Flow Ltr/Min	Thread
		Rubber Hose		
61 51 66	6 mm	720	8	PT 3/8 x PT 3/8
67	9 "	720	20	PT 1/2 x PT 3/8
68	12 "	720	40	PT 1/2 x PT 1/2
		Nylon Hose		
61 51 69	5 mm	720	8	PT 3/8 x PT 3/8
70	8 "	720	20	PT 1/2 x PT 3/8
71	11 "	720	40	PT 1/2 x PT 1/2

38. Nut Splitters / Flange Jacks

Hydraulic Nut Splitters



Splits frozen or rusted nuts without damage to the bolt. It is conveniently sized to work in hard to reach places. Made of the finest steel, heat-treated and forged for long service. To operate, just use a regular hand wrench and turn the power screw which has a hydraulic pump built inside multiplying the power exerted upon it.



A set is composed of two models :
No. 316 size up to 1/2" BSW (Across Flat 20 mm)
No. 336 size up to 7/8" BSW (Across Flat 33 mm)
Sold in sets only.

61 51 80	Nut splitter, hydraulic size up to 1/2" and 7/8" BSW, 2 pcs/set	Set

Heating Loosener
for Stuck Bolt & Nut

This extremely handy tool uses induction to precisely heat a nut, steering knuckle, bearing or any other object made of magnetizable metal. In less than a minute this can heat steel to 300 till 600 degrees Celsius, and since heat causes it to expand you can remove it in a snap.

The heat generated through induction technology can be applied to parts of all different sizes: stuck nuts, bolts, steering knuckles, nipples, bearings and so forth. It generates no open fire, so it's safe to use.

To establish the right interaction between the "iDuctor" and the object to be heated, the tool is accompanied by a set of nine coils in metric sizes M8, M10, M12, M16, M20, M24, and M30. It also comes with a flexible 'wrappable'

coil measuring 110 cm long. The coils are easily changed by hand.

The "iDuctor" is also usable for other specific purposes in addition to heating stuck parts, such as heating and removing coating layers from steel. Special tools are available for this specific application.

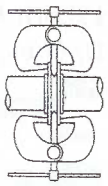
Time and power are easily adjustable. Power source : AC 220 V. The "iDuctor" is CE certified.

61 51 81	Heating Loosener for stuck bolt & nut "iDuctor" AC 220V	Set

Name of Mfr. : TK Tools Industrial Equipment

Flange Jacks

The jacks exert tremendous pressure smoothly and evenly. The flanges are parted quickly and held in perfect alignment without damage to flange faces. Sold in 2 pcs/set only.



Unit Per Set

CODE	No.	For Pipe Size mm				Weight Per Pair kgs
		5 kgf/cm² Cast Iron	10 kgf/cm² Cast Iron	16 kgf/cm² Cast Iron	20 kgf/cm² Cast Iron	
61 51 84	20	50 - 500	50 - 500	25 - 300	20 - 300	6
85	30	400 - 1,200	450 - 600	300 - 600	300 - 600	12

39. Pipe Cleaners

Plumber's Snake Wire Pipe Cleaners

(Sani Snakes)

Used for unclogging pipes and drains. The flexible coil of non-corrosive spring steel will remove most obstructions. The wire spring is available in diameters from 6 mm to 13 mm.

Unit Per Pc.

CODE	Dimensions Diam. x Length	For Pipe Inner Diam.
61 52 01	6 mm x 5 mtr	20 - 32 mm
02	6 mm x 7.5 mtr	20 - 32 mm
03	6 mm x 10 mtr	20 - 32 mm
61 52 04	10 mm x 10 mtr	38 - 75 mm
05	10 mm x 15 mtr	38 - 75 mm
61 52 06	13 mm x 10 mtr	75 - 100 mm
07	13 mm x 15 mtr	75 - 100 mm

Kinetic Rim Guns

for Cleaning Clogged Pipes and Tubes

These "rim guns" are specially designed for clearing clogged drains by means of a compressed air "shot" which suddenly strikes the water on top of the clogged part inside the pipe or drain. The result of this "air shot" is a wave of kinetic energy striking the resistance point vertically with high pressure and clearing the waste and clogged parts away. (Remarks : The pressure against the side walls of the pipe is only a small percentage, avoiding any damage.)

Effective Range

The clearing effect depends on the pipe diameter and the distance between the clogged part and the pipe entrance.

Pipe Diam mm	Effective Range MTR	Pipe Diam mm	Effective Range MTR
12.5	100	100	35
25	90	125	35
50	70	130	30
75	45		

How to use

Model H

Designed for multi-purpose use. (To be used for condenser tubes, pipes, toilets, etc.) By using the hand pump, an air pressure of 10 kgf/cm² can be built up. In addition to this, a valve has been fitted to a kinetic rim gun enabling the fitting of this model to an air compressor.
Note: Spare parts are available on request.

61 52 15	"Three bond" Kinetic rim gun, Model H	Set

40. Rivets / Riveters

Hand Rivets

These simple and easy-to-use rivets fasten products together easily and effectively...no complicated installations, expensive equipment or skilled operators are needed. Just drill a hole, insert and set a rivet from the same side....and high fastening connections are achieved quickly. High strength, precision-made hollow rivets are assembled on a solid mandrel. They are specially useful for blind fastening....where no access to the reverse side is available.

Hand Riveter Tools

Designed to set all standard size of blind rivets.

Plier Type

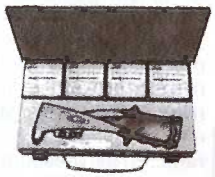
Bellow Type

Unit Per Pr.

CODE	Type	Overall Length mm	Capacity Rivet Diam. mm
61 52 30	Plier	260	2.4, 3.2, 4.0, 4.8
31	Bellow	325 - 900	2.4, 3.2, 4.0, 4.8

Hand Riveter Kits

Contains a plier type hand riveter tool and two different diameter rivets, sized 3.2 mm and 4.0 mm each in two different lengths. Furnished in a steel carrying case.



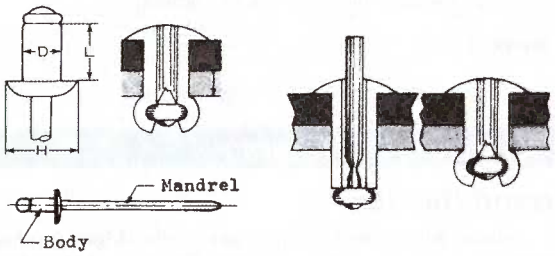
61 52 33	Hand riveter kit in steel case	Set

Blind Rivets for Riveter

High strength, precision-made hollow rivets assembled on a solid mandrel. They are specially useful for "blind" fastening where no access to the reverse side is available. Rivets are made in various sizes with head styles in aluminium, steel, monel, copper and stainless steel. Two types of standard rivets, open and closed, are available but the most common open type is described below.

Standard Open Type

Standard open type rivet is a hollow rivet, pre-assembled on to a headed pin or mandrel. The mandrel is designed to fracture at a pre-determined point during the setting operation, when the lamination forming the structure being fastened, have been drawn closely together and the whole join is tight. Normally on the vessel the rivet of aluminium alloy body and steel mandrel are used. Unless otherwise specified the aluminium alloy body and steel mandrel type will be supplied. Please specify diameter and length in mm when ordering.



How to order : CODE

Blind rivet, open type, aluminium alloy body & steel mandrel, RIVET DIAM x LENGTH mm

Unit Per Pkt

CODE	Rivet Dia mm D	Length mm L	Required Hole dia mm	Rivetting Range mm	Pcs in Pkt
61 52 36	2.4	5.7	2.5	1.0 - 3.2	100
61 52 37	3.2	4.4	3.3	1.0 - 1.6	60
38	3.2	6.3	3.3	1.6 - 3.2	60
39	3.2	8.0	3.3	3.2 - 4.8	60
40	3.2	9.8	3.3	4.8 - 6.4	60
61 52 41	4.0	6.9	4.1	1.2 - 3.2	50
42	4.0	8.6	4.1	3.2 - 4.8	50
43	4.0	10.4	4.1	4.8 - 6.4	50
44	4.0	14.0	4.1	6.4 - 9.6	50
61 52 45	4.8	7.5	4.9	1.6 - 3.2	40
46	4.8	9.3	4.9	3.2 - 4.8	40
47	4.8	11.1	4.9	4.8 - 6.4	40

Pneumatic Riveters

Designed to set all standard sizes of blind rivets and works by compressed air to set rivets securely and quietly for large jobs. The pneumatic type works smoothly with little impact, creates no noise and assures that the rivets stay loaded in the nozzle. Can rivet aluminium, stainless steel or any material with light operation and required air pressure 6.0 kgf/cm².

61 52 51	Pneumatic riveter, rivet diam 2.4 - 4.8 mm	Set

41. Stainless Steel Tools

Stainless Steel Tools

Various stainless steel tools are available and they show the following characteristics.

1) Resistant to corrosion and avoid steel material from corrosion in use.
2) Retain heat, and heat is difficult to be transmitted.
3) Higher rigidity than steel material
4) Difficult to conduct electricity compared to copper.
5) Simple cleaning.

Stainless Steel Single Open End Wrenches

Opening 15° Angle

Unit Per Pc.

CODE	Opening mm	Length mm	CODE	Opening mm	Length mm
61 60 01	8	95	**61 60 12**	32	275
02	10	100	**13**	34	290
03	12	110	**14**	36	310
04	13	140	**15**	41	345
05	14	140	**16**	46	375
61 60 06	17	160	**61 60 17**	50	410
07	19	170	**18**	55	450
08	22	195	**19**	60	490
09	24	220	**20**	65	530
10	27	240	**21**	70	570
61 60 11	30	260	**61 60 22**	75	610

Stainless Steel Double Open End Wrenches

Opening 15° Angle

Unit Per Pc.

CODE	Opening mm	Length mm	CODE	Opening mm	Length mm
61 60 25	5.5 x 7	90	**61 60 40**	21 x 26	205
26	6 x 7	92	**41**	22 x 24	210
27	8 x 10	100	**42**	23 x 26	220
28	10 x 11	115	**43**	24 x 27	230
29	10 x 12	120	**44**	24 x 30	233
61 60 30	12 x 13	128	**61 60 45**	26 x 32	243
31	12 x 14	130	**46**	27 x 30	250
32	14 x 17	150	**47**	30 x 32	265
33	17 x 19	170	**48**	30 x 36	270
34	17 x 21	173	**49**	32 x 36	300
61 60 35	19 x 21	182	**61 60 50**	34 x 36	300
36	19 x 22	185	**51**	36 x 38	330
37	19 x 24	190	**52**	36 x 41	330
38	20 x 22	195	**53**	38 x 40	330
39	21 x 23	200	**54**	41 x 46	360

S.Steel 12 Point Single End Offset Wrenches

Offset 60°

Unit Per Pc.

CODE	Opening mm	Length mm	CODE	Opening mm	Length mm
61 60 55	22	190	**61 60 60**	36	295
56	24	215	**61**	41	330
57	27	230	**62**	46	365
58	30	255	**63**	50	400
59	32	265	**64**	55	445

S.Steel 12 Point Single End Angle Wrenches

45° Angle

Unit Per Pc.

CODE	Opening mm	Length mm	CODE	Opening mm	Length mm
61 60 65	10	119	**61 60 74**	32	295
66	13	151	**75**	34	307
67	14	151	**76**	36	307
68	17	174	**77**	38	340
69	19	207	**78**	41	340
61 60 70	22	207	**61 60 79**	46	370
71	24	250	**80**	50	400
72	27	250	**81**	55	430
73	30	295			

S.Steel Striking 12 Point Ring Wrenches

Unit Per Pc.

CODE	Opening mm	Length mm	CODE	Opening mm	Length mm
61 60 85	24	165	**61 60 92**	41	225
86	27	175	**93**	46	235
87	30	185	**94**	50	250
88	32	185	**95**	55	265
89	34	200	**96**	60	274
61 60 90	36	205	**61 60 97**	65	298
91	38	215	**98**	70	320

S.Steel Open & 12 Point Box Wrenches

Unit Per Pc.

CODE	Opening mm	Overall Length mm	CODE	Opening mm	Overall Length mm
61 64 01	8	120	**61 64 15**	26	290
02	9	135	**16**	27	290
03	10	135	**17**	30	320
04	11	150	**18**	32	340
05	12	150	**19**	34	360
61 64 06	13	175	**61 64 20**	36	360
07	14	175	**21**	38	430
08	17	195	**22**	41	430
09	19	215	**23**	46	480
10	20	215	**24**	50	520
61 64 11	21	245	**61 64 25**	55	560
12	22	245	**26**	60	595
13	23	265	**27**	65	595
14	24	265	**28**	70	630

S.Steel 12 Point Double End Wrenches

15° Offset

Unit Per Pc.

CODE	Opening mm	Overall Length mm	CODE	Opening mm	Overall Length mm
61 64 31	5.5 x 7	115	**61 64 43**	21 x 23	285
32	6 x 7	115	**44**	21 x 26	320
33	8 x 10	130	**45**	22 x 24	310
34	10 x 11	140	**46**	24 x 27	340
35	10 x 12	140	**47**	24 x 30	350

(to be continued)

Unit Per Pc.

CODE	Opening mm	Overall Length mm	CODE	Opening mm	Overall Length mm
61 64 36	12 x 13	160	**61 64 48**	26 x 32	370
37	12 x 14	160	**49**	27 x 30	360
38	14 x 17	220	**50**	30 x 32	380
39	17 x 19	250	**51**	30 x 36	395
40	17 x 22	250	**52**	32 x 36	405
61 64 41	19 x 22	280	**61 64 53**	34 x 36	420
42	19 x 24	310	**54**	36 x 41	445

S.Steel Combination Ring & Spud Wrenches

60° Offset

Unit Per Pc.

CODE	Opening mm	Length mm	CODE	Opening mm	Length mm
61 64 55	14	270	**61 64 61**	30	430
56	17	310	**62**	32	430
57	19	330	**63**	36	460
58	22	350	**64**	41	490
59	24	370	**65**	46	520
61 64 60	27	400			

S.Steel Adjustable Wrenches

Unit Per Pc.

CODE	Length mm	Max Jaw Opening mm	CODE	Length mm	Max Jaw Opening mm
61 64 66	100	13	**61 64 70**	300	36
67	150	18	**71**	375	46
68	200	24	**72**	450	55
69	250	30	**73**	600	65

S.Steel Straight Pipe Wrenches

Unit Per Pc.

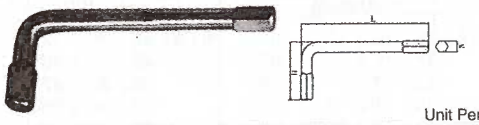
CODE	Length mm	Max Jaw Opening mm	CODE	Length mm	Max Jaw Opening mm
61 64 75	200	25	**61 64 79**	450	60
76	250	30	**80**	600	75
77	300	40	**81**	900	125
78	350	50	**82**	1,200	150

S.Steel Hook Spanner Wrenches

Unit Per Pc.

CODE	Circle Diam. mm	Overall Length
61 64 85	34 to 36	170 mm
86	40 to 42	176 mm
87	45 to 50	209 mm
88	52 to 55	212 mm
89	58 to 62	244 mm
61 64 90	68 to 75	250 mm
91	80 to 90	284 mm
92	95 to 100	288 mm
93	110 to 115	337 mm

S.Steel Allen Hexagon Wrenches



Unit Per Pc.

CODE	Across Flat (mm)	L (mm)	H (mm)	CODE	Across Flat (mm)	L (mm)	H (mm)
61 68 01	1.5	59	25	**61 68 11**	10	110	45
02	2	59	25	**12**	11	119	48
03	2.5	59	25	**13**	12	130	52
04	3	59	25	**14**	13	140	54
05	4	65	30	**15**	14	150	58
61 68 06	5	79	32	**61 68 16**	15	156	60
07	6	85	37	**17**	16	162	63
08	7	88	43	**18**	17	168	65
09	8	92	44	**19**	18	173	69
10	9	97	44	**20**	19	177	72

Stainless Steel Side Cutting Pliers

Unit Per Pr.

CODE	Length	Weight (grm)
61 68 21	150 mm	180
22	175 mm	355
23	200 mm	465

Stainless Steel Combination Pliers, Slip Joint

Unit Per Pr.

CODE	Length	Max Slip Opening
61 68 24	150 mm	8 mm
25	200 mm	13 mm

Stainless Steel Diagonal Cutting Pliers

This heavy duty diagonal cutting pliers is designed for cutting hard wires, etc. at close quarters.

Unit Per Pr.

CODE	Length	Weight (grm)
61 68 26	150 mm	245
27	200 mm	410

Stainless Steel Long Nose Side Cutting Pliers

Plastic Covered Handle

An ideal tool for quick repair and electronic works.

Unit Per Pr.

CODE	Length	Weight (grm)
61 68 28	150 mm	245
29	200 mm	410

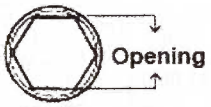
Stainless Steel Water Pump Pliers

61 68 30	Water Pump Pliers, Stainless Steel Opening Max. 32 mm	Pr.

Stainless Steel Socket Wrenches

Made of stainless steel, suitable for work with stainless steel bolt to avoid "contact corrosion".

When ordering, please indicate the size of the square drive opening at the back of the socket : 9.5 mm (3/8"), 12.7 mm (1/2"), 19.0 mm (3/4")



6 PT.

12 PT.

9.5 mm (3/8") Drive 12 Point

Unit Per Pc.

CODE	Opening mm	Overall Length mm
61 68 31	5	28
32	5.5	28
33	6	28
34	7	28
35	8	28
61 68 36	9	28
37	10	32
38	11	32
39	12	32
40	13	32
61 68 41	14	32
42	16	32
43	17	32
44	19	32

12.7 mm (1/2") Drive 12 Point

Unit Per Pc.

CODE	Opening mm	Overall Length mm
61 68 45	6	40
46	7	40
47	8	40
48	9	40
49	10	40
61 68 50	11	40
51	12	40
52	13	40
53	14	40
54	15	40
61 68 55	17	40
56	19	42
57	20	42
58	21	43
59	22	43
61 68 60	23	43
61	24	43
62	26	43
63	27	46
64	30	46
61 68 65	32	46

Clip-on Tools

Adjustable Wrenches, Heavy Duty

Unit Per Pc.

CODE	Art. No.	Length		Max. Jaw Opening
		mm	inch	
61 13 31	016.904	110	4	17mm
32	016.905	155	6	24 "
33	016.908	205	8	29 "
34	016.910	255	10	33 "
35	016.912	305	12	38 "
61 13 36	016.915	375	15	50 "
37	016.918	455	18	60 "
38	016.924	615	24	70 "

Universal Pipe Wrench

Unit Per Pr.

CODE	Art. No.	Size	Length mm
61 13 40	104.209	3/4"	280
41	104.210	1"	320
42	104.220	1-1/2"	420
43	104.220	2"	560
44	104.230	3"	630
61 13 45	104.240	4"	740

Accurate Tubing Cutter

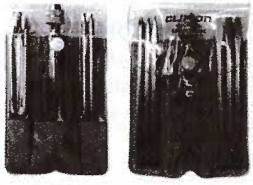
Capacity up to 3" is designed for plastic tube cutting. Ratcheting system makes cutting work accurate. Quick feed/release wheel.

Unit Per Pc.

CODE	For Tube Size O.D.		CODE For Extra Blade
61 20 38	1/4"-3"	6-76mm	61 20 48

Spark Testing Screwdriver Set

LO-V:
For Spark Testing of low voltage: 100~220V-AC, 120-300V-DC,
5 various interchangeable bits;
HI-V:
For Spark Testing of high voltage:
2,500~19,000V-AC
5 various interchangeable bits.



LO-V HI-V

Unit Per Set.

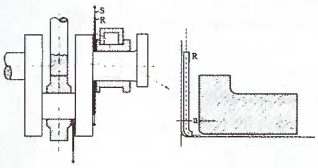
CODE	Art. No.	Nominal	Content
61 24 16	034.021	LO-V	Plastic handle with Chuck, -3.5, -5.0, -6.5, #1, #2
61 24 17	034.022	HI-V	Plastic handle with Chuck, -4.0, -5.0, -6.0, #1, #2

Bearing Feeler Gauge

Used for measuring main bearing clearance of marine engine.

When the rod "S" has been pressed through the pipe "R", the pipe "R" can be pushed away fro the brass by further pressing on the rod "S" and when a distance "a" is obtained it is easy to feel the fit of the feeler in the clearance.

Obs. Keep "R" against the journal as long as the feeler is in the bearing.



Unit Per Set.

CODE	Art No.	Range mm	Contents mm
61 05 87	090.012	0.75~0.95	0.75, 0.80, 0.85, 0.90, 0.95
88	090.022	0.65~0.85	0.65, 0.70, 0.75, 0.80, 0.85
89	090.032	0.05~0.35	0.05, 0.1, 0.15, 0.2, 0.25, 0.30, 0.35
90	090.042	0.40~0.70	0.40, 0.45, 0.50 ,0.55, 0.60, 0.65, 0.70
91	090.052	0.75~1.05	0.75, 0.80, 0.85, 0.90, 0.95, 1.00, 1.05
61 05 92	090.062	0.40~0.60	0.40, 0.45, 0.50, 0.55, 0.60
93	090.072	0.10~1.10	0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80, 0.90, 1.00, 1.10

Bearing Puller Set

BPK55 For Inner Ring

The slide hammer bearing puller set is designed for removing "hard-to-puller" bearings without damaging the bearing housing. Sliding the body of the hammer, the strong impact to the grip enables bearing extraction.

BPK65 For Inner & Outer Ring

The bearing puller set is designed to remove the internal and external bearing rings from bearings mounted to various fittings, shafts, etc. Made of drop forged.

Unit Per Set.

CODE	Art. No.	Content
61 50 81	113.061	Sliding Hammer * 1 Set Internal Claw * 5 Pcs Steel Case * 1 Pc
61 50 82	113.062	Sliding Hammer * 1 Set Internal Claw * 8 Pcs Gear Puller * 1 Pc Flare Nut Wrench * 1 Pc Hexagon Key Wrench * 1 Pc Steel Case * 1 Pc

Gauge Glass Cutter

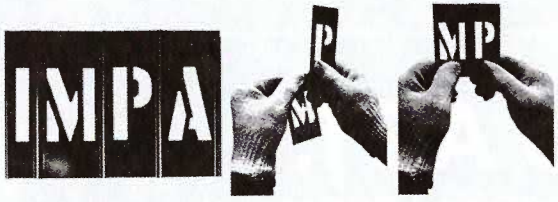
Steel construction for durability. The tungsten Carbide Wheel makes the cutting work on glass tube high efficient.

Unit Per Pc.

CODE	Type	Capacity Min. Inside Diam.x Length
61 28 09	Double	8 mm x 200 mm

Reusable Interlocking Stencils

Reusable, adjustable and interlocking. Gothic-style characters for horizontal composition. Stencils adjust quickly for perfect character alignment, spacing and clean, bold characters. Made of brass, suitable for marking shipments, making signs and other identification on ships.



33 Piece Single Letter Sets — Unit Per Set.

CODE	Art. No.	Size	Content
61 31 41	120.121	1"	"A-Z*1
42	120.122	1-1/2"	Other:
43	120.123	2"	Plain Ender*1
44	120.124	2-1/2"	Period Ender*1
45	120.125	3"	Comma*1
61 31 46	120.126	4"	Dash*1
47	120.127	5"	Period*1
48	120.128	6"	Apostrophe*1
			&*1"

15 Piece Single Figure Sets — Unit Per Set.

CODE	Art. No.	Size	Content
61 31 51	120.141	1"	1-9*1, 0*2
52	120.142	1-1/2"	Other:
53	120.143	2"	Period*1,
54	120.144	2-1/2"	Dash*1,
55	120.145	3"	Plain Ender*2"
61 31 56	120.146	4"	
57	120.147	5"	
58	120.148	6"	

45 Piece Letter & Figure Sets — Unit Per Set.

CODE	Art. No.	Size	Content
61 31 61	120.151	1"	A-Z*1
62	120.152	1-1/2"	0-9*1
63	120.153	2"	Other:
64	120.154	2-1/2"	Plain Ender*2, Period*1,
65	120.155	3"	Ender*1, Comma*1,
61 31 66	120.156	4"	Dash*1, Period*1,
67	120.157	5"	Spacer*2, &*1"
68	120.158	6"	

78 Piece Letter & Figure Sets — Unit Per Set.

CODE	Art. No.	Size	Content
61 31 31	120.161	1"	A-P*2, Q*1, R-U*2, V*1,
32	120.162	1-1/2"	W*2, X-Z*2,
33	120.163	2"	0-9*2
34	120.164	2-1/2"	Other:
35	120.165	3"	Plain Ender*2, Period*2,
61 31 36	120.166	4"	Spacer*2, Comma*1,
37	120.167	5"	Apostrophe*1, Dash*1,
38	120.168	6"	Period Ender*1,&*1"

Heavy Duty Wad Punch

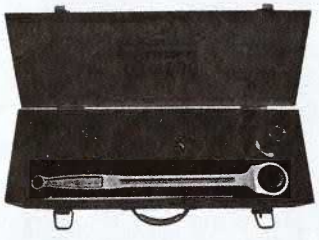
Wad Punches are heavy-duty tools designed to cut discs of gasket materials.
They are most commonly used to create washers by first cutting a disc with a larger sized wad punch and the centre hole with a smaller sized punch.

Unit Per Pc.

CODE	Art No.	Hole Diam. mm	CODE	No.	Hole Diam. mm
61 30 49	085.006	6	**61 30 93**	085.032	32
50	085.007	7	**94**	085.033	33
51	085.008	8	**95**	085.034	34
52	085.009	9	**96**	085.035	35
53	085.010	10	**97**	085.036	36
61 30 54	085.011	11	**61 30 98**	085.037	37
55	085.012	12	**99**	085.038	38
57	085.013	13	**61 31 00**	085.039	39
58	085.014	14	**12**	085.040	40
59	085.015	15	**13**	085.041	41
61 30 63	085.016	16	**61 31 14**	085.042	42
64	085.017	17	**15**	085.043	43
67	085.018	18	**27**	085.044	44
68	085.019	19	**28**	085.045	45
69	085.020	20	**29**	085.046	46
61 30 78	085.021	21	**61 31 30**	085.048	48
79	085.022	22	**97**	085.050	50
81	085.023	23	**98**	085.055	55
82	085.024	24	**99**	085.060	60
83	085.025	25	**61 32 00**	085.065	65
61 30 84	085.026	26	**61 32 10**	085.070	70
85	085.027	27	**11**	085.075	75
87	085.028	28	**12**	085.080	80
90	085.029	29	**13**	085.085	85
91	085.030	30	**14**	085.090	90
92	085.031	31	**15**	085.100	100

Hexagon Bit Sets

A handy tool kit to tighten and loosen hexagon head cap screws. The attached ratchet handles are differently designed in multi-function.



Unit Per Set

CODE	Art No.	Sq. Dr. inch	Hexagon Bit		Art. No.
			Size	Quantity	
61 12 86	025.101	1/4	1.5-5	6's	RC-2000
87	025.102	3/8	3-10	6's	RC-3000
88	025.103	1/2	6-17	6's	RC-4000
89	025.104	3/4	14-27	6's	RC-6000

19 mm (3/4") Drive 12 Point

Unit Per Pc.

CODE	Opening mm	Overall Length mm
61 68 66	17	50
67	19	50
68	21	55
69	22	55
70	24	55
61 68 71	26	55
72	27	55
73	30	60
74	32	60
75	35	60
61 68 76	36	60
77	38	60
78	41	65
79	46	65
80	50	70

Stainless Steel Ratchet Handles
for Socket Wrenches

Made of stainless steel, suitable for work together with stainless steel socket wrenches.

Unit Per Pc.

CODE	Square Drive	Overall Length mm	Weight (grm)
61 68 81	9.5 mm (3/8")	200	290
82	12.7 mm (1/2")	245	690
83	19.0 mm (3/4")	320	1,570

42. Non-Sparking Tools

Non-Sparking, Non-Magnetic & Non-Corrosive for Tankers, LPG and LNG Vessels

Two types of non-spark tools are available, a high quality grade beryllium copper alloy material and a standard grade aluminium bronze alloy. These tools are non magnetic and non corrosive. The sizes of the items specified below are standard, but larger or smaller sizes are available upon request.

Sparkless Safety Tool on Grinding

Sparking Alloy Tool on Grinding

Non-Spark Single Open End Wrenches

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 54 01	8	**61 54 21**	10
02	10	**22**	12
03	12	**23**	14
04	14	**24**	17
05	17	**25**	19

(to be continued)

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 54 06	21	**61 54 26**	21
07	23	**19**	22
08	26	**27**	23
09	29	**20**	24
10	32	**28**	26
61 54 11	35	**61 54 38**	27
12	38	**29**	29
13	41	**39**	30
14	46	**30**	32
15	50	**31**	35
61 54 16	54	**61 54 40**	36
17	58	**32**	38
18	63	**33**	41
		34	46
		35	50
		61 54 36	58
		37	67

Non-Spark Double Open End Wrenches

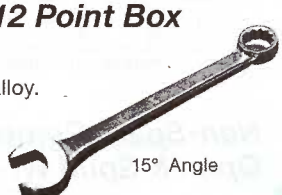
15° Angle

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 54 41	8 x 9	**61 54 60**	8 x 10
42	10 x 12	**61**	9 x 10
43	12 x 14	**62**	10 x 12
44	14 x 17	**63**	12 x 14
45	17 x 19	**64**	14 x 17
61 54 46	17 x 21	**61 54 65**	17 x 19
47	19 x 21	**66**	17 x 21
48	21 x 23	**67**	19 x 21
49	21 x 26	**56**	19 x 22
50	23 x 26	**68**	21 x 23
61 54 51	26 x 32	**61 54 69**	21 x 26
52	32 x 35	**57**	22 x 24
53	35 x 41	**70**	23 x 26
54	41 x 46	**58**	24 x 27
55	41 x 50	**59**	24 x 30
		61 54 71	26 x 29
		72	26 x 32
		77	27 x 30
		73	29 x 32
		78	30 x 32
		61 54 74	32 x 35
		79	32 x 36
		75	35 x 41
		88	36 x 41
		76	41 x 46

Non-Spark Open & 12 Point Box Wrenches

Made of beryllium copper alloy.



15° Angle

Unit Per Pc.

CODE	Opening mm	CODE	Opening mm
61 54 89	24	**61 55 11**	32
61 55 00	30	**12**	36

Non-Spark 12 Point Single End Offset Wrenches

15° Offset

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 54 80	17	**61 54 90**	17
81	21	**91**	19
82	26	**92**	21
83	32	**93**	23
84	35	**94**	26
61 54 85	41	**61 54 95**	32
86	46	**96**	35
87	50	**97**	41
		98	46
		99	50

Non-Spark 12 Point Single End Angle Wrenches

Beryllium Copper Alloy

15° Angle

Unit Per Pc.

CODE	Opening mm	CODE	Opening mm
61 55 01	17	**61 55 06**	32
02	19	**07**	35
03	21	**08**	41
04	23	**09**	46
05	26	**10**	50

Non-Spark 12 Point Double End Wrenches

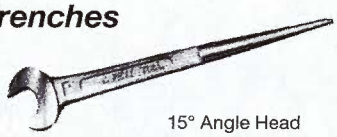
15° Offset

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 55 13	10 x 12	**61 55 26**	12 x 14
14	10 x 13	**27**	14 x 17
15	12 x 14	**28**	17 x 19
16	14 x 17	**29**	17 x 21
17	17 x 19	**30**	19 x 21
61 55 18	17 x 21	**61 55 24**	19 x 22*
19	19 x 21	**31**	21 x 26
20	21 x 26	**25**	22 x 24*
21	26 x 32	**32**	23 x 26
22	32 x 35	**35**	24 x 27*
61 55 23	35 x 41	**61 55 42**	24 x 30*
		33	26 x 32
		43	27 x 30*
		50	30 x 32*
		34	32 x 35
		61 55 57	32 x 36*
		64	36 x 41*

Remark : * marked sizes are 45° Offset

Non-Spark Combination Open & Spud Wrenches



15° Angle Head

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 55 36	17	**61 55 44**	17
37	21	**45**	21
38	26	**46**	26
39	32	**47**	32
40	35	**48**	35
61 55 41	41	**61 55 49**	41

Non-Spark Combination Ring & Spud Wrenches

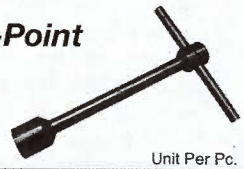
60° Offset

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 55 51	17	**61 55 58**	17
52	21	**59**	21
53	26	**65**	24*
54	32	**60**	26
55	35	**70**	27*
61 55 56	41	**61 55 76**	30*
		61	32
		62	35
		77	36*
		63	41

Remark : * marked sizes are 45° Offset

Non-Spark T-Type 12-Point Box Wrenches



Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 55 66	19	**61 55 71**	17
67	24	**72**	19
68	30	**73**	24
69	36	**74**	26
		75	30

Non-Spark Striking Single Open End Wrenches

Beryllium Copper Alloy

Unit Per Pc.

Beryllium Copper Alloy			
CODE	Opening mm	CODE	Opening mm
61 55 80	30	**61 55 83**	36
81	32	**84**	41
82	35	**85**	46

Non-Spark Striking 12 Point Ring Wrenches

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 55 90	26 (6 point)	**61 56 01**	26
91	32 (6 ")	**02**	27
92	35 (6 ")	**03**	30
93	41 (6 ")	**04**	32
94	46 (6 ")	**05**	35

(to be continued)

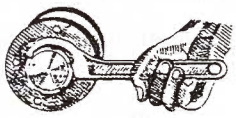
Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening mm	CODE	Opening mm
61 55 95	50 (6 point)	**61 56 06**	36
96	58 (6 ")	**07**	41
97	63 (6 ")	**08**	46
98	71 (12 ")	**09**	50
		10	55

Non-Spark Hook Spanner Wrenches

Special Aluminium Bronze

A tool to tighten and loosen round nuts with notches. Sizes fit to the outer diameter of round nuts.



Unit Per Pc.

Special Aluminium Bronze		
CODE	**61 56 12**	**61 56 13**
For Hose Size mm	40	65

Non-Spark Adjustable Wrenches

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	O' all Length mm	CODE	O' all Length mm
61 56 15	150	**61 56 22**	150
16	200	**23**	200
17	250	**24**	250
18	300	**25**	300
19	375	**26**	375
61 56 20	450		

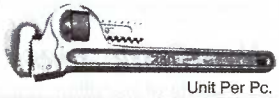
Non-Spark Ratchet Wrenches for Socket

The size of this wrench is determined by its opening across flats, not by bolt diameter.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening Across Flat mm	CODE	Opening Across Flat mm
61 56 30	17	**61 56 40**	17
31	26	**41**	19
32	32	**42**	21
33	35	**43**	22
34	41	**44**	24
61 56 35	50	**61 56 45**	26
36	58	**46**	27
37	63	**47**	30
		48	32
		49	35
		61 56 50	36

Non-Spark Straight Pipe Wrenches



Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	O' all Length mm	CODE	O' all Length mm
61 56 51	200	**61 56 59**	200
52	250	**60**	250
53	300	**61**	300
54	350	**62**	350
55	450	**63**	450

(to be continued)

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	O' all Length mm	CODE	O' all Length mm
61 56 56	600	**61 56 64**	600
57	900	**65**	900

Non-Spark Socket Wrench Sets

Able to furnish 12.7 mm square drive set only.

Unit Per Set

CODE	Rank	Square Drive	Contents
61 56 71	Special Aluminium Bronze	12.7 mm	8 sockets of m/m ... 10, 12, 14, 17, 19, 21, 23, 26 1 each of ... Speed T handle, Nut spinner handle, Sliding T handle, Universal Joint, Offset handle, Male ratchet handle and 3 length of extension bars.
61 56 72	Beryllium Copper Alloy	12.7 mm	15 sockets of m/m ... 9, 10, 12, 13, 14, 15, 16, 17, 17.5, 19, 21, 23, 26, 29, 32 1 each of ... Universal Joint, Cross bar, Male ratchet handle, Sliding T handle, Nut spinner handle, Speed T handle and 2 of extension bars.
61 56 73		12.7 mm	22 sockets of m/m... 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 30, 32 1 each of... Deep socket, Universal joint, Male ratchet handle, Sliding T handle, Speed T handle, Driver socket, Offset handle and 2 of Extension bars.

Non-Spark Hexagon Allen Wrenches

Beryllium Copper Alloy

Unit Per Pc.

Beryllium Copper Alloy			
CODE	Size mm	CODE	Size mm
61 56 90	2.5 x 56	**61 56 94**	6 x 90
91	3 x 63	**95**	8 x 100
92	4 x 70	**96**	10 x 122
93	5 x 80		

Non-Spark Ball Pein Hammers

Reliable ball pein hammer, will not produce sparks.

Unit Per Pc.

Special Aluminium Bronze			Beryllium Copper Alloy		
CODE	Nominal Size	Weight Grm.	CODE	Nominal Size	Weight Grm.
61 57 01	1/4	115	**61 57 10**	1/4	115
02	1/2	225	**11**	1/2	225
03	3/4	340	**12**	3/4	340
04	1	453	**13**	1	453
05	1-1/2	680	**14**	1-1/2	680
61 57 06	2	900	**61 57 15**	2	900
07	3	1,350	**16**	3	1,350

Non-Spark Testing Hammers

Unit Per Pc.

Special Aluminium Bronze		Weight Grm	Beryllium Copper Alloy	
CODE	Nominal Size		CODE	Nominal Size
61 57 20	1/4	130	**61 57 25**	1/4
21	1/2	220	**26**	1/2
22	3/4	300	**27**	3/4
23	1	380	**28**	1

Non-Spark Double Face Hammers with Handle

This double face hammer head is furnished with a handle. If a handle is not required, please specify accordingly.

Unit Per Pc.

Special Aluminium Bronze		Weight kgs	Beryllium Copper Alloy	
CODE	Nominal Size		CODE	Nominal Size
61 57 30	3	1.36	**61 57 40**	3
31	4	1.81	**41**	4
32	5	2.27	**42**	5
33	6	2.72	**43**	6
34	8	3.63	**44**	8
61 57 35	10	4.53	**61 57 45**	10
36	12	5.45	**46**	12
37	15	6.8	**47**	15
38	20	9.0		

Non-Spark Chipping Hammers Handled

Designed for chipping of scale, rust or old paint in vessels where non-sparking safety tools are indispensable.

Unit Per Pc.

Special Aluminium Bronze		Weight Grm	Beryllium Copper Alloy	
CODE	Nominal Size		CODE	Nominal Size
61 57 51	1/2	225	**61 57 55**	1/2
		340	**56**	3/4
52	1	453	**57**	1
		680	**58**	1-1/2

Non-Spark Claw Hammers Handled

One side for hammering and the other for pulling out nails.

Unit Per Pc.

Special Aluminium Bronze		Weight Grm	Beryllium Copper Alloy	
CODE	Nominal Size		CODE	Nominal Size
61 57 70	1	453	**61 57 75**	1
		680	**76**	1-1/2

Non-Spark Cold Chisels

To be used on jobs where non-sparking cold chisels are required.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Size mm	CODE	Size mm
61 58 01	10 x 150	**61 58 09**	20 x 200
02	15 x 150	**10**	27 x 200
03	17 x 180	**11**	27 x 250
04	21 x 200	**12**	27 x 300
05	23 x 200		
61 58 06	25 x 215		
07	25 x 300		

Non-Spark Concrete Chisels

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Size mm	CODE	Size mm
61 58 14	20 x 200	**61 58 18**	20 x 200
15	20 x 250	**19**	25 x 200
16	25 x 250	**20**	25 x 250
		21	30 x 300

Non-Spark Caulking Chisels Special Aluminium Bronze

Unit Per Pc.

Special Aluminium Bronze					
CODE	Type	Size mm	CODE	Type	Size mm
61 58 24	Straight	25 x 150	**61 58 27**	Bent	17 x 170
25	"	25 x 170	**28**	"	17 x 200
26	"	25 x 200	**29**	W/handle	125

Non-Spark Crowbars

Made of beryllium copper alloy.

Unit Per Pc.

Round Body		Hexagon Body	
CODE	Blade Width x Overall Length mm	CODE	Blade Width x Overall Length mm
61 58 30	52 x 600	**61 58 31**	22 x 1,000

Non-Spark Pinch Bars

Made of beryllium copper alloy.

61 58 32	Bar, pinch, blade width 30 mm x overall length 1,200 mm, non-spark, beryllium copper alloy	Pc.

Non-Spark Hand Scrapers with Handle Beryllium Copper Alloy

Designed for scraping in areas where non-sparking tools are required.

Unit Per Pc.

Beryllium Copper Alloy		
CODE	SIZE mm	Remark
61 58 40	40 x 75	with handle
41	75 x 115	"

Non-Spark Deck Scrapers with Handle

With 900 mm long handle.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Size mm	CODE	Size mm
61 58 43	50 x 900	**61 58 44**	50 x 900

Non-Spark Angle Scrapers

Specify width and length when ordering.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Size mm	CODE	Size mm
61 58 46	40 x 250	**61 58 48**	40 x 270
47	40 x 300	**49**	50 x 300

Non-Spark Combination Pliers, Slip Joint

Designed for maximum gripping capacity to round objects.

Unit Per Pr.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Length mm	CODE	Length mm
61 58 61	150	**61 58 63**	160
62	200	**64**	210

Non-Spark Side Cutting Pliers

A non-sparking tool with powerful leverage and rigid side cutters.

Unit Per Pr.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Length mm	CODE	Length mm
61 58 67	180	**61 58 70**	150
68	250	**71**	170
		72	200

Non-Spark Radio Pliers

Long thin taper nose for use in close quarters. An ideal tool for quick electrical and repair works.

Unit Per Pr.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Length mm	CODE	Length mm
61 58 75	150	**61 58 76**	160

Non-Spark Diagonal Cutting Pliers

This heavy duty diagonal cutting pliers is designed for cutting hard wires, etc. at close quarters.

Unit Per Pr.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Length mm	CODE	Length mm
61 58 80	150	**61 58 81**	150

Non-Spark Water Pump Pliers

61 58 85	Water pump pliers, special aluminium bronze	Pr.
86	" , beryllium copper alloy	"

Non-Spark Slotted Screwdrivers, Plastic Handle

Note: The sizes listed are of blade length only, not overall length.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Blade mm	CODE	Blade mm
61 59 01	4.5 x 50	**61 59 10**	4.5 x 50
02	5 x 75	**11**	5.5 x 75
03	6 x 100	**12**	6 x 100
04	6 x 125	**13**	8 x 150
05	8 x 150	**14**	9 x 200
61 59 06	8 x 200	**61 59 15**	10 x 250
07	10 x 250	**16**	10 x 300
08	10 x 300		

Non-Spark Screwdrivers, Phillips, Plastic Handle

The sizes listed below are of blade size only, not overall length.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Blade mm	CODE	Blade mm
61 59 20	No. 1 x 75	**61 59 25**	No. 1 x 75
21	2 x 100	**26**	2 x 100
22	3 x 150	**27**	3 x 150
23	4 x 200	**28**	4 x 200

Non-Spark Drum Opening Spanners

A tool specially designed to open drums, plugs, and caps of Japanese or foreign origin in an easy, quick, and safe way.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Overall Length mm	CODE	Overall Length mm
61 59 36	520	**61 59 37**	560

Non-Spark Valve Wheel Wrenches

F Type

Specify length when ordering.

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Opening Width x Overall Length mm	CODE	Opening Width x Overall Length mm
61 59 40	30 x 300	**Round Bar**	
41	40 x 500	**61 59 45**	30 x 250
42	50 x 700	**44**	35 x 250
43	60 x 1,000	**48**	40 x 300
		49	44 x 350
		61 59 46	50 x 300
		47	65 x 500
		50	68 x 500
		56	68 x 600
		Square Bar	
		61 59 57	44 x 350
		62	60 x 500

Non-Spark Square Shovels

Unit Per Pc.

Special Aluminium Bronze			Beryllium Copper Alloy		
CODE	Blade mm	O' all Length mm	CODE	Blade mm	O' all Length mm
61 59 51	180 x 225	910	**61 59 54**	180 x 220	910
52	250 x 300	970	**55**	255 x 300	970
53	280 x 355	1,060			

Non-Spark Round Shovels

Unit Per Pc.

Special Aluminium Bronze			Beryllium Copper Alloy		
CODE	Blade mm	O' all Length mm	CODE	Blade mm	O' all Length mm
61 59 58	225 x 290	970	**61 59 59**	224 x 292	970

Non-Spark Fibreglass Square Scoops & Shovels

Made of fibreglass, a non-sparking safety tool, also will not scrape or strip the protective coating of a tank when sludging. Heavy duty, lightweight and most suitable tool for sludging oil tanks. Available in Scoop & Shovel.

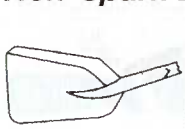
Scoop

Shovel

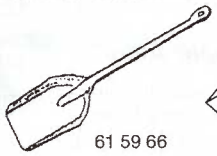
Unit Per Pc.

CODE	Description	Blade (mm)	O' all Length (mm)
61 59 60	Scoop, square fiberglass non-spark	167 x 220	330
61 59 61	Shovel, square fiberglass non-spark	290 x 445	1,040

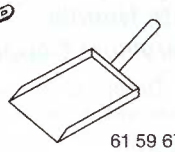
Non-Spark Dust Pans



61 59 65



61 59 66



61 59 67

Unit Per Pc.

Aluminium			Special Aluminium Bronze		
CODE	Blade mm	O' all Length mm	CODE	Blade mm	O' all Length mm
61 59 65	160 x 240	460	**61 59 66**	100 x 150	320
			67	130 x 175	315

Non-Spark Putty Knives

Unit Per Pc.

Special Aluminium Bronze		Beryllium Copper Alloy	
CODE	Size mm	CODE	Size mm
61 59 70	75 x 175	**61 59 71**	35 x 190
		73	40 x 200
		74	50 x 200
		72	75 x 175
		76	75 x 200

Non-Spark Heavy Duty Knives

Edged cutting blade length is 150 mm and overall length is 265 mm.

61 59 75	Knife, heavy duty, beryllium copper alloy, non-spark	Pc.

Non-Spark Hatchets

Made of beryllium copper alloy.

61 59 77	Hatchet, blade length 85 mm x overall length 365 mm, non-spark, beryllium copper alloy	Pc.

43. Bahco Tools

Bahco tools are made of selected Swedish steel, produced from high-grade iron ore containing a minimum of impurities.

High quality steel combined with precision manufacture, technical know-how and skilled craftsmanship have made Bahco Tools famous throughout the world.

Adjustable Wrenches

110 ~ 455 mm

615 ~ 770 mm

Unit Per Pc.

CODE	Length mm	Length inch	Max. Opening	Bahco Type No.
61 61 01	110	4-1/4	13 mm	8069
02	155	6	20 "	8070
03	205	8	27 "	8071
04	255	10	30 "	8072
05	305	12	34 "	8073
61 61 06	380	15	44 "	8074
07	455	18	53 "	8075
08	615	24	63 "	86
09	770	30	85 "	87

Pipe Wrenches

Bahco

Universal Pipe Wrench

Unit Per Pr.

CODE	Length mm	Max Opening	Bahco Type No.
61 61 11	215	30 mm	140
12	280	36 mm	141
13	370	52 mm	142
14	555	78 mm	143
15	720	110 mm	144
61 61 16	940	160 mm	147

Corner Pipe Wrench

Unit Per Pr.

CODE	Length mm	Max. Opening	Bahco Type No.
61 61 20	320	40 mm	442B
21	430	65 mm	443B
22	535	78 mm	444B

Open & 12 Point Box Wrenches

PU Type

Unit Per Pc.

CODE	Opening mm	Bahco Type No.	CODE	Opening mm	Bahco Type No.
61 61 29	6	PU 6	61 61 44	21	PU21
30	7	PU 7	45	22	PU22
31	8	PU 8	46	23	PU23
32	9	PU 9	47	24	PU24
33	10	PU10	48	25	PU25
61 61 34	11	PU11	61 61 49	26	PU26
35	12	PU12	50	27	PU27
36	13	PU13	51	28	PU28
37	14	PU14	52	29	PU29
38	15	PU15	53	30	PU30
61 61 39	16	PU16	61 61 54	32	PU32
40	17	PU17	57	36	PU36
41	18	PU18			
42	19	PU19			
43	20	PU20			

Pliers

Bahco

Engineer's Sidecutting Pliers

2628G

Unit Per Pr.

CODE	Length mm	Bahco Type No.
61 62 13	167	2628G - 160
14	187	2628G - 180
15	207	2628G - 200

Letter G stands for vinyl covered handle.

Round Nose Pliers

Unit Per Pr.

CODE	Length mm	Bahco Type No.
61 62 21	152	2521G - 140

Snipe Nose Pliers 60° offset

Unit Per Pr.

CODE	Length mm	Bahco Type No.
61 62 27	174	2427G - 160
28	190	2427G - 200

Nippers

Bahco

Side Cutting Nipper

Unit Per Pr.

CODE	Length mm	Bahco Type No.
61 62 31	140	1528 D

Bulldog End Cut Nipper

527D

1519D

Unit Per Pr.

CODE	Length mm	Bahco Type No.
61 62 36	160	527 D - 160
37	200	527 D - 200
40	230	1519 D

Cutters

Bahco

Power Cutter

Unit Per Pr.

CODE	Length mm	Bahco Type No.
61 62 35	250	1518 D

Bolt Cutter

Unit Per Pr.

CODE	Length mm	Capacity Wire ø	Bahco Type No.
61 62 51	465	6 mm	4559 -18
52	610	8 mm	4559 -24
53	760	9 mm	4559 -30
54	910	10 mm	4559 -36
55	1,070	11 mm	4559 -42

Cable Cutter

2520

Unit Per Pr.

CODE	Length mm	Cutting Capacity	Bahco Type No.
61 62 61	550	30 mm	2520

Screwdrivers

Round Blade for Slot Head Screw

Unit Per Pc.

CODE	Blade Length	Bahco Type No.
61 63 01	50 mm	BE-6110
02	75 mm	BE-6120
03	100 mm	BE-6130
04	125 mm	BE-6140
05	125 mm	BE-6150
61 63 06	150 mm	BE-6160

Round Blade for Cross Head Screw

Unit Per Pc.

CODE	Tip No.	Blade Length	Bahco Type No.
61 63 10	0	60 mm	BE-5600
11	1	80 mm	BE-5610
12	2	100 mm	BE-5620
13	3	150 mm	BE-5630
14	4	200 mm	BE-5640

Blade with Hexagonal Section for Slot Head Screw

Unit Per Pc.

CODE	Blade Length	Bahco Type No.
61 63 16	100 mm	BE-6850
17	150 mm	BE-6860
18	175 mm	BE-6870
19	200 mm	BE-6880
20	200 mm	BE-6890

Short Blade for Slot Head Screw

Unit Per Pc.

CODE	Tip Size mm	Blade Length	Bahco Type No.
61 63 22	0.8 x 4.0	25 mm	BE-6540
23	1.2 x 8.0	25 mm	BE-6560

Short Round Blade for Cross Head Screw

Unit Per Pc.

CODE	Tip No.	Blade Length	Bahco Type No.
61 63 27	1	25 mm	BE-5710
28	2	25 mm	BE-5720

44. Ridgid Tools

Adjustable Wrenches

Unit Per Pc.

CODE	No.	Length		Jaw Open	
		inch	mm	inch	mm
Chrome					
61 65 01	704	4	100	1/2	10
02	706	6	150	3/4	20
03	708	8	200	7/8	25
04	710	10	250	1 - 1/8	30
05	712	12	300	1 - 5/16	35

(to be continued)

Unit Per Pc.

CODE	No.	Length		Jaw Open	
		inch	mm	inch	mm
61 65 06	715	15	375	1 - 11/16	40
08	718	18	450	2 - 1/16	50
10	724	24	600	2 - 7/16	60
Black					
61 65 11	704B	4	100	1/2	10
12	706B	6	150	3/4	20
13	708B	8	200	7/8	25
14	710B	10	250	1 - 1/8	30
15	712B	12	300	1 - 5/16	35
61 65 16	715B	15	375	1 - 11/16	40
18	718B	18	450	2 - 1/16	50

Straight Pipe Wrenches

Unit Per Pc.

CODE	Overall Length in/mm	Jaw Opening in/mm	CODE	Overall Length in/mm	Jaw Opening in/mm
61 65 30	6/150	3/4 / 20	**61 65 35**	18/ 450	2-1/2 / 65
31	8/200	1 / 25	**36**	24/ 600	3 / 80
32	10/250	1-1/2 / 40	**37**	36/ 900	5 / 125
33	12/300	2 / 50	**38**	48/1,200	6 / 150
34	14/350	2 / 50	**39**	60/1,500	8 / 200

Aluminium Handle Straight Pipe Wrench

Unit Per Pc.

CODE	No.	Handle Length inch/mm	Jaw Opening inch/mm	Weight lbs
61 65 42	810	10/ 250	1-1/2/ 40	1
43	814	14/ 350	2/ 50	2-1/2
44	818	18/ 450	2-1/2/ 65	3-3/4
61 65 45	824	24/ 600	3/ 80	6
46	836	36/ 900	5/125	11
47	848	48/1,200	6/150	18 - 1/2

Heavy-Duty Chain Wrenches

Unit Per Pc.

CODE	No.	Capacity				Chain Length	
		Rated	Pipe	Actual O.D.			
		inch	mm	inch	mm	inch	mm
61 65 70	C-14	2	50	5	125	18-1/2	460
71	C-18	2-1/2	60	5	125	20-1/4	500
72	C-24	3	75	5	125	20-1/4	500
73	C-36	4-1/2	110	7-1/2	185	29	725

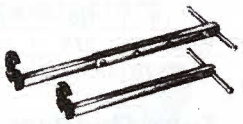
Strap Wrenches

Best for any polished pipe, strong woven nylon strap gives a tight grip and will not scratch the surface of the pipe.

Unit Per Pc.

CODE	No.	Capacity inch	Strap Width inch
61 65 76	1	1/8 ~ 2	1/2
77	2	1/8 ~ 2	1 - 1/8
78	5	1 ~ 5	1 - 3/4

Basin Wrenches



An extension wrench specially designed for the installation or repair of sink basins. Spring loaded jaws provide fast one hand ratcheting in confined, difficult to reach areas.

Unit Per Pc.

CODE	No.	Shank Length	Capacity
61 65 90	1010	10"	3/8 - 1-1/4"
61 65 91	1017	10 - 17"	3/8 - 1-1/4"
61 65 92	1019	10 - 17"	1-1/4" - 2-1/2"

Offset Hex Wrenches

Unit Per Pc.

CODE	No.	Capacity	Jaw Opening	Length
61 65 94	E - 110	1-1/8" - 2-5/8"	2-5/8"	9-1/2"

Exposed Ratchet Drop Head Threaders

for Pipe Thread

This ratchet allows you to thread easily with a manual operation. This drop head style threader comes with a complete set of the necessary die sizes. Ratchet will cut a clean thread on the first time, it is not necessary to make a secondary cut.

Unit Per Set

CODE	No.	Capacity for Thread BSPT
61 66 01	00-R	1/8 to 1
03	12-R	1/8 to 2
04	R-200	1/8 to 2

Die Head for Drop Head Threaders

British standard pipe taper threaded head will be delivered unless another type of thread is specified.

Unit Per Pc.

Size	No.00-R	No.12-R	No.R-200
	CODE		
1/8	**61 66 05**	**61 66 30**	**61 66 91**
1/4	**06**	**31**	**92**
3/8	**07**	**32**	**93**
1/2	**08**	**33**	**94**
3/4	**09**	**34**	**95**
1	**61 66 10**	**61 66 35**	**61 66 96**
1-1/4		**36**	**97**
1-1/2		**37**	**98**
2		**38**	**99**

Metal Carrying Cases

for Drop Head Pipe and Bolt Threader

Unit Per Pc.

CODE	Threader Type for	Weight kgs
61 66 45	00 - R	3.4
47	12 - R	6.3

Ratchet Bolt Threaders

When ordering, please specify type of thread.

Unit Per Pc.

CODE	No.	Capacity	
		inch	mm
61 66 54	00 - RB	1/4-1	6-25

Ratchet Threaders

British standard pipe taper thread will be delivered unless another type of thread is specified.

Unit Per Pc.

CODE	No.	Capacity	
		inch	mm
61 66 56	65R - TC	1-2	25-50

Dies for Ratchet Threaders

Unit Per Pc.

CODE	**61 66 57**	**61 66 58**	**61 66 59**	**61 66 60**
Size	1"	1-1/4"	1-1/2"	2"

Pipe Cutters

Ridgid

Heavy-Duty Pipe Cutters

1-A & 2-A

3-S, 4-S and 6-S

Unit Per Pc.

CODE	No.	Capacity	Weight lbs/kgs
61 66 63	1 - A	1/8 - 1-1/4"	6 - 1/2/3.0
64	2 - A	1/8 - 2"	7 - 1/4/3.2
61 66 68	3 - S	1" ~ 3"	15/6.8
69	4 - S	2" ~ 4"	18/8.2
70	6 - S	4" ~ 6"	24/10.1

Wide Roll Pipe Cutters

Unit Per Pc.

CODE	No.	Capacity		Weight kgs
		inch	mm	
61 66 66	202	1/8 - 2	3-50	3.5

Heavy Duty 4-Wheel Pipe Cutters

No. 42-A

No. 44-S

Unit Per Pc.

CODE	No.	Capacity	Weight lbs/kgs
61 66 72	42 - A	3/4" - 2"	7/3.1
73	44 - S	2-1/2" - 4"	20/9.0

Spare Wheels for Ridgid Pipe Cutter

Unit Per Pc.

CODE	No.	Pipe Cutter Model	Range mm
61 66 75	F - 3	1 - A, 2 - A, 202, 42A	1/8 to 2"
76	F - 229	3 - S, 4 - S, 44 - S	1 to 4"
77	F - 367	6 - S	4 to 6"

Bolt Cutters

Unit Per Pr.

CODE	No.	Cut Diam inch/mm	Length inch/mm	Remark
61 66 80	N14S	1/4 / 6	15 / 379	Center Cut
81	N18S	5/16 / 8	19 / 485	"
82	N24S	3/8 / 10	26 / 652	"
83	N30S	7/16 / 11	31 / 800	"
84	N36S	1/2 / 13	38 / 958	"
61 66 85	N42S	9/16 / 14	44 / 1,115	Center Cut

Tubing Cutters

Midget Tubing Cutters

Unit Per Pc.

CODE	No.	Capacity		Length
		inch	mm	
61 67 51	103	to 5/8" O.D.	to 16 O.D.	54
52	104	to 15/16" O.D.	to 24 O.D.	65

Tubing Cutters

Unit Per Pc.

CODE	No.	Capacity		Weight kgs
		inch	mm	
61 67 54	150	1/8 - 1-1/8 O.D.	3-28 O.D	0.4

Quick Acting Tubing Cutters

Unit Per Pc.

CODE	No.	Capacity O.D.mm	Weight kgs
61 67 60	151	6 - 42	0.4
61	152	6 - 66	0.9
62	153	32 - 90	0.9
63	154	48 - 116	1.4
64	156	100 - 170	1.9

Flaring Tools

Unit Per Set

CODE	No.	Flare	Tube Diameter O.D.
61 67 73	458	45°	1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4
61 67 75	455	45°	1/2, 5/8, 3/4, 7/8, 1
61 67 76	377	37°	3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4
61 67 77	375	37°	1/2, 5/8, 3/4, 7/8, 1
61 67 78	458 MM	45°	4, 4.75, 6, 8, 10, 12, 15, 16 mm

(to be continued)

Tube Benders

Ridgid

Lever-Type Tube Benders

Unit Per Set

CODE	No.	Tube Diam O.D.	CODE	No.	Tube Diam O.D.
61 67 80	403	3/16"	**61 67 86**	406M	6 mm
81	404	1/4"	**87**	408M	8 mm
82	405	5/16"	**88**	410M	10 mm
83	406	3/8"	**89**	412M	12 mm
85	408	1/2"			

General Ratchet Lever-Type Tube Benders

Unit Per Set

CODE	No.	Tube Diam O.D.
61 67 92	358	For 5/8"
93	368	For 3/4"
94	378	For 7/8"

Hickey Type Heavy Wall Conduit Benders

Unit Per Pc.

CODE	No.	Capacity mm	Weight kgs
61 67 98	B - 1711	12, 19	1.3
99	B - 1712	25, 32	3.5

45. Torches / Leak Detectors

Kerosene Torches

(Blow Lamps)

This powerful burner produces a strong blue blast. The flame can be regulated as required for the job. Only to be operated with kerosene.

Unit Per Pc.

CODE	Thank Capacity	CODE	Thank Capacity
61 70 05	1 ltr	**61 70 07**	2 ltr
06	1.5 ltr		

Compact Gas Torches

Lightweight, compact torch for soldering or fusing wax, paint, etc. Be careful not to open the cartridge when there is still some propane remaining inside. Specify whether the full set or the spare cartridge only is required when ordering. Size : 90 mm outside diameter and 180 mm in height.

61 70 16	Complete Set with Burner	Set
17	Spare Gas Cartridge	Pc.

Refrigerant Gas Leak Detectors

Used to quickly and accurately isolate leaks in all commercial, industrial and automotive air conditioning and refrigeration systems. It detects all HFC, CFC and HCFC refrigerants including R134A, R12 as well as blends such as R404A, R408A, R409A, R410A, and others.

Fully automatic and requires very little power to operate by using state of the art microprocessor controlled technologies.

A spare sensor housed in the battery compartment, also insures no down time when sensors are damaged or need replacing.

Features:
- Simple, one button operation.
- Two sensitivity modes, enabling quick and easy location of large and small leaks.
- Both visual and audible leak detection signal.
- Low battery indicator.
- Automatic power-off to conserve battery life.

Unit Per Pc.

CODE	61 70 22
Batteries	2 x 1.5V 'AA' Alkaline batteries (3 VDC)
Battery Life	40 hours
Sensitivity	< 3g/year (0.1 oz/yr)
Sensor Lifetime	Approx. 30 hours
Probe Length	12" (30 cm)
Dimensions cm	19 x 5.7 x 3.8
Weight grm	190

Name of Mfr.: Core Enterprises Inc.

Leak Detectors "Gupoflex"

"Gupoflex" is a CO_2 spray which will safely and effectively detect all kinds of gas or air leaks in seals, valves, cylinders, pipes, tanks, etc. The container is extremely compact and lightweight, can be carried easily and used anywhere. When sprayed on the surface where a leak exists the spray will foam. It is a very sensitive spray and will even detect low pressure leaks. The CO_2 is not harmful to one's health and it has no effect upon the surface which it is sprayed. Leak detective capacity up to 1 x 10^{-4}/sec, 345 grm/tin.

61 70 24	Leak detector "Gupoflex" spray 345 grm	Tin

Leak Detectors "Super Colour Check"

This set is for dye checking cracks for leaks. It consists of six different aerosol liquids to be used as penetrant, developer and remover. Each aerosol can contains 300 cc (10 oz).

61 70 26	Leak detector, Super colour check, 300 cc, 6' s/set	Set

46. Ladders

Aluminium Alloy Ladders

Straight Ladders

A common general purpose ladder made of aluminium alloy available up to 6.0 meters length. Non-slip round rungs and non-slip rubber guide shoes at the bottom. Has 35 cm (13-3/4") stepping space.

Unit Per Set

CODE	Length mtrs	Safety Load at 75° Lean kgs.	Weight kgs.
61 71 01	2.4	100	4.3
02	3.0	150	6.5
03	4.0	150	8.4
04	5.0	150	10.3
05	6.0	150	12.2

2-Extension Ladders

Made in two sections from aluminium alloy with round non-slip rungs. Has non-slip rubber shoes at the bottom end with an automatic spring lock on each step which has a 35 cm stepping space. Easy to carry and set up wherever it is required.

Unit Per Set

CODE	Length		Safety Load at 75° Lean kgs.	Weight kgs.
	Extended mtrs	Folded mtrs		
61 71 10	4.5	2.8	100	10.5
11	5.1	3.1	150	13.5
12	6.5	3.8	150	16.2
13	7.2	4.1	150	18.3
14	7.8	4.4	150	19.7
61 71 15	9.2	5.1	150	26.2
16	10:6	5.8	150	29.5

3-Extension Ladders

Made in three sections of aluminium alloy with non-slip rungs and self-aligning safety shoes. Please specify the extended length when ordering.

Unit Per Set

CODE	Length		Safety Load at 75° Lean kgs.	Weight kgs.
	Extended mtrs	Folded mtrs		
61 71 20	6.5	3.1	150	20.4
21	8.5	3.8	150	28.6
22	10.6	4.5	150	39.6
23	12.6	5.2	150	45.9
24	14.7	5.8	150	52.0

Aluminium Alloy Step Ladders

A strong framed step ladder for use indoors or outdoors when cleaning, painting, or doing repair work. Each step is flat with non-slip gridding and there are non-slip rubber guide shoes at the bottom of the support legs. This ladder will safely support up to 100 kgs of weight for up to 0.6 mtr height, and up to 160 kgs of weight for 0.9 mtr height and more.

Unit Per Set

CODE	Height mtrs	Nos. of Steps	Weight kgs
61 71 25	0.3	2	1.6
35	0.6	2	2.3
26	0.9	3	3
27	1.2	4	4
28	1.5	5	5
61 71 29	1.8	6	6
30	2.1	7	10
31	2.4	8	11.3
32	2.7	9	12.6
33	3.0	10	14
61 71 34	3.6	12	17

Aluminium Alloy Folding Ladders

Can be used as an extended-straight-folded-or step ladder. Non-slip round steps and non-slip rubber shoes at the bottom ends. Please specify the extended length when ordering.

Unit Per Set

CODE	Length		Weight kgs.
	Extended mtrs	Folded mtrs	
61 71 36	2.0	0.9	6.2
37	2.7	1.2	7.6
38	3.4	1.5	9.3
39	4.1	1.9	11.2
40	4.8	2.2	13.2

Aluminium Alloy Extension Ladders

A compact storage size W:480 x D:83 x H:860 mm, and suitable for working at high place by extending to max length 3,800 mm. Max. withstand load : 100 kgs. Weight: 10 kgs.

61 71 41	Ladder, extension, aluminium alloy Max length 3,800 mm	Pc.

Aluminium Alloy Foldable Working Benches

A foldable working bench made of aluminium alloy. Easy to carry and place it at your favorable working place. Please make sure to lock the foot holding stoppers before stepping on.

Outer size : W410 x D1,100 x H500 mm, Stage size : 300 x 680 mm. Max. withstand load : 100 kgs. Weight : 3.5 kgs.

61 71 42	Bench, working, foldable, Aluminium alloy, W410 x D1,100 x H500 mm	Pc.

47. Trucks / Carriers

Wheelbarrows

A small hand-propelled vehicle with one or two wheels.

Unit Per Pc.

CODE	**61 71 45**	**61 71 46**
Wheel	One	Two

Spare Wheels for Wheelbarrow

Unit Per Pc.

CODE	For	Type	Size
61 71 47 48	One-wheel	Air inflated Puncture-less	13" x 3"
61 71 49	Two-wheels	Solid	26" x 2-1/2"

Platform Trucks

With One Handle

For moving and handling all sorts of goods easily from on deck to storage facilities or accommodations. The cart has a steel platform and handle with solid cushion wheels. There are two swivel wheels located at the front and two straight wheels at the rear.

Unit Per Pc.

CODE	Platform mm	Loading kgs.	CODE	Platform mm	Loading kgs.
61 71 51	500 x 750	200	**61 71 54**	750 x 1,200	500
52	600 x 900	300	**55**	900 x 1,500	750
53	710 x 1,000	320			

With Two Handles

Steel plate platform and handles. Has two swivel solid cushion wheels on one side and two rigid on the other. Platform sizes larger than those listed below can be supplied but require some delivery time.

Unit Per Pc.

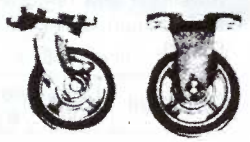
CODE	Platform mm	Loading kgs.	CODE	Platform mm	Loading kgs.
61 71 58	500 x 750	200	**61 71 61**	750 x 1,200	500
59	600 x 900	300	**62**	900 x 1,500	750
60	710 x 1,000	400			

Light Duty with Detachable Handle

For handling general merchandise. Has a steel platform and a pipe handle. The two front tires are swivel air cushion tires and the tires at the rear are straight set tires. Platform sizes smaller or larger than the size listed below are available but may require some delivery time.

61 71 64	Truck (lorry), detachable handle with 4 tires, light duty 800 x 1,200 mm	Pc.

Spare Wheels for Platform Truck



Solid rubber cushion wheel, available in free swivel and fixed types.

Unit Per Pc.

Free Swivel		Fixed	
CODE	Diam. mm	CODE	Diam. mm
61 71 66	100	**61 71 74**	100
67	130	**75**	130
68	150	**76**	150
69	180	**77**	180
70	200	**78**	200
61 71 71	250	**61 71 79**	250
72	300	**80**	300

Folding Handy Trucks

Folding type handy truck. Lightweight and compact but sturdy.

Unit Per Pc.

CODE	Table Size	Weight kgs	CODE	Table Size	Weight kgs
61 71 82	450 x 710	11	**61 71 83**	600 x 900	24
81	515 x 815	17.5			

Shovel Nose Hand Trucks

Wood

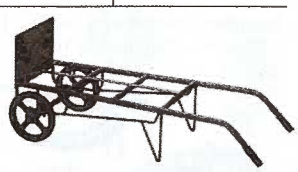
For use in handling cartons, boxes, bags or crates of stores. Made of wood and iron reinforced. Has two solid cushion tires. Platform size is 450 mm in width and 1,750 mm overall length.

Unit Per Pc.

CODE	Wheel	Load Capacity
61 71 84	Rubber cushion solid tires	500 kgs
85	Steel wheels	

Steel

For use in handling cartons, bags, etc. Has a steel frame and rubber solid cushion tires.



Unit Per Pc.

CODE	Size H x W x L mm	Load Capacity kgs
61 71 86	1,180 x 500 x 500	120
87	1,180 x 480 x 480	180
88	1,780 x 630 x 530	500

Carriers

Gas Cylinder Carriers

For carrying acetylene oxygen and other gas cylinders. Made from strong steel frames with rubber solid cushion tires. One or two cylinder carriers are available.

Unit Per Pc.

CODE	For Gas Cylinder	Size H x W x L mm
61 71 90	Oxygen x 1	1,300 x 460 x 670
91	Oxygen x 1 / Acetylene x 1	1,200 x 830 x 600
92	Propane x 1	1,600 x 400 x 400

Drum Carriers

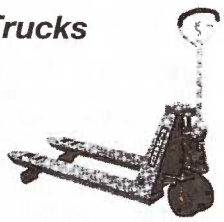
Made of sturdy steel frames and designed for the easy lifting and carrying of drums. Available with air cushioned tires or solid rubber tires. The width is 450 mm and the overall length including the handle is 1,550 mm.

Unit Per Pc.

CODE	Description
61 71 93	With two solid rubber tires
94	With two air cushion rubber tires

Hydraulic Hand Pallet Trucks

Hydraulic powered, hand fork-lift truck. Recommended for handling heavy materials and crates in warehouses and freight terminals. When ordering, please specify the capacity required.



Unit Per Set

CODE	Capacity	Fork Length	Weight
61 71 96	1.5 ton	1,070 mm	77 kgs
97	2.5 ton	1,070 "	99 "

48. Roller Conveyors / Mesh Box Pallets

Aluminium Roller Conveyor Units

Lightweight aluminium conveyor belts which are easy to maneuver and convenient for moving or loading large amounts of stores or moving frozen and fresh provisions to refrigerated storage lockers. Any package with a smooth surface will roll easily on this conveyor. Please specify the length of the conveyor required when ordering.

61 72 01 ~ 03 61 72 04

Unit Per Pc.

CODE	Unit Length	Roller Width	Number of Rollers	Weight
61 72 01	1.5 Mtr	300 mm	15	9.8 kgs
02	2.0 "	300 "	20	13.2 "
03	3.0 "	300 "	30	15.5 "
04	Corner 90°	300 "	19	13.2 "

Mesh Box Pallets

A foldable container made of strong, galvanized iron wire mesh with steel pallets at the bottom. Useful for the loading, unloading, and transporting of stores. They can be piled one upon the other and handled by slings using suspenders, pallet jacks, or forklifts.

Unit Per Pc.

CODE	Dimensions mm.			Mesh mm.	Wire Diam. mm.	Weight Capacity kgs
	W	L	H			
61 72 10	800	1,000	850	50 x 50	6.5	1,500
11	1,000	1,000	850	50 x 50	6.5	1,500
12	1,000	1,200	850	50 x 50	6.5	2,000

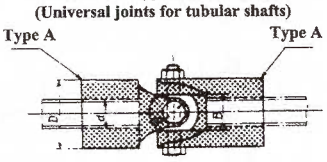
49. Universal Joints

Marine Universal Joints

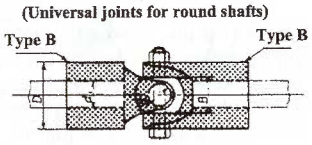
(Ref. JIS F-7452-1978)

These universal joints are used for such operating gears as water sliding doors, sky lights, valves for ventilation, valves for piping, main engine revolution indicators, or transmission gears in ships. They are classified into 4 main types according to the shape of the coupling applicable to the transmission shaft and fixing method of the shaft as shown below.

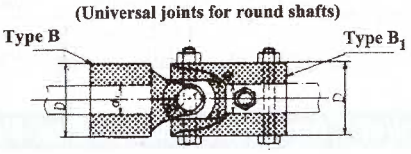
Type AA
(Universal joints for tubular shafts)



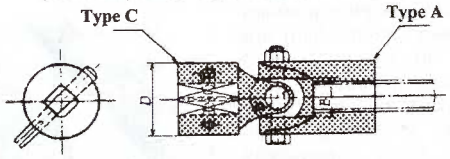
Type BB
(Universal joints for round shafts)



Type BB_1
(Universal joints for round shafts)



Type AC
(Universal joints for square and tubular shafts)



Type of Yoke	Shape of Coupling	Applicable Transmission Shaft	Fixing Method
A	Round Hole	Tubular Shaft	Welding
B	"	Round "	"
B_1	"	" "	Bolt
C	Square Hole	" "	Pin

And also classified into four types, AA, BB, BB_1 and AC by combining the above types. See illustrations above.

Shaft Size Table

Unit : mm

Nominal Size	Dia. of Applicable Trans. Shaft		Type A	Type B, B_1	Type C
	Tubular Shaft O.D.	Round Shaft	Tube Shaft Hole Dia.	Round Shaft Hole Dia.	Square Shaft Side Length
20	21.2	20	27.7	20.5	17
25	34	25	34.5	25.5	19
32	-	32	-	32.5	22
38	-	38	-	38.5	27
40	48.6	-	49.1	-	-
42	-	42	-	42.5	32
48	-	48	-	48.5	36

Dimensions of steel pipes for transmission shaft for Type A

Nominal Size of Universal Joint	Carbon Steel Pipe for Ordinary Piping		
	Outside Dia.	Thickness	Inner Dia.
20	27.2	2.8	21.6
25	34.0	3.2	27.6
40	48.6	3.5	41.6

Materials are usually steel or, stainless steel. Specify when ordering.

How to order : CODE

Universal joint, TYPE of COMBINATION, NOMINAL SIZE, MATERIAL

Unit Per Pc.

Nominal Size	Material	Type			
		AA CODE	BB CODE	BB_1 CODE	AC CODE
20	Steel	61 72 40	61 72 47	61 72 54	61 72 61
25		41	48	55	62
32		42	49	56	63
38		43	50	57	64
40		44	51	58	65
42		61 72 45	61 72 52	61 72 59	61 72 66
48		46	53	60	67
20	Stainless Steel	61 72 70	61 72 77	61 72 84	61 72 91
25		71	78	85	92
32		72	79	86	93
38		73	80	87	94
40		74	81	88	95
42		61 72 75	61 72 82	61 72 89	61 72 96
48		76	83	90	97

50. Lubricators / Grease Pumps

A pump unit for all types of lubricants which is easy to handle and maneuver making it suitable for work on ships as well as industrial plants or repair shops. The lubricant container is easy to open and refill. When ordering, please specify whether the lubricator you require is for oil or grease use.

Grease Pumps

Air Operated

Air operated grease pump for use with 16 kgs to 220 kgs pail can. A set consists of a pump, drum cover, follow plate, and grease hose. Air inlet size is 1/4" G (PF).

Drum Cover

Follow Plate

Pump

How to order : CODE

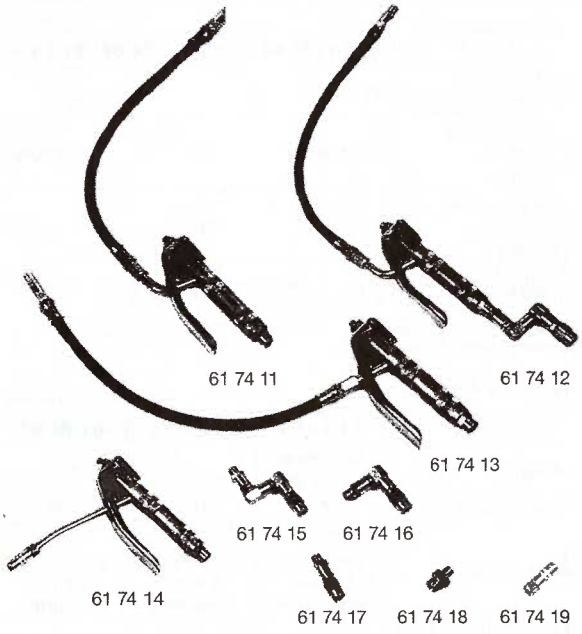
Grease pump, air operated, for DRUM CAPACITY kgs, PUMP RATIO

Unit Per Set

CODE	For Drum kgs	Pump Ratio	Grease Feed Delivery	Shank mm	
				Diam	Length
61 74 01	16/ 20	44 : 1	500 grm/min.	30	410
02	20/ 30	44 : 1	500	30	470
03	50/ 60	44 : 1	500	30	730
04	180/220	44 : 1	500	30	940
05	50/ 60	54 : 1	900	30	730
61 74 06	180/220	54 : 1	900 grm/min.	30	940

Accessories for Air Operated Grease Pump

For use with above air operated grease pumps.



CODE	Description	Unit
61 74 11	Grease gun w/bent flexible pipe	Set
12	" w/flexible pipe & swivel joint	"
13	" w/straight flex pipe	"
14	" w/rigid pipe	"
15	Triple swivel joint	Pc.
61 74 16	90° swivel joint	Pc.
17	Single swivel joint	"
18	Steel connection 1/4" x 1/4" - 3/8" x 1/4"	"
19	4 jaw grease fitting	"

Lubrication Piston Pumps

This pump is the ideal solution for pumping motor oil, gear oil and transmission fluid. For the purpose of making ordering easier, we have provided the following ordering table composed of the most practical specifications for marine use. For any further detailed information please contact your local supplier.

LM2203A Series

LM2305A Series

Performance Specifications

Model	LM2203A Series	LM2305A Series
Ratio	3:1	5:1
Air Motor Diameter	2"	3"
Stroke	3"	
Air Inlet Pressure	150 psi max.	

Unit Per Set

CODE	Model	Thread	Max. GPM		Air Inlet NPT (F)	Fluid Inlet / Outlet NPT (F)	Container Size
			Max. Flow	Free Flow			
2" Diameter Air Motor							
61 74 21	LM2203A-11-B	NPT	6	9	1/4"	3/4 / 1/2	Stub
22	LM2203A-12-B	BSP					

(to be continued)

Unit Per Set

CODE	Model	Thread	Max. GPM		Air Inlet NPT (F)	Fluid Inlet / Outlet NPT (F)	Container Size
			Max. Flow	Free Flow			
61 74 23	LM2203A-31-B	NPT	6	9	1/4"	3/4 / 1/2	16 Gallon
24	LM2203A-32-B	BSP					
25	LM2203A-41B	NPT	6	9	1/4"	3/4 / 1/2	55 Gallon
26	LM2203A-42B	BSP					
27	LM2203A-51B	NPT	6	9	1/4"	3/4 / 1/2	275 Gallon
28	LM2203A-52B	BSP					
3" Diameter Air Motor							
61 74 31	LM2305A-11	NPT	6	9	1/4"	1-1/2 / 1/2	Stub
32	LM2305A-12	BSP					
33	LM2305A-31	NPT	6	9	1/4"	1-1/2 / 1/2	16 Gallon
34	LM2305A-32	BSP					
35	LM2305A-41	NPT	6	9	1/4"	1-1/2 / 1/2	55 Gallon
36	LM2305A-42	BSP					
37	LM2305A-51	NPT	6	9	1/4"	1-1/2 / 1/2	275 Gallon
38	LM2305A-52	BSP					

Name of Mfr. : Ingersoll-Rand

Grease Piston Pumps

These Pumps deliver unmatched performance for pumping grease with sizes to fit 35 to 400 lb. containers and working flow rates from two to four gallons per minute. For the purpose of making ordering easier, we have provided the following ordering table composed of the most practical specifications for marine use. For any further detailed information please contact your local supplier.

LM2250E Series

LM2350E Series

Performance Specifications

Model	LM2250E Series	LM2350E Series
Ratio	50:1	
Air Motor Diameter	2"	3"
Stroke	3"	
Air Inlet Pressure	150 psi max.	

Unit Per Set

CODE	Model	Thread	Flow Lbs. per Min.		Air Inlet NPT (F)	Fluid Outlet NPT (F)	Container Size
			Working	Free			
2" Diameter Air Motor							
61 74 41	LM2250E-21-B	NPT	2 lbs	9.0 lbs	1/4"	3/8	35 lbs
42	LM2250E-22-B	BSP					
43	LM2250E-31-B	NPT	2 lbs	9.0 lbs	1/4"	3/8	120 lbs
44	LM2250E-32-B	BSP					
45	LM2250E-41B	NPT	2 lbs	9.0 lbs	1/4"	3/8	40 lbs
46	LM2250E-42B	BSP					
47	LM2250E-61B	NPT	2 lbs	9.0 lbs	1/4"	3/8	60 lbs
48	LM2250E-62B	BSP					
3" Diameter Air Motor							
61 74 51	LM2350E-21-B	NPT	4 lbs	7.5 lbs	1/4"	3/8	35 lbs
52	LM2350E-22-B	BSP					
53	LM2350E-61-B	NPT	4 lbs	7.5 lbs	1/4"	3/8	60 lbs
54	LM2350E-31-B	NPT	4 lbs	7.5 lbs	1/4"	3/8	120 lbs
55	LM2350E-32-B	BSP					
56	LM2350E-41-B	NPT	4 lbs	7.5 lbs	1/4"	3/8	400 lbs
57	LM2350E-42-B	BSP					

Name of Mfr. : Ingersoll-Rand

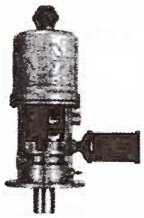
Oil and Grease Pumps

Oil Pumps

Fast-Ball®

Mini Fire-Ball® 225

Fire-Ball® 300



Fire-Ball® 425

Model	Features
Fast-Ball®	Ideal for oil transfer applications, the 1:1 Fast-Ball's in-line design features fewer parts for minimal pump wear.
Mini Fire-Ball® 225	Great for low to medium volume (oil and grease) applications, the Mini Fire-Ball 225 is the latest edition of Graco's classic Fire-Ball design. Available in 3:1 (oil) and 50:1 (grease) packages.
Fire-Ball® 300	Ideal for medium volume applications, the Fire-Ball 300 set the industry standard for years of reliable service. Available in ratios of 5:1, 15:1 and 50:1.
Fire-Ball® 425	With a robust design, the Fire-Ball is the pump of choice for your most demanding high volume applications. Available in ratios of 3:1, 6:1, 10:1, 50:1 and 75:1.

Unit Per Pc.

CODE	61 74 61	61 74 62	61 74 63	61 74 64
Model	Fast-Ball	Fast-Flo	Fast-Flo SST	Mini Fire-Ball 225
Pump Ratio	1 :1			3 : 1
Max. Fluid Output Pressure	12.4 bar			31 bar
Fluid Flow @ 80 cpm	18-22.7 lpm	19-22.7 lpm	20-22.7 lpm	7 lpm
Universal Pump Only	#222051	#226944	#226945	#246775
60 Ltr Cover Mount Package	N/A			#24M262
200 Ltr Bung Mounted Package	#222103	N/A	N/A	#24M264
200 Ltr Cover Mounted Package	N/A			#24M263
1,040 Ltr Bung Mounted Package	#222104	N/A		#24M264

Name of Mfr.: Graco

Unit Per Pc.

CODE	61 74 65	61 74 66	61 74 67	61 74 68
Model	Fire-Ball 300	Fire-Ball 425		
Pump Ratio	5 :1	3 : 1	6 : 1	10 : 1
Max. Fluid Output Pressure	62 bar	37 bar	76 bar	124 bar
Fluid Flow @ 80 cpm	9.3 lpm	50.6 lpm	25.3 lpm	15.4 lpm
Universal Pump Only	#203876	#237526	#238108	#205626

(to be continued)

Unit Per Pc.

CODE	61 74 65	61 74 66	61 74 67	61 74 68
60 Ltr Cover Mount Package	#241046	N/A		
200 Ltr Bung Mounted Package	#201048	N/A		#222095
200 Ltr Cover Mounted Package	#241047	N/A		#222065
1,040 Ltr Bung Mounted Package	#241049	N/A		

Name of Mfr.: Graco

Grease Pump

Unit Per Pc.

CODE	61 74 69	61 74 70	61 74 80
Model	Mini Fire-Ball 225	Fire-Ball 300	
Pump Ratio	50:1	15:1	50:1
Application	High-pressure grease dispense	Medium-pressure grease dispense	High-pressure grease dispense
Max. Fluid Output Pressure	578 bar	186 bar	579 bar
Continuous Duty Flow Rate	0.15 kg/min	2.7 lpm	1.52 kg/min
16 kgs Drum-Pump only	246909	206405	239877
16 kgs Drum-Package	253384	241043	240885
31 kgs Drum-Pump only	N/A	N/A	239877
31 kgs Drum-Package	N/A	N/A	N/A
55 kgs Drum-Pump only	246780	206699	239887
55 kgs Drum-Package	253387	241044	240880
180 kgs Drum-Pump only	246781	206700	239888
180 kgs Drum-Package	253390	241045	N/A

Name of Mfr. : Graco

Unit Per Pc.

CODE	61 74 87	61 74 88	61 74 89
Model	Fire-Ball 425		
Pump Ratio	10:1	50:1	75:1
Application	High-pressure grease dispense	High-pressure grease dispense	High-pressure grease dispense
Max. Fluid Output Pressure	124 bar	517 bar	517 bar
Continuous Duty Flow Rate	13.3 lpm	1.52 kg/min	1.3 kg/min
16 kgs Drum-Pump only	N/A	N/A	239731
16 kgs Drum-Package	N/A	N/A	N/A
31 kgs Drum-Pump only	N/A	N/A	239731
31 kgs Drum-Package	N/A	N/A	N/A
55 kgs Drum-Pump only	N/A	205394	239729

(to be continued)

Unit Per Pc.

CODE	61 74 87	61 74 88	61 74 89
55 kgs Drum-Package	N/A	241039	24M271
180 kgs Drum-Pump only	965124	205395	239730
180 kgs Drum-Package	965129	N/A	N/A

Name of Mfr. : Graco

Dispense Meters and Control Valves

Complete meter and valve product line for dispensing oil, grease, coolant and anti-freeze fluids. Higher pressure options for longer plumbing runs. New features to improve your productivity. Unmatched reliability and durability.

SD Series Electronic Meters

Fluid inlet options (1/2" and 3/4" npt) meets standard and high-low flow requirements. Large LCD display and simple operator controls – Adjusts for easy reading in all lighting conditions, - Calibration easily adjusts from keypad. Solid construction to stand up to harsh environments and provide years of trouble-free performance – Durable cast trigger guard prevents accidental triggering. Flush-mount nozzle valve design prevents leaks and contamination. Designed for no leak performance.

Technical Specification

Flow Range	0.1 to 14 gpm (0.4 to 53 lpm)
Max. Working Pressure	1,500 psi (103.4 bar)
Units of Measure	Quarts, pints, gallons, liters
Inlet	3/4" – 14 npt or 1/2" – 14 npt
Outlet	3/4" – 16 straight thread O-ring boss
Maximum Totalizer	999,999 gallons or liters
Max. Recorded Dispense	999.9 units
Accuracy	±0.5%
Battery	4 AA alkaline or 4 AA lithium
Dimensions (w/o extension)	13" L x 3.75" W x 5.75" H (33 cm x 9.5 cm x 14.6 cm)
Weight	5 lbs (2.3 kgs)

SDM5 Manual Dispense Electronic Meter, 5 gpm or less
1/2" npt(f) swivel, extension and standard quick-close nozzle

Unit Per Set

CODE	For	Type of Extension	Drip-proof	Part No.
61 74 71 72	Oil	Rigid extension Flexible extension	Automatic Non-drip	255350 255348
61 74 73	Oil	Gear lube extension	-	255349
61 74 74 75	Anti-freeze	Rigid extension Flexible extension	-	255802 255803

Name of Mfr. : Graco

SDM15 Manual Dispense Electronic Meter, 14 gpm or less
1/2" or 3/4" npt(f) swivel, extension, high flow, quick-close nozzle

Unit Per Set

CODE	For	Inlet Size	Type of Extension	Part No.
61 74 76 77	Oil	1/2"	Rigid extension Flexible extension	256836 256837
61 74 78 79		3/4"	Rigid extension Flexible extension	255800 255801

Name of Mfr. : Graco

SDP5 Preset Dispense Electronic Meter, 5 gpm or less
1/2" npt(f) swivel, extension, high flow, quick-close nozzle

Unit Per Set

CODE	For	Type of Extension	Drip-proof	Part No.
61 78 01 02	Oil	Rigid extension Flexible extension	Automatic Non-drip	255200 255351
61 78 03	Oil	Gear lube extension	-	255352
61 78 04 05	Anti-freeze	Rigid extension Flexible extension	-	255355 255356

Name of Mfr. : Graco

SDP15 Preset Dispense Electronic Meter, 14 gpm or less
1/2" or 3/4" npt(f) swivel, extension, high flow, quick-close nozzle

Unit Per Set

CODE	For	Inlet Size	Type of Extension	Part No.
61 78 06 07	Oil	1/2"	Rigid extension Flexible extension	256838 256839
61 78 08 09		3/4"	Rigid extension Flexible extension	255353 255354

Name of Mfr. : Graco

LDM5 Manual Dispense Electronic Meter, 5 gpm or less, 1/2" npt(f) swivel, extension, automatic nozzle

Unit Per Set

CODE	For	Inlet Size	Extension	Attachment	Part No.
61 78 10	Oil and Anti-freeze	1/2"	Flexible	-	255751
61 78 11			Rigid	with Trigger Guard/boot	256215

Name of Mfr. : Graco

LDP5 Preset Dispense Electronic Meter, 5 gpm or less, 1/2" npt(f) swivel, extension, automatic nozzle

Unit Per Set

CODE	For	Inlet Size	Extension	Attachment	Part No.
61 78 12	Oil and Anti-freeze	1/2"	Flexible	-	255277
61 78 13			Rigid	with Trigger Guard/boot	256216

Name of Mfr. : Graco

Mechanical Meters

Accurate dispensing for a wide variety of machine service applications.

SDMP8 – Preset type

Bare type

Ridged Type

Unit Per Set

CODE	Type	Capacity	Connection	Part No.
61 78 14	Bare	60 quart	NPT	24U947
15		60 gallon		24U950
16		60 liter		24U953
61 78 17	Ridged	60 quart		24V052
18		60 gallon		24V055
19		60 liter		24V058

Name of Mfr. : Graco

SDMM8 – Manual Type

Bare

Rigid

Flexible

Gear Lube

Unit Per Set

CODE	Type	Capacity	Connection	Part No.
61 78 20	Bare	4/16 liter	NPT	24U956
21		4/16 quart		24U959
61 78 22	Ridged	4/16 liter		24V046
23		4/16 quart		24V037
61 78 24	Flexible	4/16 liter		24V043
25		4/16 quart		24V034
61 78 26	Gear Lube	4/16 liter		24V049
27		4/16 quart		24V040

Name of Mfr. : Graco

SDV15 Manual Dispense Valves, 15 gpm or less 1/2" npt(f) swivel, locking open trigger, extension and standard quick-close nozzle

Unit Per Set

CODE	For	Type of Extension	Drip-proof	Part No.
61 74 81	Oil	Rigid extension	Automatic	247712
82	products	Flexible extension	Non-drip	247713
61 74 83	Oil	Gear lube extension	-	247714
61 74 84	Anti-	Rigid extension	-	247715
85	freeze	Flexible extension		247716
61 74 86	3/4" – 16(f) straight thread O-ring boss outlet, and trigger lock, no extension			247717

Name of Mfr. : Graco

XDV20 Manual Dispense Valves, 20 gpm or less

Unit Per Set

CODE	For	Inlet Size	Type of Extension	Part No.
61 74 91	Oil and Anti-freeze	1/2"	Rigid extension	247718
92			Flexible extension	247721
61 74 93		3/4"	Rigid extension	247722
94			Flexible extension	247723
61 74 95		1/2" 3/4"	No extension	247724
96				247725

Name of Mfr. : Graco

Grease Lubricators

Air Operated

Standard Accessories

SKR-55	H.P. Grease Gun HPG-G	1 Pc.
	Grease Hose 2.5 Mtr.	1 Pc.
	Check Valve	1 Pc.
	Air Chuck PS-20PM	1 Pc.
SKR-66	H.P. Grease Gun HPG-G	1 Pc.
	Grease Hose 2.5 Mtr.	1 Pc.
	Follower Plate 270 mmø	1 Pc.
	Check Valve	1 Pc.
	Air Regulator SKR-AR	1 Pc.
SKR-110A50	Pump PD110A50	1 Pc.
	Grease Hose 2.5 Mtr.	1 Pc.
	Follower Plate 270 mmø	1 Pc.
	Check Valve	1 Pc.
	Air Regulator SKR-AR	1 Pc.

Note: Additional Hose is available on request to extend the reach of the lubricator.

Unit Per Set

CODE	**61 75 01**	**61 75 02**	**61 75 04**
Model	SKR-55	SKR-66	SKR-110A-50
Feature	Common Type	For rather hard grease use. Follower plate equipped.	High efficiency with large output capacity. Follower plate equipped.
Range of Applicable Grease	NLGI No.0	NLGI No.1	NLGI No.1
Pump Ratio	65 : 1	65 : 1	50 : 1
Max. Output Pressure	45.5 MPa	45.5 MPa	35.0 MPa
Max. Outlet Quantity	320 grm/min	320 grm/min	1,200 grm/min
Max. Air Consumption	212 ltr/min	212 ltr/min	320 ltr/min
Grease Capacity	16 - 18 kgs	16 - 18 kgs	16 - 18 kgs

Name of Mfr. : Yamada Corporation

Grease Lubricators

Macnaught Air Operated

PLC

P3L

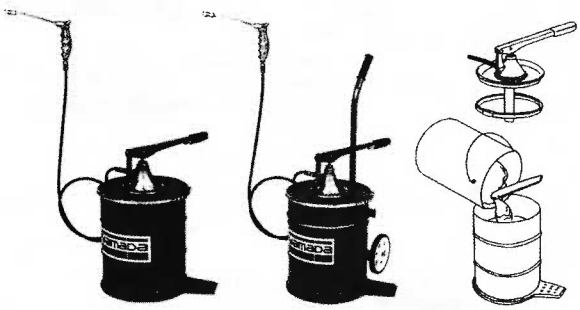
Unit Per Set

CODE	61 75 11	61 75 12
Model	PLC	P3L
Feature	Common type, simple construction, long life. Follow-Plate equipped.	Anti corrosive air motor and Follow Plate equipped. Very useful for choked nipples, because can increase output pressure up to 850 kgf/cm² by booster gun if necessary.
Range of Applicable Grease	NLGI #2	NLGI #2
Pump Ration Max. Output Pressure	50 : 1 350 kgf/cm²	50 : 1 350 kgf/cm²
Max. Outlet Quantity	660 grm/min	540 grm/min
Standard Accessories		
PLC	Grease Gun Grease Hose Carrier	1 Pc. 2.5 Mtr. Equipped
P3L	Booster Gun Grease Hose Carrier	1 Pc. 2.5 Mtr. Equipped

High Pressure Grease Bucket Pumps

Hand Operated

Specially designed plunger easily builds lube pressure up to 25 MPa even under low loading pressure. The same extension hoses as from hand grease guns are available for various applications.



SK-55 SK-77

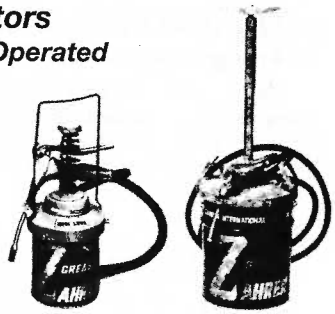
Unit Per Set

CODE	61 75 16	61 75 17
Model	SK-55	SK-77
Output Pressue	25.0 MPa	
Output / Stroke	3.2 grm / stroke	
Stroke	38 - 43 mm	
Container Capacity	20 Ltr.	
Dimensions mm	281ø x 499H	281ø x 795H
Name of Mfr	Yamada Corporation	
Standard Accessories		
SK-55	Grease Gun SK-G Grease Hose 2Mtr. Follower Plate	1 Pc. 1 Pc. 1 Pc.
SK-77	HP. Grease Gun Grease Hose 2Mtr. Follower Plate Dolly S-20	1 Pc. 1 Pc. 1 Pc. 1 Pc.

Grease Lubricators

Macnaught Hand Operated

A very useful outfit. Compact, lightweight, and applicable for a variety of lubricating jobs with a pressure capacity of up to 700 kgs/cm².



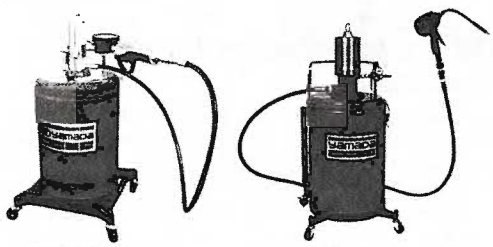
K-6 K-3

Unit Per Set

CODE	61 75 21	61 75 22
Model	Mini K-6	Super K-3
Feature	Can be fitted with standard 2.5 kgs small grease can. Capable of feeding 30 grease nipples at one time pump charge	Can be fitted with standard 16 kgs grease pail can. Capable of feeding 80 grease nipples at one time pump charge
Max. Output Pressure	700 kgf/cm²	700 kgf/cm²
Pump Charge	50 cc	130 cc
Output/Stroke	3 cc/stroke	3 cc/stroke
Demensions mm	200ø x 450H	300ø x 890H
Grease Hose	1.5 mtrs.	3 mtrs.

Oil Lubricators

Air Operated



SGR-55 SGR-110A5

Unit Per Set

CODE	61 75 31	61 75 32
Model	SGR-55	SGR-110A5
Pump Ratio	1.8 : 1	5 : 1
Max. Output Pressure	1.2 MPa	3.5 MPa
Max. Output Capacity	7 ltr / min.	11 ltr / min.
Max. Air Consumption	130 ltr / min.	390 ltr / min.
Container Capacity	20 Ltr	50 Ltr
Height mm	784	953

Name of Mfr. : Yamada Corporation.

Standard Accessories

SGR-55	Digital Oil Gun ODV-30D Oil Hose 1.5Mtr. Oil Tank Air Chuck PS-20M	1 Pc. 1 Pc. 1 Pc. 1 Pc.
SGR-110A5	Oil Gun with Flow Meter Non Drip Nozzle NDN-H-3 Swivel Joint OIL-SJ Oil Hose 3Mtr. Air Regulator AR-110A	1 Pc. 1 Pc. 1 Pc. 1 Pc. 1 Pc.

Oil Bucket Pumps
Hand Operated

Dispenses all types of fluid lubricant such as gear oil, motor oil, A.T.F. (Automatic Transfer Fluid) and others with easy operation. A limited movement of the lever provides high volume lubricant delivery.

STB-60

STB-70

Unit Per Set

CODE	61 75 36	61 75 37
Model	STB-60	STB-70
Pump Output	40 cc / stroke	
Container Capacity	20 Ltr.	
Height	795 mm	
Standard Accessories	Oil Hose 2 Mtr. 1 Pc.	Oil Hose 2 Mtr. 1 Pc.
	Hose 2 Mtr. w/ Nozzle 1 Pc.	Hose 2 Mtr. w/ Nozzle 1 Pc.
	Dolly S-20 1 Pc.	Dolly S-20 1 Pc.
	Digital Flowmeter with Filter 1 Pc.	

Name of Mfr. : Yamada Corporation.

Oil Volume Bucket Pumps
Hand Operated

Handles either mobile grease or oil especially to serve button head fittings on earth-moving equipment, farm equipment, industrial machines, etc. Volume lubricant delivery gives fast and positive lubrication under maximum lube pressure of 50 MPa on the VO-50 and 2 MPa on the VO-8.

VO-8

VO-50

Unit Per Set

CODE	61 75 41	61 75 42
Model	VO-8	VO-50
Output/Stroke	20 cc/stroke	24 cc/stroke
Container Capacity	8 Ltr	15 Ltr
Dimensions mm	200ø x 477H	200ø x 530H
Standard Accessories	Oil Hose 1 Mtr. 1 Pc.	Oil Hose 1.5 Mtr.1 Pc.
	Button Head Coupler 1 Pc.	Button Head Coupler 1 Pc.

Name of Mfr. : Yamada Corporation.

Lubricating Hose
for Model SKR and SGR Series

Max. Working Pressure

SKR Grease Hose	34.5 MPa	H.P.
SGR Oil Hose	7 MPa	L.P.

How to order : CODE

GREASE or OIL hose, DIAM x LENGTH, with fitting, PART/NO.

Unit Per Lgh

CODE	P/N	Size		Fitting at Both Ends
		Diam.	Length	
SKR Grease Hose				
61 75 51	695062	1/4	1.5 Mtrs.	PF1/4 Male Thread (G)
52	695050		2 "	
53	695034		2.5 "	
54	695049		3 "	
55	695098		5 "	
56	695099		10 "	
SGR Oil Hose				
61 75 57	695052	3/8	1.5 Mtrs.	PT3/8 Male Thread (R)
58	695051		2 "	
59	695103		3 "	
60	695700	1/2	3 "	PT1/2 Male Thread (R)

Accessories
for Model SKR and SGR Series

Control Valves

61 75 65
H.P. Grease-Gun HPG-G
P/N 851985
Standard for Model SKR-55/66/110A50
Containing Nozzle CNP-2
P/N 804911
Swivel Joint ass'y P/N 802910
Inlet PS 1/4 Female (G)

61 75 68
Oil Gun ODV-30
P/N 686857
Max. Working Pressure 7 MPa
Inlet PT 3/8 Female (Rc)

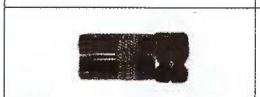
61 75 69
Digital Oil Gun ODV-30D
P/N 686858
Max. Working Pressure 7 MPa
Inlet PT 3/8 Female (Rc)

61 75 71
61 75 72
Swivel Joint OIL-SJ
P/N 804553 1/2 x 3/8
1/2 x 1/2

Unit Per Pc.

CODE	P/N	Description
61 75 65	851985	H.P. Grease Gun w/Swivel Joint
61 75 68	686857	Oil Gun ODV-30
69	686858	Digital Oil Gun ODV-30D
61 75 71	804553	Swivel Joint 1/2 x 3/8
72	804553	Swivel Joint 1/2 x 1/2

Specifications for Extension Couplers & Adaptors

	61 75 75 Straight Adaptor HSP-1 P/N 804903, L=120 mm, PT 1/8" Male (R)
	61 75 76 Straight Long Adaptor HSP-2 P/N 804904, L=240 mm, PT 1/8" Male (R)
	61 75 77 Needle Adaptor HSP-3 P/N 800701 for concealed hinges or tight spots, L=135 mm, PT 1/8" Male (R)
	61 75 79 Straight Extra Long Adaptor HSP-10 P/N 804907, L=450mm, PT 1/8" Male (R)
	61 75 80 Standard Hydraulic Adaptor CNP-1, P/N 804910, L=185 mm, PT 1/8" Male (R)
	61 75 81 Small Dia. Hydraulic Adaptor CNP-2 P/N 804911 for use with hand grease gun, L=185 mm, PT 1/8" Male (R)
	61 75 82 Long Hydraulic Adaptor CNP-13 P/N 804912, L=335 mm PT 1/8" Male (R)
	61 75 83 Standard Hydraulic Coupler CNP-1H, P/N 686445, L= 38.5 mm PT 1/8" Female (Rc)
	61 75 84 Small Dia. Hydraulic Coupler CNP-2H P/N 686446, L=39 mm, PT 1/8" Female (Rc)
	61 75 85 Hydraulic Coupler Extension Hose SPK-5 P/N 850392, L= 420 mm

Unit Per Pc.

CODE	Model	P/N	Name
61 75 75	HSP- 1	804903	Straight Adaptor
76	2	804904	Straight Long Adaptor
77	3	800701	Needle Adaptor
79	10	804907	Straight Extra Long Adaptor
61 75 80	CNP- 1	804910	Straight Hydraulic Adaptor
81	2	804911	Small Dia. Hydraulic Adaptor
82	13	804912	Long Hydraulic Adaptor
83	1H	686445	Straight Hydraulic Coupler
84	2H	686446	Small Dia. Hydraulic Coupler
61 75 85	SPK- 5	850392	Hydraulic Coupler Ext. Hose

Grease Pump Packages

These Grease Pump Packages are available in two models. For the purpose of making ordering easier, we have provided the following ordering table composed of the most practical specifications for marine use. For any further detailed information please contact your local supplier.

Unit Per Set

CODE	**61 75 45**	**61 75 46**
Model	LP2009-2-B	LP2010-2-B
Follower Plate	286 mm	332 mm
Ratio	50 : 1	
Air Motor Diameter	2"	
Air Inlet (Female)	Rp 1/4	
Air Inlet Pressure Range Psi (bar)	0-150 (0-10.3)	
Fluid Pressure Range Psi (bar)	0-7,500 (0-517.2)	
Volume/Cycle oz (ml)	0.17 (4.91)	
Maximum Delivery/ Minute Kg (lbs)	4.1 (9)	
Cycles/Minutes Rec'd @ Working Flow	80	
Displacement In^3 per cycle	0.300	
Pump Construction	Carbon Steel	

Name of Mfr.: Ingersoll-Rand

Foot Operated Grease Pumps FB-8

Hands-free, waste free and mess free greasing. Greatly reduces effort & allows high pressure greasing with highest comfort. All the pressure in the hose is released into the bucket by hooking up the foot pedal. Pump delivers app. 2.7 ml of grease per stroke and develops 69 MPa (703 kgf/cm^2).

Unit Per Pc.

CODE	**61 75 86**
Model	FB-8
Capacity	8 ltr
Discharge Stroke	2.7 ml
Discharge Pressure	69 MPa (703 kgf/cm^2)
Hose	1/4" x 2 mtr
Dimensions L x W x H mm	450 x 239 x 452
Weight kgs	8.6

Name of Mfr. : Yamada Corporation

Grease Lock Couplers for Foot Operated Grease Pump FB-8

GLC-70

Easy coupling - leak proof greasing - easy release. Easy connect and disconnect to/from grease fitting, by operating the lever.

Unit Per Pc.

CODE	**61 75 87**
Model	GLC-70
Operating Pressure	69 MPa (703 kgf/cm^2)
Connection	Rc 1/8"
Dimensions mm	L : 89.6 x ø16
Weight grm	100

Microhose Type Grease Lock Couplers

Unit Per Pc.

CODE	Model	Specification
61 75 88	SPK-500S	500 mm (Micro hose connection R 1/8")
89	SPK-1000S	1,000 mm (Micro hose connection R 1/8")
90	SPK-1500S	1,500 mm (Micro hose connection R 1/8")

51. Grease Nipples / Grease Guns

Grease Nipples
for Hydraulic Fittings

Chrome or brass plated steel material.

How to order : CODE

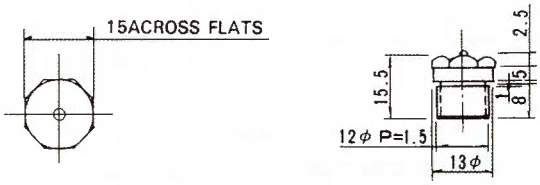
Grease nipple, TYPE, NOMINAL SIZE

Unit Per Pc.

Illustration	CODE	Type	Nominal Size (Thread)	Remark
	61 76 05	A Straight	M6x0.5	
	06		M6x1.0	
	07		PT 1/8	
	08		PT 1/4	
	09		PT 3/8	
	10		NPT 1/8	
	11		NPT 1/4	
	61 76 13	B 67.5°	PT 1/8	JIS B 1575
	14		PT 1/4	
	15		NPT 1/8	
	61 76 16	C 90°	PT 1/8	
	17		PT 1/4	
	61 76 18	Straight	6 mm	
	61 76 21	Pin Type	PF 1/8	
	22		PF 1/4	
	23		PF 3/8	
	24		PT 1/8	
	25		PT 1/4	
	26		PT 3/8	
	27		PT 1/2	
	61 76 30	Button Head	PF 1/8x15	Thread x Across Flat
	31		PF 1/4x15	
	32		PF 1/8x17	
	33		PF 1/4x17	
	34		PF 3/8x17	
	35		PF 1/2x22	
	36		M12x1.5	
	37		PT 1/8x17	
	38		PT 1/4x17	

Grease Nipples
for MacGregor Cargo Hatches

Specially designed to fit MacGregor type cargo hatches which can not accept other types of grease nipples. Available only in one type and size. Thread : 12 mmø x 1.5 Pitch.



23 32 83	Grease nipple for MacGregor hatch cover Item No. 20.00.09	Pc.

Grease Cups

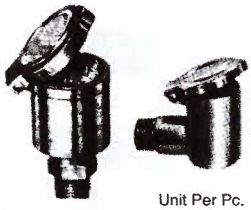
Brass made plain type cups for grease.

Unit Per Pc.

CODE	Cup Diam. mm	Male Thread	CODE	Cup Diam. mm	Male Thread
61 76 51	20	PF1/8	**61 76 55**	38	PF1/4
52	25	PF1/8	**56**	50	PF3/8
53	32	PF1/8	**57**	65	PF3/8
54	32	PF1/4	**58**	75	PF1/2

Oil Cups

Brass made oil cups. Caps close automatically for dust proofing. Two types, either straight or elbow type are available.



Unit Per Pc.

Straight Type			Elbow Type		
CODE	Cup Diam. mm	Male Thread	CODE	Cup Diam. mm	Male Thread
61 76 61	18	PF 1/8	**61 76 71**	20	PF 1/8
62	22	" 1/8	**72**	25	" 1/8
63	22	" 1/4	**73**	25	" 1/4
64	28	" 1/4	**74**	32	" 1/4
65	34	" 1/4	**75**	32	" 3/8
61 76 66	34	" 3/8			

Flexible Extension Hose

Used for hand lever grease guns only for hydraulic grease lubrication. All are 4.75 mm I.D. one-wire nylon braided, 210 kgf/cm² working and 420 kgf/cm² burst pressure.

For Pin type Grease Nipple SPK-1C

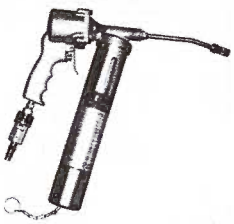
For Button Head type Grease Nipple SPK-2C

For Hydraulic or Straight type Grease Nipple SPK-3C

Unit Per Pc.

CODE	Grease Nipple Type	Male Thread	Length mm
61 76 80	Pin Type SPK-1C	PT 1/8	355
81	Button Head Type SPK-2C	"	375
82	Hydraulic or Straight Type SPK-3C	"	330

Air Powered Grease Lubricators



Works with compressed air for easy speed greasing by just pulling the trigger. Pressure is maintained constantly and the lubrication level is consistent. Works with a replaceable grease cartridge which is easy to attach and keeps dust and dirt out of the grease.

Grease level inside the cartridge can be checked at a glance so the grease will not run out unexpectedly.

Unit Per Set

CODE	61 76 91
Model	AMG-400N
Max Discharge Pressure	32 MPa
Output	310 ml/min.
Capacity	420 ml with use of the cartridge
Standard Accessory	Hydraulic Adaptor CNP-2 Quick Coupler PS-20PM Air Regulator
Size	387 x 438 x 66 mm
Weight	1.8 kgs

Lever Type Hand Grease Guns

These spring primed grease guns are designed for maximum efficiency and easy operation. These rugged lubricators are available in high pressure, medium pressure and volume delivery models to cover the complete range of pressure gun applications.

Standard Type

Suction Filling Type

Unit Per Pc.

CODE	Model	Capacity cc	Max. Working Pressure MPa	Wt. kgs	Size mm	
					Cyl. Diam.	Length
Standard Type Grease Gun						
61 77 01	KH-120	140	20	0.51	38.0	232
02	KH-35	400	25	1.11	59.6	290
03	KH-500	550	50	1.30	59.6	368
04	GC-57K	500	50	1.55	57	371
Suction Filling Type Grease Gun						
61 77 07	KH-32	200	25	1.27	59.6	412

52. Oilers / Oil Containers

Oil Syringes

Provide fast, clean servicing for rapid transfer of any fluid or lubricant. Pulling or pushing the handle intakes or discharges the lubricant.

Unit Per Pc.

CODE	Capacity cc	Length mm	Weight kgs
61 77 16	200	490	0.57
17	600	696	1.28
18	1,000	886	1.77

Oilers

Plastic Oilers

Made of oil resistant hard plastic. A thin pump nozzle forces the oil out in a strong stream.

Straight Type | Angle Type | Pistol Pump Type

Unit Per Pc.

CODE	Type	Capacity cc
61 77 21	Straight	180
22		300
61 77 24	Angle	130
25		200
26		300
61 77 28	Pistol Pump	500

Metallic Oilers

Bench Type | Rat Tail Type | Pistol Pump Type

Unit Per Pc.

CODE	Type	Capacity	Material
61 77 31	Bench	180 cc	Tin
32	Rat-tail	540 "	"
33	Pistol Pump	250 "	Cast Iron
34	"	330 "	"

Heavy Duty Pump Oilers

Heavy duty industrial type angled pump oiler. Two types of spout, flexible and solid are available.

Flexible Spout Type | Solid Spout Type

Unit Per Pc.

CODE	Spout Type	Capacity cc	Wt. gms.
61 77 36	Flexible	175	145
37	"	350	290
38	Solid	125	135
39	"	250	250

Oil Jugs

Made of plastic or copperrite (tin copper plated). So called Engineer's filler.

Unit Per Pc.

Copperrite		Plastic	
CODE	Capacity	CODE	Capacity
61 77 41	1 ltr	**61 77 45**	1 ltr
42	2 "	**46**	2 "
		47	3 "
		48	4 "
		49	5 "

Oil Funnels

Made from heavy galvanized tin plate with a brass strainer.

Unit Per Pc.

CODE	Diam. mm	CODE	Diam. mm
23 26 01	100	**23 26 05**	225
02	125	**06**	250
03	150	**07**	280
04	200	**08**	350

Oil Containers/Jerry Cans

Available in plastic or tin. This plastic container is suitable for almost all liquid while the tin container (so called Jerry Can) is ideal for gasoline.

Unit Per Pc.

CODE	Material	Capacity Ltr.	CODE	Material	Capacity Ltr.
61 77 61	Plastic	5	**61 77 66**	Tin	10
62	"	10	**67**	"	20
63	"	20			

Oil Pans

Designed to make it easy to transfer oil for proper disposal or recycling. Available in steel type, and also available in rugged high-density polypropylene or polyethylene type (oil drain pan) with resistant to chemicals and solvents.

Oil Pans

Oil Drain Pans

Steel Type

Unit Per Pc.

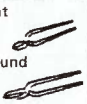
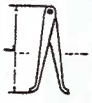
CODE	W x L x H mm	Volume ltr	CODE	W x L x H mm	Volume ltr
61 77 71	510 x 320 x 45	5	**61 77 74**	595 x 360 x 115	18
72	465 x 265 x 96	8	**75**	604 x 452 x 149	30
73	470 x 320 x 120	12	**76**	908 x 616 x 148	60

Plastic Type

Unit Per Pc.

CODE	W x L x H mm	Volume ltr	CODE	W x L x H mm	Volume ltr
Oil Pan (Polypropylene)			**Oil Drain Pan (Polyethylene)**		
61 77 77	345 x 265 x 82	5	**61 77 80**	520 x 145 x 390	8
78	390 x 296 x 104	8	**81**	600 x 170 x 450	16
79	460 x 340 x 110	10			

A Guide for Engine Stores

Dial Gauge	Measure for.Sounding	Tap & Round Die	File Handle	Chisel (Oil Groove Cut)	Flashlight	 Flat Round Smith Tongs	Listening Rod	Bolt & Nut
Micrometer (Outside)	Cloth Tape Measure	Spanner (Single Ended)	File Brush	Scissor for Packing	Wire Rope Sling	Smith Hammer	15 mm Air Hose with Nozzle	Stud & Nut
Vernier Caliper	Spring Balance	Spanner (Double Ended)	Hand Hammer	Scissors for Metal	Manila Rope Sling	Oil Measure	15 mm Flexible Metal Hose	Split Pin
Tachometer	 Inside Caliper	Box Spanner	Lead Hammer	Packing Knife	Screw Jack	Oil Hopper	Canvas Cloth	Steel Plate
Clinometer	Outside Caliper	Adjustable Wrench	Wooden Hammer	Packing Tool	Shackle	Oil Feeder	Scaffolding Plate	Galvanized Steel Sheet
Marking Scriber	Compass	Pipe Wrench	Sledge Hammer	Hacksaw Frame & Hacksaw	Beam Grab	Oil Feeder (Syringe)	Aluminum Foot Stool	Copper or Steel Sheet
Surface Gauge	Thermometer with Holder	Screwdriver	Chipping Hammer	Parallel Vise	Chain Block	Grease Pump	Shoe Mat	Steel Bar
Surface Plate	Thermometer 100°C Alcohol	Screwdriver (Cross Head)	Scraper (Flat & Bamboo Leaf)	Leg Vise	Crow Bar	Oil Pan with Strainer	Engine Room Desk	Steel Wire
Straight Edge	Thermometer 500°C Mercury	Plier	Paint Scraper	Bench Vise	Wedge	Water Bucket	Blackboard	Y-Type Strainer
Square	Portable Elect. Grinder	File (For White Metal)	Center Punch	Wet Stone with Bed	Valve Handle Spanner	Wire Brush	Eye Bolt	Spectacle Flange
Feeler Gauge	Portable Electric Drill	File 300 mm	Cutting Punch	Oil Stone with Bed	Forge with Hearth	Painting Brush	Waste Box	Plain Trolley
Steel Scale	Straight Shank Drill	File 200 mm	Chisels (Flat & Crosscut)	Torch Lamp	Anvil with Wooden Bench	Paint Can	Steel Washer	U Bolt

63
CUTTING TOOLS

<table>
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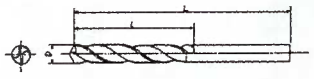
<td>Drills
 
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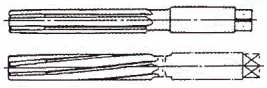
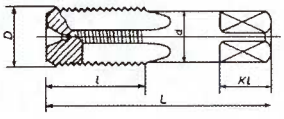
<td>Reamers
 
P. 63-4 ~ 6</td>
<td>Taps/Dies
 
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<td>Lathe
Machine
Attachments

P. 63-14</td>
<td>Drill Machine Attachments

P. 63-14 ~ 16</td>
<td>Screw Extractors

P. 63-16</td>
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<tr>
<td>Carbide Rotary Burs

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<td>Tool Bits/Carbide Tips

P. 63-17 ~ 24</td>
<td>Tool Bit Holders

P. 63-24 ~ 25</td>
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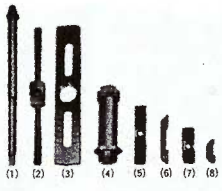
<td>Thread Restorers (File Type)

P.63- 25</td>
<td>Valve
Seat
Cutters
 
P. 63-26</td>
<td>Hole Saws

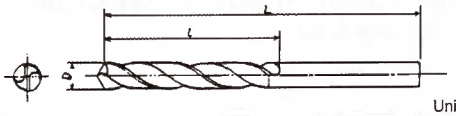
P. 63-26 ~ 27</td>
</tr>
</table>

Straight Shank Twist Drills

High Speed Steel

(Ref. JIS B 4301 – 88)

The drills are of the correctional two-flute design with helix angles, flute and point shapes selected for general purpose applications. They may be used very successfully in cast iron, steel forging and other materials.



Unit Per Pc.

CODE	Diameter mm	Length mm	
		Flute	Overall
63 01 01	0.3	3	19
02	0.4	5	20
03	0.5	6	22
04	0.6	7	24
05	0.7	9	28
63 01 06	0.8	10	30
07	0.9	11	32
08	1.0	12	34
09	1.1	14	36
10	1.2	16	38
63 01 11	1.3	16	38
12	1.4	18	40
13	1.5	18	40
14	1.6	20	43
15	1.7	20	43
63 01 16	1.8	22	46
17	1.9	22	46
18	2.0	29	55
19	2.1	29	55
20	2.2	33	58
63 01 21	2.3	33	58
22	2.4	35	61
23	2.5	35	61
24	2.6	37	64
25	2.7	37	64
63 01 26	2.8	39	67
27	2.9	42	71
28	3.0	42	71
29	3.1	42	71
30	3.2	42	71
63 01 31	3.3	45	73
32	3.4	45	73
33	3.5	45	73
34	3.6	48	76
35	3.7	48	76
63 01 36	3.8	48	76
37	3.9	51	79
38	4.0	54	83
39	4.1	54	83
40	4.2	54	83
63 01 41	4.3	54	83
42	4.4	56	86
43	4.5	56	86
44	4.6	56	86
45	4.7	59	89
63 01 46	4.8	59	89
47	4.9	62	92
48	5.0	62	92
49	5.1	62	92
50	5.2	64	95
63 01 51	5.3	64	95
52	5.4	64	95
53	5.5	64	95
54	5.6	67	98
55	5.7	67	98

(to be continued)

Unit Per Pc.

CODE	Diameter mm	Length mm	
		Flute	Overall
63 01 56	5.8	67	98
57	5.9	67	98
58	6.0	70	102
59	6.1	70	102
60	6.2	70	102
63 01 61	6.3	70	102
62	6.4	73	105
63	6.5	73	105
64	6.6	73	105
65	6.7	73	105
63 01 66	6.8	73	105
67	6.9	73	105
68	7.0	73	105
69	7.1	75	108
70	7.2	75	108
63 01 71	7.3	75	108
72	7.4	78	111
73	7.5	78	111
74	7.6	78	111
75	7.7	81	114
63 01 76	7.8	81	114
77	7.9	81	114
78	8.0	81	114
79	8.1	84	117
80	8.2	84	117
63 01 81	8.3	84	117
82	8.4	87	121
83	8.5	87	121
84	8.6	87	121
85	8.7	87	121
63 01 86	8.8	89	124
87	8.9	89	124
88	9.0	89	124
89	9.1	89	124
90	9.2	92	127
63 01 91	9.3	92	127
92	9.4	92	127
93	9.5	92	127
94	9.6	95	130
95	9.7	95	130
63 01 96	9.8	95	130
97	9.9	95	130
98	10.0	95	130
99	10.5	100	137
02 01	11.0	103	140
63 02 02	11.5	106	143
03	12.0	111	149
04	12.5	114	152
05	13.0	114	152

Cobalt Straight Shank Twist Drills

Cobalt is harder and stronger than high speed steel and provides better wear resistance. Designed for machine and hand drilling tough materials such as stainless steel.

Unit Per Pc.

CODE	Diameter mm	Length mm	
		Flute	Overall
63 02 06	1.0	10	40
07	1.5	14	48
08	2.0	19	55
09	2.5	24	61
10	3.0	36	71
63 02 11	3.5	31	73
12	4.0	34	83
13	4.5	38	86
14	5.0	42	92
15	5.5	46	95

(to be continued)

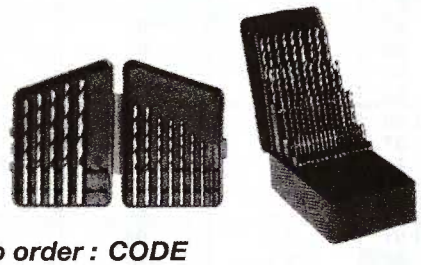
Unit Per Pc.

CODE	Diameter mm	Length mm	
		Flute	Overall
63 02 16	6.0	46	102
17	6.5	50	105
18	7.0	55	105
19	7.5	55	111
20	8.0	60	114
63 02 21	8.5	60	121
22	9.0	65	124
23	9.5	65	127
24	10.0	70	130
25	10.5	70	137
63 02 26	11.0	75	140
27	11.5	75	143
28	12.0	81	149
29	12.5	81	152
30	13.0	81	152

Straight Shank Twist Drill Sets

High Speed Steel

The drills in these sets are high speed steel, general purpose, straight shank twist drills for portable or machine drilling in metric sizes. Sets are all furnished in polyethylene or steel folding cases.



How to order : CODE

Drill set, high speed steel, SIZE (MINIMUM – MAXIMUM) mm, NUMBERS/set

Unit Per Set

CODE	Set Contents	Range of Size	Container
63 02 51	8 s	2.0, 3.0, 3.2, 4.0, 4.8, 5.0, 6.0, 6.5 mm	Poly Case
63 02 52	13 s	1.5, 2.0, 2.5, 3.0, 3.2, 3.5, 4.0, 4.5, 4.8, 5.0, 5.5, 6.0, 6.5 mm	"
63 02 53	13 s	1.5, 2.0, 2.5, 3.0, 3.2, 3.5, 4.0, 4.5, 4.8, 5.0, 5.5, 6.0, 6.5 mm	Steel Case
63 02 54	19 s	1 mm to 10 mm by 0.5 mm	"
63 02 55	25 s	1 mm to 13 mm by 0.5 mm	"
63 02 56	41 s	6 mm to 10 mm by 0.1 mm	"
63 02 57	50 s	1 mm to 5.9 mm by 0.1 mm	"

Drill Stands

This drill stand is suitable for straight shank drills indicating each drill hole with the right size mark.

How to order : CODE

Drill stand, SIZE (MINIMUM – MAXIMUM) mm, NUMBER of HOLES

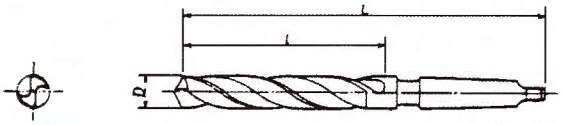
Unit Per Pc.

CODE	Size	Number of Holes
63 02 71	1.0 mm - 6.5 mm by 0.1 mm	56
63 02 72	0.5 mm - 13.0 mm by 0.5 mm	26
63 02 73	6.6 mm - 13.0 mm by 0.1 mm	65

Morse Taper Shank Twist Drills

High Speed Steel

(Ref. JIS B 4302 – 88)



Unit Per Pc.

CODE	Diameter mm	Length mm		Morse Taper No.
		Flute	Overall	
63 03 01	10.0	95	178	1
02	10.5	98	182	1
03	11.0	102	185	1
04	11.5	105	188	1
05	12.0	108	192	1
63 03 06	12.5	112	195	1
07	13.0	115	198	1
08	13.5	118	202	1
09	14.0	122	205	1
10	14.5	122	222	1
63 03 11	15.0	125	225	2
12	15.5	128	228	2
13	16.0	130	230	2
14	16.5	132	232	2
15	17.0	135	235	2
63 03 16	17.5	140	240	2
17	18.0	140	240	2
18	18.5	145	245	2
19	19.0	145	245	2
20	19.5	150	250	2
63 03 21	20.0	150	250	2
22	20.5	155	255	2
23	21.0	155	255	2
24	21.5	160	260	2
25	22.0	160	260	2
63 03 26	22.5	165	265	2
27	23.0	165	265	2
28	23.5	165	285	2
29	24.0	165	285	2
30	24.5	165	285	2
63 03 31	25.0	165	285	3
32	25.5	165	285	3
33	26.0	165	285	3
34	26.5	170	290	3
35	27.0	170	290	3
63 03 36	27.5	175	295	3
37	28.0	175	295	3
38	28.5	180	300	3
39	29.0	180	300	3
40	29.5	185	305	3
63 03 41	30.0	185	305	3
42	30.5	190	310	3
43	31.0	190	310	3
44	31.5	195	315	3
45	32	195	315	3
63 03 46	33	200	345	4
47	34	205	350	4
48	35	205	350	4
49	36	210	355	4
50	37	210	355	4

(to be continued)

Unit Per Pc.

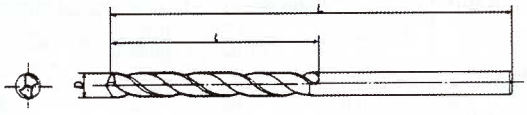
CODE	Diameter mm	Length mm		Morse Taper No.
		Flute	Overall	
63 03 51	38	215	360	4
52	39	215	360	4
53	40	220	365	4
54	41	220	365	4
55	42	225	370	4
63 03 56	43	225	370	4
57	44	230	375	4
58	45	230	375	4
59	46	235	380	4
60	47	235	380	4
63 03 61	48	240	385	4
62	49	240	385	4
63	50	245	390	4
64	51	245	425	5
65	52	250	430	5
63 03 66	53	250	430	5
67	54	255	435	5
68	55	255	435	5
69	56	260	440	5
70	57	260	440	5
63 03 71	58	265	445	5
72	59	265	445	5
73	60	270	450	5
74	61	270	450	5
75	62	275	455	5
63 03 76	63	275	455	5
77	64	280	460	5
78	65	280	460	5
79	66	285	465	5
80	67	285	465	5
63 03 81	68	290	470	5
82	69	290	470	5
83	70	295	475	5
84	71	295	475	5
85	72	300	480	5
63 03 86	73	300	480	5
87	74	305	485	5
88	75	305	485	5
89	76	310	490	5

Straight Shank Long Twist Drills

High Speed Steel

(Ref. JIS B 4305 – 88)

These drills are designed for holes required several times deeper than the diameter. In addition to the sizes listed below, there are drills available in other lengths for the diameters shown.



Unit Per Pc.

CODE	Diameter mm	Length mm	
		Flute	Overall
63 04 01	1.0	30	75
02	1.5	35	75
03	2.0	50	100
04	2.5	65	125
05	3.0	65	125
63 04 06	3.5	75	150
07	4.0	100	200
08	4.5	100	200
09	5.0	100	200
10	5.5	100	200

(to be continued)

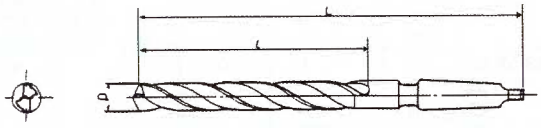
Unit Per Pc.

CODE	Diameter mm	Length mm	
		Flute	Overall
63 04 11	6.0	100	200
12	6.5	100	200
13	7.0	100	200
14	7.5	125	250
15	8.0	150	250
63 04 16	8.5	150	250
17	9.0	150	250
18	9.5	150	250
19	10.0	150	250
20	10.5	150	250
63 04 21	11.0	150	250
22	11.5	150	250
23	11.5	175	300
24	12.0	150	250
25	12.0	175	300
63 04 26	12.5	150	250
27	12.5	175	300
28	13.0	150	250
29	13.0	175	300

Morse Taper Shank Long Twist Drills

High Speed Steel

(Ref. JIS B 4306 – 88)



Unit Per Pc.

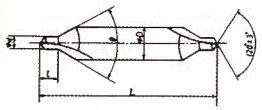
CODE	Diameter mm	Length mm		Morse Taper No.
		Flute	Overall	
63 04 51	10.0	150	250	1
52	11.0	150	250	1
53	12.0	150	250	1
54	13.0	200	300	1
55	14.0	225	350	1
63 04 56	15.0	225	350	2
57	16.0	225	350	2
58	17.0	225	350	2
59	18.0	225	350	2
60	19.0	225	350	2
63 04 61	20.0	250	400	2
62	21.0	250	400	2
63	22.0	250	400	2
64	23.0	300	450	2
65	24.0	300	450	3
63 04 66	25.0	300	450	3
67	26.0	350	500	3
68	27.0	350	500	3
69	28.0	350	500	3
70	29.0	350	500	3
63 04 71	29.0	400	600	3
72	30.0	350	500	3
73	30.0	400	600	3
74	31.0	350	500	3
75	31.0	400	600	3
63 04 76	32.0	300	450	3
77	32.0	350	500	3
78	32.0	400	600	3

Center Drills for Center Holes

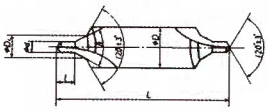
High Speed Steel

(Ref. JIS B 4304 – 88)

A Type

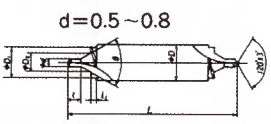


B Type

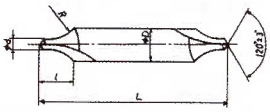


C Type

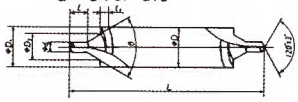
d=0.5~0.8



R Type



d=Over 1.0



How to order : CODE

Center drill, TYPE, DRILL DIAM mm, ANGLE θ

Unit Per Pc.

A Type				B Type			
CODE	Nominal Size		Body Diam. mm	CODE	Nominal Size		Body Diam. mm
	Drill Diam. mm	θ			Drill Diam. mm	θ	
63 05 01	1.0	60°	3.15	**63 05 31**	1.0	60°	4.0
02	1.6		4.0	**32**	1.6		6.3
03	2.0		5.0	**33**	2.0		8.0
04	2.5		6.3	**34**	2.5		10.0
05	3.15		8.0	**35**	3.15		11.2
06	4.0		10.0	**36**	4.0		14.0
07	6.3		16.0	**37**	6.3		20.0
08	10.0		25.0	**38**	10.0		31.5
63 05 11	1.0	75°	3.15	**63 05 41**	1.0	75°	5.0
12	1.6		5.0	**42**	1.6		8.0
13	2.0		6.3	**43**	2.0		10.0
14	2.5		8.0	**44**	2.5		11.2
15	3.15		10.0	**45**	3.15		14.0
16	4.0		12.5	**46**	4.0		18.0
17	6.3		18.0	**47**	6.3		25.0
18	10.0		28.0	**48**	10.0		35.5
19	12.5		35.5	**49**	12.5		45.0
63 05 21	1.0	90°	4.0	**63 05 51**	1.0	90°	5.0
22	2.0		8.0	**52**	2.0		10.0
23	2.5		10.0	**53**	2.5		11.2
24	3.15		11.2	**54**	3.15		14.0
25	4.0		12.5	**55**	4.0		18.0
26	6.3		20.0	**56**	6.3		25.0
27	10.0		31.5	**57**	10.0		40.0
28	12.5		35.5	**58**	12.5		45.0

C Type				R Type		
CODE	Nominal Size		Body Diam. mm	CODE	Nominal Size	Body Diam. mm
	Drill Diam. mm	θ			Drill Diam. mm	
63 05 61	1.0	60°	3.15	**63 05 91**	1.0	3.15
62	1.6		5.0	**92**	1.6	4.0
63	2.0		6.3	**93**	2.0	5.0
64	2.5		8.0	**94**	2.5	6.3
65	3.15		10.0	**95**	3.15	8.0
66	4.0		12.5	**96**	4.0	10.0
67	6.3		18.0	**97**	6.3	16.0
68	10.0		28.0	**98**	10.0	25.0

(to be continued)

C Type							
CODE	Nominal Size		Body Diam. mm	CODE	Nominal Size		Body Diam. mm
	Drill Diam. mm	θ			Drill Diam. mm	θ	
63 05 71	1.0	75°	4.0	**63 05 81**	1.0	90°	5.0
72	1.6		6.3	**82**	1.6		8.0
73	2.0		8.0	**83**	2.0		10.0
74	2.5		10.0	**84**	2.5		12.5
75	3.15		12.5	**85**	3.15		16.0
76	4.0		14.0	**86**	4.0		18.0
77	6.3		22.4	**87**	6.3		25.0
78	10.0		35.5	**88**	10.0		40.0
79	12.5		45.0	**89**	12.5		45.0

Step Drills

Made of heat treated steel and can create various hole sizes by single drill in steel, stainless steel, plastic or wood up to 6 mm depth.

Unit Per Pc.

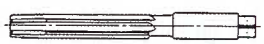
CODE	Model	Size mm	Max. hole Depth
63 38 01	ST - 1	4, 5, 6, 7, 8, 9, 10, 11, 12	3 mm
02	ST - 2	6, 8, 10, 12, 14, 16, 18	5 mm
03	ST - 3	6, 9, 11, 13, 15, 17, 19, 21, 24, 27, 30, 33	3 mm
04	ST - 4	6, 9, 12, 15, 18, 21, 24, 27, 30, 32, 34, 36, 38, 40, 42	3 mm

Hand Reamers

High Speed Steel

(Ref. JIS B 4405 – 90)

These reamers are driven by hand to finish the inside walls of drilled holes. To achieve an improved starting performance, the cutting edge is slightly chamfered. The flutes are normally straight and helical. Spiral flutes are recommended for operations involving an interruption to the cut, such as a keyway.



Straight Flute

Helical Flute

Unit Per Pc.

Straight	Dimensions mm			Helical
CODE	Diameter	Length mm		CODE
		Flute	Overall	
63 06 01	0.5	12	30	**63 07 01**
02	0.8	15	35	**02**
03	1.0	20	40	**03**
04	1.2	25	45	**04**
05	1.5	25	50	**05**
63 06 06	1.8	30	55	**63 07 06**
07	2.0	30	60	**07**
08	2.2	30	60	**08**
09	2.5	35	65	**09**
10	2.8	35	65	**10**
63 06 11	3.0	40	72	**63 07 11**
12	3.5	40	75	**12**
13	4.0	40	80	**13**
14	4.5	45	85	**14**
15	5.0	45	90	**15**

(to be continued)

Unit Per Pc.

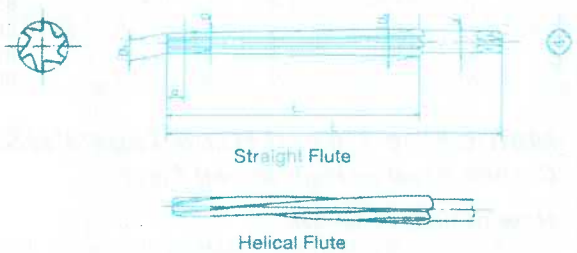
Straight CODE	Dimensions mm Diameter	Length mm Flute	Overall	Helical CODE
63 06 16	5.5	45	95	63 07 16
17	6.0	50	100	17
18	6.5	50	100	18
19	7.0	55	105	19
20	7.5	55	110	20
63 06 21	8.0	60	115	63 07 21
22	8.5	60	120	22
23	9.0	65	125	23
24	9.5	65	125	24
25	10.0	70	130	25
63 06 26	10.5	70	135	63 07 26
27	11.0	75	140	27
28	11.5	75	145	28
29	12.0	75	150	29
30	12.5	80	155	30
63 06 31	13.0	80	160	63 07 31
32	13.5	85	165	32
33	14.0	85	165	33
34	14.5	90	170	34
35	15.0	90	175	35
63 06 36	16.0	95	185	63 07 36
37	17.0	100	190	37
38	18.0	105	200	38
39	19.0	105	210	39
40	20.0	110	220	40
63 06 41	21.0	120	230	63 07 41
42	22.0	120	235	42
43	23.0	130	250	43
44	24.0	130	255	44
45	25.0	130	260	45
63 06 46	26.0	140	270	63 07 46
47	28.0	140	290	47
48	30.0	150	305	48
49	32.0	160	315	49
50	34.0	160	315	50
63 06 51	36.0	165	320	63 07 51
52	38.0	165	325	52
53	40.0	165	330	53
54	42.0	170	335	54
55	44.0	170	340	55
63 06 56	46.0	175	345	63 07 56
57	48.0	180	350	57
58	50.0	180	355	58

Hand Taper Pin Reamers 1/50

High Speed Steel

(Ref. JIS B 4411 – 88)

This type of reamer is used in finishing taper pin holes. Straight Flutes are standard but Helical Flutes are also available.



Straight Flute

Helical Flute

Unit Per Pc.

Straight Flute CODE	Dimensions mm Nominal Size Diam D	Large Size Diam D1	Flute Length L1	Overall Length L	Helical Flute CODE
63 08 01	0.6	0.90	20	38	63 08 31
02	0.8	1.18	24	42	32
03	1.0	1.46	28	46	33
04	1.2	1.74	32	50	34
05	1.6	2.24	37	57	35
63 08 06	2.0	2.86	48	68	63 08 36
07	2.5	3.36	48	68	37
08	3.0	4.16	63	85	38
09	4.0	5.42	76	100	39
10	5.0	6.56	83	110	40
63 08 11	6.0	8.00	105	135	63 08 41
12	8.0	10.80	145	180	42
13	10.0	13.40	175	215	43
14	13.0	17.00	210	255	44
15	16.0	20.40	230	280	45
63 08 16	20.0	24.80	250	310	63 08 46
17	25.0	30.70	300	370	47
18	30.0	36.10	320	400	48
19	40.0	46.50	340	430	49
20	50.0	56.90	360	460	50

Hand Taper Pin Reamers 1/48

Straight Flute, American Standard

High Speed Steel

1/48 Taper pins according to U.S. Standard have a taper of 6.35 mm per 25.4 mm. These reamers are designed in nominal numbers but since the standards are not unified, there are minor differences in tip diameter and small end diameter.

Unit Per Pc.

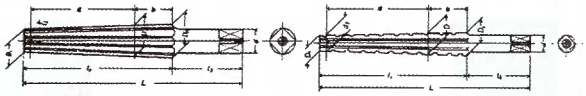
CODE	Diameter mm Size No	Small End	Large End	Length mm Flute	Overall
63 08 61	0000	2.21	2.90	33	59
62	000	2.61	3.30	33	59
63	00	2.89	3.72	40	65
64	0	3.27	4.17	43	75
65	1	3.68	4.58	43	75
63 08 66	2	4.08	5.10	49	81
67	3	4.61	5.84	59	94
68	4	5.26	6.61	65	103
69	5	6.12	7.60	71	110
70	6	7.04	9.00	94	138
63 08 71	7	8.37	10.72	113	160
72	8	10.09	12.84	132	183
73	9	12.21	15.42	154	211
74	10	14.73	18.33	173	237
75	11	17.93	22.31	210	285
63 08 76	12	21.38	26.69	255	340
77	13	25.93	31.98	305	405
78	14	31.75	39.15	355	465

Morse Taper Reamers

High Speed Steel

(Ref. JIS B 4401 – 87)

Used for finishing Morse taper holes, these reamers come in finishing and rough-cutting grades. The rough cutting reamer has a helical arrangement of chip breakers at the cutting edges which fragment the chips for easy removal.



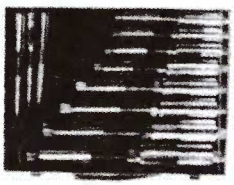
For Finishing For Rough Cutting

Unit Per Pc.

CODE	Morse Taper No.	Diameter mm		Length mm	
		Small End D1	Large End D2	Flute L1	Overall L
Finishing					
63 09 01	0	6.547	9.930	65	95
02	1	9.571	12.963	68	100
03	2	14.733	18.729	80	125
04	3	20.010	24.929	98	150
05	4	26.229	32.462	120	180
63 09 06	5	37.873	45.767	150	230
07	6	54.388	65.069	205	310
08	7	70.578	84.878	275	400
Rough Cutting					
63 09 11	0	6.297	9.680	65	95
12	1	9.321	12.713	68	100
13	2	14.483	18.479	80	125
14	3	19.760	24.679	98	150
15	4	25.979	32.212	120	180
63 09 16	5	37.623	45.517	150	230
17	6	54.130	64.319	205	310
18	7	70.328	84.628	275	400

Adjustable Reamer Sets

Different sets of reamers in various size combinations are available to give maximum economy, and convenience of use for different requirements.



Unit Per Set

CODE	Range mm	Number of Reamers
63 09 51	4.5 - 6.35	5
52	6.35 - 9.5	4
53	9.5 - 12.0	3
54	12.0 - 27.0	8
55	12.0 - 38.0	11
63 09 56	15.0 - 27.0	6
57	15.0 - 38.0	9
58	9.5 - 56.0	16

Metric Coarse Thread Hand Taps 3's/Set

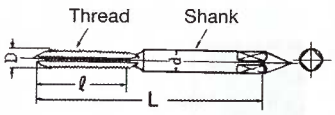
Carbon Steel or High Speed Steel

(Ref. JIS B 4430 – 87)

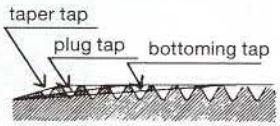
The hand taps most commonly employed today are used in conjunction with a machine, e.g. a tapping machine, rather than by hand. Thus, it is more common to employ a tap with a cutter shape most suitable for the conditions of use than using in sequence, three taps, i.e. the taper tap, plug tap and bottoming tap. Two kinds of materials of Carbon Steel and High Speed Steel are available. When ordering, please specify which one.

A set of 3 hand taps

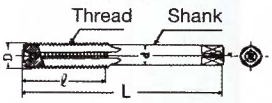
Shape of the hand tap M5 and less



Detailed view of chamfer



M6 and more



How to order : CODE

Hand tap, metric coarse, MATERIAL, DIAMETER, PITCH mm, 3's/set

Unit Per Set

Carbon Steel CODE	Designation Diameter mm D	Pitch mm	Length mm		**High Speed Steel** CODE
			Flute	Overall L	
63 10 01	M 1.0	0.25	8	30	**63 10 51**
02	M 1.1	0.25	9	32	**52**
03	M 1.2	0.25	9	32	**53**
04	M 1.4	0.30	11	34	**54**
05	M 1.6	0.35	13	36	**55**
63 10 06	M 1.7	0.35	13	36	**63 10 56**
07	M 1.8	0.35	13	36	**57**
08	M 2.0	0.40	15	40	**58**
09	M 2.2	0.45	15	42	**59**
10	M 2.3	0.40	15	42	**60**
63 10 11	M 2.5	0.45	16	44	**63 10 61**
12	M 2.6	0.45	16	44	**62**
13	M 3.0	0.50	18	46	**63**
14	M 3.5	0.60	18	48	**64**
15	M 4.0	0.70	20	52	**65**
63 10 16	M 4.5	0.75	20	55	**63 10 66**
17	M 5.0	0.80	22	60	**67**
18	M 6.0	1.00	24	62	**68**
19	M 7.0	1.00	26	65	**69**
20	M 8.0	1.25	30	70	**70**
63 10 21	M 9.0	1.25	30	72	**63 10 71**
22	M 10	1.50	32	75	**72**
23	M 11	1.50	38	80	**73**
24	M 12	1.75	38	82	**74**
25	M 14	2.0	42	88	**75**
63 10 26	M 16	2.0	45	95	**63 10 76**
27	M 18	2.5	48	100	**77**
28	M 20	2.5	50	105	**78**
29	M 22	2.5	55	115	**79**
30	M 24	3.0	58	120	**80**
63 10 31	M 27	3.0	62	130	**63 10 81**
32	M 30	3.5	65	135	**82**
33	M 33	3.5	70	145	**83**
34	M 36	4.0	75	155	**84**
35	M 39	4.0	80	165	**85**
63 10 36	M 42	4.5	85	175	**63 10 86**
37	M 45	4.5	85	180	**87**
38	M 48	5.0	90	185	**88**

Metric Fine Thread Hand Taps 3's/Set

Carbon Steel or High Speed Steel

How to order : CODE

Hand tap, metric fine, MATERIAL,DIAMETER, PITCH mm, 3's/set

Unit Per Set

Carbon Steel CODE	Designation Diameter mm D	Pitch mm	Length mm Flute	Length mm Overall L	High Speed Steel CODE
63 11 01	M 1.0	0.2	6	30	63 12 01
02	M 1.1	0.2	6	32	02
03	M 1.2	0.2	6	32	03
04	M 1.4	0.2	6	34	04
05	M 1.6	0.2	6	36	05
63 11 06	M 1.8	0.2	6	36	63 12 06
07	M 2.0	0.25	8	40	07
08	M 2.2	0.25	8	42	08
09	M 2.5	0.35	10	44	09
10	M 3.0	0.35	10	46	10
63 11 11	M 3.5	0.5	10	48	63 12 11
12	M 4.0	0.5	15	52	12
13	M 4.5	0.5	15	52	13
14	M 5.0	0.5	15	52	14
15	M 5.5	0.5	15	52	15
63 11 16	M 6.0	0.75	20	62	63 12 16
17	M 7.0	0.75	20	62	17
18	M 8.0	1	30	70	18
19	M 8.0	0.75	20	62	19
20	M 9.0	1	30	70	20
63 11 21	M 9.0	0.75	20	62	63 12 21
22	M 10	1.25	32	75	22
23	M 10	1	30	70	23
24	M 10	0.75	20	62	24
25	M 11	1	30	70	25
63 11 26	M 11	0.75	20	62	63 12 26
27	M 12	1.5	38	82	27
28	M 12	1.25	38	80	28
29	M 12	1	30	70	29
30	M 14	1.5	42	88	30
63 11 31	M 14	1	30	70	63 12 31
32	M 15	1.5	42	90	32
33	M 15	1	30	70	33
34	M 16	1.5	45	95	34
35	M 16	1	30	75	35
63 11 36	M 17	1.5	45	95	63 12 36
37	M 17	1	30	80	37
38	M 18	2	45	95	38
39	M 18	1.5	45	95	39
40	M 18	1	30	80	40
63 11 41	M 20	2	45	95	63 12 41
42	M 20	1.5	45	95	42
43	M 20	1	30	80	43
44	M 22	2	45	95	44
45	M 22	1.5	45	95	45
63 11 46	M 22	1	30	85	63 12 46
47	M 24	2	45	95	47
48	M 24	1.5	45	95	48
49	M 24	1	30	90	49
50	M 25	2	45	95	50
63 11 51	M 25	1.5	45	95	63 12 51
52	M 25	1	30	95	52
53	M 26	1.5	45	95	53
54	M 27	2	45	95	54
55	M 27	1.5	45	95	55
63 11 56	M 27	1	30	95	63 12 56
57	M 28	2	45	105	57
58	M 28	1.5	45	105	58
59	M 28	1	30	105	59
60	M 30	3	65	135	60
63 11 61	M 30	2	45	105	63 12 61
62	M 30	1.5	45	105	62
63	M 30	1	30	105	63
64	M 32	2	45	105	64
65	M 32	1.5	45	105	65

(to be continued)

Unit Per Set

Carbon Steel CODE	Designation Diameter mm D	Pitch mm	Length mm Flute	Length mm Overall L	High Speed Steel CODE
63 11 66	M 33	3	70	145	63 12 66
67	M 33	2	45	110	67
68	M 33	1.5	45	110	68
69	M 35	1.5	45	110	69
70	M 36	3	75	155	70
63 11 71	M 36	2	45	110	63 12 71
72	M 36	1.5	45	110	72
73	M 38	1.5	45	115	73
74	M 39	3	80	165	74
75	M 39	2	45	115	75
63 11 76	M 39	1.5	45	115	63 12 76
77	M 40	3	80	165	77
78	M 40	2	45	115	78
79	M 40	1.5	45	115	79
80	M 42	4	80	175	80
63 11 81	M 42	3	80	175	63 12 81
82	M 42	2	45	120	82
83	M 45	1.5	45	120	83
84	M 45	4	80	180	84
85	M 45	3	80	180	85
63 11 86	M 45	2	45	120	63 12 86
87	M 45	1.5	45	120	87
88	M 48	4	80	180	88
89	M 48	3	80	180	89
90	M 48	2	45	125	90
63 11 91	M 48	1.5	45	125	63 12 91
92	M 50	3	80	180	92
93	M 50	2	45	130	93
94	M 50	1.5	45	130	94

Whitworth Coarse Thread Hand Taps 3's/Set

Carbon Steel or High Speed Steel

How to order : CODE

Hand tap, whitworth coarse, MATERIAL, DIAMETER, THREAD, 3's/set

Unit Per Set

Carbon Steel CODE	Designation Diam. inch D	Threads Per Inch	Length mm Flute	Length mm Overall L	High Speed Steel CODE
63 13 01	1/16	60	13	36	63 13 26
02	3/32	48	15	42	27
03	1/8	40	18	46	28
04	5/32	32	20	52	29
05	3/16	24	22	60	30
63 13 06	7/32	24	22	60	63 13 31
07	1/4	20	24	62	32
08	5/16	18	30	70	33
09	3/8	16	35	75	34
10	7/16	14	38	80	35
63 13 11	1/2	12	42	85	63 13 36
12	9/16	12	42	90	37
13	5/8	11	45	95	38
14	3/4	10	50	105	39
15	7/8	9	55	115	40
63 13 16	1	8	60	125	63 13 41
17	1 1/8	7	65	135	42
18	1 1/4	7	70	145	43
19	1 3/8	6	75	155	44
20	1 1/2	6	78	160	45

(to be continued)

Unit Per Set

Carbon Steel CODE	Designation Diam. inch D	Threads Per Inch	Length mm Flute	Length mm Overall L	High Speed Steel CODE
61 13 21	1 5/8	5	82	170	61 13 46
22	1 3/4	5	85	175	47
23	1 7/8	4 1/2	90	185	48
24	2	4 1/2	92	195	49

Unified Coarse Thread Hand Taps 3's/Set

Carbon Steel or High Speed Steel

How to order : CODE

Hand tap, unified coarse, MATERIAL,NOMINAL SIZE, PITCH mm

Unit Per Set

Carbon Steel CODE	Nominal Size	Diam. mm D	Threads Per Inch	Length mm Flute	Length mm Overall L	High Speed Steel CODE
63 13 50	No.1 - 64UNC	1.854	64	13	36	63 13 75
51	No.2 - 56UNC	2.184	56	15	42	76
52	No.3 - 48UNC	2.515	48	16	44	77
53	No.4 - 40UNC	2.845	40	16	44	78
54	No.5 - 40UNC	3.175	40	18	46	79
63 13 55	No.6 - 32UNC	3.505	32	18	48	63 13 80
56	No.8 - 32UNC	4.166	32	20	52	81
57	No.10 - 24UNC	4.826	24	22	60	82
58	No.12 - 24UNC	5.486	24	22	60	83
59	1/4 - 20UNC	6.350	20	24	62	84
63 13 60	5/16 - 18UNC	7.938	18	30	70	63 13 85
61	3/8 - 16UNC	9.525	16	35	75	86
62	7/16 - 14UNC	11.112	14	38	80	87
63	1/2 - 13UNC	12.700	13	42	85	88
64	9/16 - 12UNC	14.288	12	42	90	89
63 13 65	5/8 - 11UNC	15.875	11	45	95	63 13 90
66	3/4 - 10UNC	19.050	10	50	105	91
67	7/8 - 9UNC	22.225	9	55	115	92
68	1 - 8UNC	25.400	8	60	125	93
69	1-1/8 - 7UNC	28.575	7	65	135	94
63 13 70	1 1/4 - 7UNC	31.750	7	70	145	63 13 95
71	1 3/8 - 6UNC	34.925	6	75	155	96
72	1 1/2 - 6UNC	38.100	6	78	160	97
73	1 3/4 - 5UNC	44.450	5	85	175	98
74	2 - 4 1/2UNC	50.800	4 1/2	92	195	99

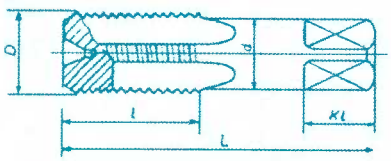
Pipe Tap Combination

Standard	Straight of Taper	Thread Male	Thread Female	Combination
JIS B 4445 ISO 2284	Straight Pipe Thread	PF (G)	PF (G)	Combination of straight male threads for pipes (PF) with straight female thread for pipe (PF)
JIS B 4446 ISO 2284	Taper Pipe Threads	PT (RC)	PT (RC)	Combination of taper male threads for pipe taper threads (PT) with taper female threads for pipe taper threads
			PS (RP)	Combination of taper male threads for pipe taper threads (PT) with straight female threads for pipe taper threads (PS)

Straight Pipe Taps for Straight Pipe Thread

G (ISO) or PF Type

(Ref. JIS B 4445 – 88)



How to order : CODE

Straight pipe tap for straight pipe thread, MATERIAL, TYPE of THREAD,NOMINAL SIZE, PITCH mm

Carbon Steel

Unit Per Pc.

CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm	CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm
G (ISO) TYPE				PF TYPE			
6314 01	G 1/16	28	52				
02	" 1/8	28	59	6314 26	PF 1/8	28	55
03	" 1/4	19	67	27	" 1/4	19	62
04	" 3/8	19	75	28	" 3/8	19	65
05	" 1/2	14	87	29	" 1/2	14	80
6314 06	G 5/8	14	91	6314 30	PF 5/8	14	82
07	" 3/4	14	96	31	" 3/4	14	85
08	" 7/8	14	102	32	" 7/8	14	90
09	" 1	11	109	33	" 1	11	95
10	" 1-1/8	11	115	34	" 1-1/8	11	100
6314 11	G 1-1/4	11	119	6314 35	PF 1-1/4	11	105
12	" 1-1/2	11	125	36	" 1-1/2	11	110
13	" 1-3/4	11	132	37	" 1-3/4	11	115
14	" 2	11	140	38	" 2	11	120
15	" 2-1/4	11	142				
6314 16	G 2-1/2	11	153				
17	" 2-3/4	11	160				
18	" 3	11	164				
19	" 3-1/2	11	173				
20	" 4	11	185				

High Speed Steel

Unit Per Pc.

CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm	CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm
G (ISO) TYPE				PF TYPE			
6314 51	G 1/16	28	52				
52	" 1/8	28	59	6314 76	PF 1/8	28	55
53	" 1/4	19	67	77	" 1/4	19	62
54	" 3/8	19	75	78	" 3/8	19	65
55	" 1/2	14	87	79	" 1/2	14	80
6314 56	G 5/8	14	91	6314 80	PF 5/8	14	82
57	" 3/4	14	96	81	" 3/4	14	85
58	" 7/8	14	102	82	" 7/8	14	90
59	" 1	11	109	83	" 1	11	95
60	" 1-1/8	11	115	84	" 1-1/8	11	100
6314 61	G 1-1/4	11	119	6314 85	PF 1-1/4	11	105
62	" 1-1/2	11	125	86	" 1-1/2	11	110
63	" 1-3/4	11	132	87	" 1-3/4	11	115
64	" 2	11	140	88	" 2	11	120
65	" 2-1/4	11	142				
6314 66	G 2-1/2	11	153				
67	" 2-3/4	11	160				
68	" 3	11	164				
69	" 3-1/2	11	173				
70	" 4	11	185				

Taper Pipe Taps for Taper Pipe Thread

Rc (ISO) and PT Type

(Ref. JIS B 4446 – 88)

How to order : CODE

Taper pipe tap for taper pipe thread, MATERIAL, TYPE of THREAD, NOMINAL SIZE, PITCH mm

Carbon Steel

Unit Per Pc.

CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm	CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm
Rc (ISO) TYPE				PT TYPE			
63 15 01	Rc 1/16	28	52				
02	" 1/8	28	59	63 15 16	PT 1/8	28	55
03	" 1/4	19	67	17	" 1/4	19	62
04	" 3/8	19	75	18	" 3/8	19	65
05	" 1/2	14	87	19	" 1/2	14	80
63 15 06	Rc 3/4	14	96	63 15 20	PT 3/4	14	85
07	" 1	11	109	21	" 1	11	95
08	" 1-1/4	11	119	22	" 1-1/4	11	105
09	" 1-1/2	11	125	23	" 1-1/2	11	110
10	" 2	11	140	24	" 2	11	120
63 15 11	Rc 2-1/2	11	153				
12	" 3	11	164				
13	" 3-1/2	11	173				
14	" 4	11	185				

High Speed Steel

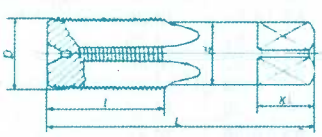
Unit Per Pc

CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm	CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm
Rc (ISO) TYPE				PT TYPE			
63 15 26	Rc 1/16	28	52				
27	" 1/8	28	59	63 15 41	PT 1/8	28	55
28	" 1/4	19	67	42	" 1/4	19	62
29	" 3/8	19	75	43	" 3/8	19	65
30	" 1/2	14	87	44	" 1/2	14	80
63 15 31	Rc 3/4	14	96	63 15 45	PT 3/4	14	85
32	" 1	11	109	46	" 1	11	95
33	" 1-1/4	11	119	47	" 1-1/4	11	105
34	" 1-1/2	11	125	48	" 1-1/2	11	110
35	" 2	11	140	49	" 2	11	120
63 15 36	Rc 2-1/2	11	153				
37	" 3	11	164				
38	" 3-1/2	11	173				
39	" 4	11	185				

Straight Pipe Taps for Taper Pipe Thread

Rp (ISO) and PS Type

(Ref. JIS B 4446 – 88)



How to order : CODE

Straight pipe tap for taper pipe thread, MATERIAL, TYPE of THREAD, NOMINAL SIZE, PITCH mm

Carbon Steel

Unit Per Pc

CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm	CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm
Rp (ISO) TYPE				PS TYPE			
63 15 51	Rp 1/16	28	52				
52	" 1/8	28	59	63 15 66	PS 1/8	28	55
53	" 1/4	19	67	67	" 1/4	19	62
54	" 3/8	19	75	68	" 3/8	19	65
55	" 1/2	14	87	69	" 1/2	14	80
63 15 56	Rp 3/4	14	96	63 15 70	PS 3/4	14	85
57	" 1	11	109	71	" 1	11	95
58	" 1-1/4	11	119	72	" 1-1/4	11	105
59	" 1-1/2	11	125	73	" 1-1/2	11	110
60	" 2	11	140	74	" 2	11	120
63 15 61	Rp 2-1/2	11	153				
62	" 3	11	164				
63	" 3-1/2	11	173				
64	" 4	11	185				

High Speed Steel

Unit Per Pc

CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm	CODE	Nominal Size	Thread Per 25.4 mm	Overall Length mm
Rp (ISO) TYPE				PS TYPE			
63 15 76	Rp 1/16	28	52				
77	" 1/8	28	59	63 15 91	PS 1/8	28	55
78	" 1/4	19	67	92	" 1/4	19	62
79	" 3/8	19	75	93	" 3/8	19	65
80	" 1/2	14	87	94	" 1/2	14	80
63 15 81	Rp 3/4	14	96	63 15 95	PS 3/4	14	85
82	" 1	11	109	96	" 1	11	95
83	" 1-1/4	11	119	97	" 1-1/4	11	105
84	" 1-1/2	11	125	98	" 1-1/2	11	110
85	" 2	11	140	99	" 2	11	120
63 15 86	Rp 2-1/2	11	153				
87	" 3	11	164				
88	" 3-1/2	11	173				
89	" 4	11	185				

Straight Pipe Taps for Straight American Pipe Thread

Carbon Steel

Unit Per Pc

CODE	Nominal Size	Diam. mm D	Thread Per Inch	Length mm	
				Flute	Overall L
63 16 01	NPS 1/8	10.117	27	19	55
02	" 1/4	13.426	18	28	62
03	" 3/8	16.866	18	28	65
04	" 1/2	20.980	14	35	80
05	" 3/4	26.325	14	35	85
63 16 06	NPS 1/8	32.934	11-1/2	45	95

Taper Pipe Taps for Taper American Pipe Thread

Carbon Steel

Unit Per Pc.

CODE	Nominal Size	Diam. mm D	Thread Per Inch	Length mm	
				Flute	Overall L
63 16 11	NPT 1/16	7.770	27	18	55
12	" 1/8	10.117	27	19	55
13	" 1/4	13.426	18	28	62
14	" 3/8	16.866	18	28	65
15	" 1/2	20.980	14	35	80

(to be continued)

Unit Per Pc.

CODE	Nominal Size	Diam. mm D	Thread Per Inch	Length mm Flute	Length mm Overall L
63 16 16	NPT 3/4	26.325	14	35	85
17	" 1	32.934	11-1/2	45	95
18	" 1-1/4	41.689	11-1/2	45	105
19	" 1-1/2	47.760	11-1/2	45	110
20	" 2	59.797	11-1/2	50	120
63 16 21	NPT 2-1/2	72.273	8	65	145
22	" 3	88.184	8	65	155

Round Dies, Adjustable

These round adjustable dies are used in either hand stock holders or machine holders. These dies can be adjusted by turning a small set screw which will change the nominal size of the dies giving them a tight or loose fit to the threads. Most commonly made of carbon steel, but high speed steel threads are also available.

Metric Coarse Thread Dies

Carbon Steel

(Ref. JIS B 4451 – 88)

How to order : CODE

Round die, adjustable, metric coarse thread, carbon steel, NOMINAL SIZE, PITCH, DIAM mm

Unit Per Pc.

CODE	Nominal Size	Pitch mm	O.D. mm D	Th'k mm B
63 17 01	M 1.0	0.25	16	5
02	M 1.1	0.25		
03	M 1.2	0.25		
04	M 1.4	0.3		
05	M 1.6	0.35		
63 17 06	M 1.7	0.35		
07	M 1.8	0.35		
08	M 2.0	0.4		
09	M 2.2	0.45		
10	M 2.3	0.4		
63 17 11	M 2.5	0.45		
12	M 2.6	0.45		
13	M 3.0	0.5	20	7
14	M 3.5	0.6		
15	M 4.0	0.7		
63 17 16	M 4.5	0.75		
17	M 5.0	0.8		
18	M 6.0	1		
19	M 7.0	1	25	9
20	M 8.0	1.25		
63 17 21	M 9.0	1.25		
22	M 10	1.5		
23	M 11	1.5	38	13
24	M 12	1.75		
25	M 14	2		
63 17 26	M 16	2		
27	M 18	2.5		
28	M 20	2.5	50	16
29	M 22	2.5		
30	M 24	3		
63 17 31	M 27	3	63	20
32	M 30	3.5		
33	M 33	3.5		
34	M 36	4	75	25
35	M 39	4		
63 17 36	M 42	4.5		

Metric Fine Thread Dies

Carbon Steel

(Ref. JIS B 4451 – 88)

How to order : CODE

Round die, adjustable, metric fine thread, carbon steel, NOMINAL SIZE, PITCH, DIAM mm

Unit Per Pc.

CODE	Nominal Size	O.D. mm D	Th'k mm B
63 18 01	M 1.0 × 0.2	16	5
02	M 1.1 × 0.2		
03	M 1.2 × 0.2		
04	M 1.4 × 0.2		
05	M 1.6 × 0.2		
63 18 06	M 1.8 × 0.2		
07	M 2 × 0.25		
08	M 2.2 × 0.25		
09	M 2.5 × 0.35		
10	M 3 × 0.35		
63 18 11	M 3.5 × 0.35	20	7
12	M 4 × 0.5		
13	M 4.5 × 0.5		
14	M 5 × 0.5		
15	M 5.5 × 0.5		
63 18 16	M 6 × 0.75		
17	M 7 × 0.75		
18	M 8 × 1	25	9
19	M 8 × 0.75		
20	M 9 × 1		
63 18 21	M 9 × 0.75		
22	M 10 × 1.25		
23	M 10 × 1		
24	M 10 × 0.75	38	13
25	M 11 × 1		
63 18 26	M 11 × 0.75		
27	M 12 × 1.5		
28	M 12 × 1.25		
29	M 12 × 1		
30	M 14 × 1.5		
63 18 31	M 14 × 1		
32	M 15 × 1.5		
33	M 15 × 1		
34	M 16 × 1.5	50	16
35	M 16 × 1		
63 18 36	M 17 × 1.5		
37	M 17 × 1		
38	M 18 × 2		
39	M 18 × 1.5		
40	M 18 × 1		
63 18 41	M 20 × 2		
42	M 20 × 1.5		
43	M 20 × 1		
44	M 22 × 2		
45	M 22 × 1.5		
63 18 46	M 22 × 1		
47	M 24 × 2		
48	M 24 × 1.5		
49	M 24 × 1		
50	M 25 × 2		
63 18 51	M 25 × 1.5	63	20
52	M 25 × 1		
53	M 26 × 1.5		
54	M 27 × 2		
55	M 27 × 1.5		
63 18 56	M 27 × 1		
57	M 28 × 2		
58	M 28 × 1.5		
59	M 28 × 1		
60	M 30 × 3	75	25

(to be continued)

Unit Per Pc.

CODE	Nominal Size	O.D. mm D	Th'k mm B
63 18 61	M 30 × 2	75	25
62	M 30 × 1.5		
63	M 30 × 1		
64	M 32 × 2		
65	M 32 × 1.5		
63 18 66	M 33 × 3		
67	M 33 × 2		
68	M 33 × 1.5		
69	M 35 × 1.5		
70	M 36 × 3		
63 18 71	M 36 × 2		
72	M 36 × 1.5		
73	M 38 × 1.5		
74	M 39 × 3		
75	M 39 × 2		
63 18 76	M 39 × 1.5		
77	M 40 × 3		
78	M 40 × 2		
79	M 40 × 1.5		
80	M 42 × 4		
63 18 81	M 42 × 3		
82	M 42 × 2		
83	M 42 × 1.5		

Unified Coarse Thread Dies

Carbon Steel

(Ref. JIS B 4451 – 88)

How to order : CODE

Round die, adjustable, unified coarse thread, carbon steel, MATERIAL, NOMINAL SIZE, DIAM mm

Unit Per Pc.

CODE	Nominal Size	O.D. mm D	Th'k mm B
63 19 01	No. 1 - 64UNC	16	5
02	No. 2 - 56UNC		
03	No. 3 - 48UNC		
04	No. 4 - 40UNC		
05	No. 5 - 40UNC	20	7
63 19 06	No. 6 - 32UNC		
07	No. 8 - 32UNC		
08	No.10 - 24UNC		
09	No.12 - 24UNC		
10	1/4 - 20UNC	25	9
63 19 11	5/16 - 18UNC	38	13
12	3/8 - 16UNC		
13	7/16 - 14UNC		
14	1/2 - 13UNC		
15	9/16 - 12UNC		
63 19 16	5/8 - 11UNC	50	16
17	3/4 - 10UNC		
18	7/8 - 9UNC		
19	1 - 8UNC	63	20
20	1-1/8 - 7UNC	75	25
63 19 21	1 1/4 - 7UNC		
22	1 3/8 - 6UNC		
23	1 1/2 - 6UNC		

Whitworth Coarse Thread Dies

Carbon Steel

How to order : CODE

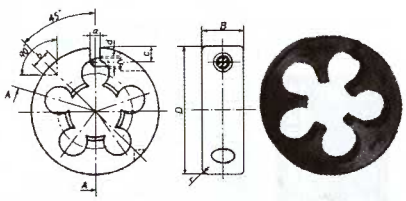
Round die, adjustable, whitworth coarse thread, carbon steel, NOMINAL SIZE, THREAD, DIAM mm

Unit Per Pc.

CODE	Nominal Size	Thread Per Inch	O.D. mm D	Th'k mm B
63 19 31	W 1/16	60	16	5
32	W 3/32	48		
33	W 1/8	40	20	7
34	W 5/32	32		
35	W 3/16	24		
63 19 36	W 7/32	24	25	9
37	W 1/4	20		
38	W 5/16	18		
39	W 3/8	16	38	13
40	W 7/16	14		
63 19 41	W 1/2	12		
42	W 9/16	12		
43	W 5/8	11	50	16
44	W 3/4	10		
45	W 7/8	9		
63 19 46	W 1	8	63	20

Adjustable Round Dies for Pipe Threads

Designed to cut pipe threads, these dies are made for one type of cut either for taper threads or straight threads just as in the case of taps.



Straight Pipe Thread Dies

Carbon Steel

(Ref. JIS B 4455 - 88)

How to order : CODE

Round die, adjustable, straight pipe thread, carbon steel, NOMINAL SIZE,THREAD, DIAM mm

Unit Per Pc.

CODE	Nominal Size	Thread Per 25.4 mm	O.D. mm D	Th'k mm B
63 20 01	PF 1/16	28	38	13
02	PF 1/8	28		
03	PF 1/4	19		
04	PF 3/8	19	50	16
05	PF 1/2	14		
63 20 06	PF 5/8	14	63	20
07	PF 3/4	14		
08	PF 7/8	14	75	25
09	PF 1	11		
10	PF 1 - 1/8	11		
63 20 11	PF 1 - 1/4	11		
12	PF 1 - 1/2	11	90	30
13	PF 1 - 3/4	11	105	30
14	PF 2	11		
15	PF 2 - 1/4	11	120	30

Taper Pipe Thread Dies

Carbon Steel

(Ref. JIS B 4455 – 88)

How to order : CODE

Round die, adjustable, taper pipe thread, carbon steel, NOMINAL SIZE, THREAD, DIAM mm

Unit Per Pc

CODE	Nominal Size	Thread Per 25.4 mm	O.D. mm D	Th'k mm B
63 20 21	PF 1/16	28	38	13
22	PF 1/8	28		
23	PF 1/4	19		
24	PF 3/8	19	50	16
25	PF 1/2	14		
63 20 26	PF 3/4	14	63	20
27	PF 1	11	75	25
28	PF 1-1/4	11		
29	PF 1-1/2	11	90	30
30	PF 2	11	105	

Straight Pipe American Thread Dies

Carbon Steel

How to order : CODE

Round die, adjustable, straight pipe American thread, carbon steel, NOMINAL SIZE, THREAD, DIAM mm

Unit Per Pc

CODE	Nominal Size	Thread Per 25.4 mm	O.D. mm D	Th'k mm B
63 20 41	NPS 1/8	27	38	13
42	NPS 1/4	18		
43	NPS 3/8	18	50	16
44	NPS 1/2	14		
45	NPS 3/4	14	63	20
63 20 46	NPS 1	11-1/2	75	25
47	NPS 1-1/4	11-1/2		

Taper Pipe American Thread Dies

Carbon Steel

How to order : CODE

Round die, adjustable, taper pipe American thread, carbon steel, NOMINAL SIZE, THREAD, DIAM mm

Unit Per Pc

CODE	Nominal Size	Thread Per Inch	O.D. mm D	Th'k mm B
63 20 51	NPT 1/8	27	38	13
52	NPT 1/4	18		
53	NPT 3/8	18	50	16
54	NPT 1/2	14		
55	NPT 3/4	14	63	20
63 20 56	NPT 1	11-1/2	75	25
57	NPT 1-1/4	11-1/2		

Hexagon Rethreading Dies

Carbon Steel

For dressing over bruised or rusty threads, or for cutting occasional new threads. No special holder required for these dies, simply use the appropriate sized wrench.

Metric Coarse Thread

How to order : CODE

Hexagon rethreading die, metric coarse, carbon steel, NOMINAL SIZE, PITCH mm

Unit Per Pc

CODE	Nominal Size	Pitch mm	Across Flat mm
63 21 01	M 3	0.5	14
02	M 3	0.6	14
03	M 3.5	0.6	14
04	M 4	0.7	14
05	M 4	0.75	14
63 21 06	M 4.5	0.75	14
07	M 5	0.8	17
08	M 5	0.9	17
09	M 5.5	0.9	17
10	M 6	1.0	19
63 21 11	M 7	1.0	19
12	M 8	1.25	21
13	M 9	1.25	21
14	M 10	1.5	26
15	M 11	1.5	26
63 21 16	M 12	1.75	32
17	M 14	2.0	35
18	M 16	2.0	35
19	M 18	2.5	41
20	M 20	2.5	46
63 21 21	M 22	2.5	46
22	M 24	3.0	50
23	M 27	3.0	54
24	M 30	3.5	54

Whitworth Coarse Thread

How to order : CODE

Hexagon rethreading die, whitworth coarse thread, carbon steel, NOMINAL SIZE, THREAD

Unit Per Pc

CODE	Nominal Size	Thread Per inch	Across Flat mm
63 21 31	W 1/8	40	17
32	W 3/16	24	17
33	W 1/4	20	19
34	W 5/16	18	21
35	W 3/8	16	26
63 21 36	W 7/16	14	26
37	W 1/2	12	32
38	W 9/16	12	35
39	W 5/8	11	35
40	W 3/4	10	41
63 21 41	W 7/8	9	46
42	W 1	8	50
43	W 1-1/8	7	54
44	W 1-1/4	7	58
45	W 1-3/8	6	63
63 21 46	W 1-1/2	6	71
47	W 1-5/8	5	77
48	W 1-3/4	5	85
49	W 1-7/8	4-1/2	85
50	W 2	4-1/2	90

Straight or Taper Pipe Thread

How to order : CODE

Hexagon rethreading die, TYPE of PIPE THREAD, NOMINAL SIZE, THREAD

Unit Per Pc.

CODE	Nominal Size	Thread Per 25.4 mm	Across Flat mm
	Straight		
63 21 61	PF 1/8	28	38
62	PF 1/4	19	38
63	PF 3/8	19	50
64	PF 1/2	14	50
65	PF 3/4	14	63

(to be continued)

Unit Per Pc

CODE	Nominal Size	Thread Per 25.4 mm	Across Flat mm
	Straight		
63 21 66	PF 1	11	75
67	PF 1-1/4	11	75
68	PF 1-3/8	11	75
69	PF 1-1/2	11	75
70	PF 1-3/4	11	90
63 21 71	PF 2	11	90
	Taper		
63 21 76	PT 1/8	28	38
77	PT 1/4	19	38
78	PT 3/8	19	50
79	PT 1/2	14	50
80	PT 3/4	14	63
63 21 81	PT 1	11	75
82	PT 1-1/4	11	75
83	PT 1-3/8	11	75
84	PT 1-1/2	11	75
85	PT 1-3/4	11	90
63 21 86	PT 2	11	90

Screw Plate Sets
(Stocks & Dies)

These sets are designed for cutting threads of a variety of sizes, easily, and all with one set. Suitable for jobs involving a wide range of on site threading work. There are single tap or three tap sets available in the same thread cutting range. When ordering, please specify the set number, thread cutting range, and thread type, (whitworth, metric, etc.), by indicating the exact code number.

For Metric Coarse Threading
with One Tap & One Round Split Die for each size

How to order : CODE

Screw plate set, metric coarse thread, CAPACITY of THREAD CUTTING (MINIMUM – MAXIMUM in mm), NUMBERS/set

Unit Per Set

CODE	Model	Thread Cutting Size	Diam of Die mm	Pcs/ Set
63 22 01	OK41	M - 6, 7, 8, 10, 12	38	12
63 22 02	OK45	M - 6, 8, 10, 12, 14, 16, 18	50	16
63 22 03	OK47	M - 6, 8, 10, 12, 14, 16, 18, 20, 22, 24	50	22
63 22 04	OK100	M - 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30	50 57	28
63 22 05	D143	M - 1.0, 1.2, 1.4, 1.7, 2.0, 2.3, 2.6, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5	20	28
63 22 06	D47	M - 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0	20	16
63 22 07	D47-1/2	M - 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0	20	16
63 22 08	D48	M - 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 7.0	20	18
63 22 09	F46	M - 4, 5, 6, 8, 10, 12	25	14
63 22 10	F48	M - 3, 4, 5, 6, 7, 8, 9, 10	25	18

(to be continued)

Unit Per Set

CODE	Model	Thread Cutting Size	Diam of Die mm	Pcs/ Set
63 22 11	M10	M - 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0	20	20
63 22 12	M11	M - 5.0, 5.5, 6.0, 7.0, 8.0, 9.0, 10.0	25	16
63 22 13	M12	M - 6, 7, 8, 9, 10, 11, 12, 14, 16	38	20
63 22 14	M13	M - 6, 7, 8, 10, 11, 12, 14, 16, 18, 20	50	22
63 22 15	M14	M - 10, 11, 12, 14, 16, 18, 20, 22, 24, 26	50	22
63 22 16	M15	M - 6, 7, 8, 10, 11, 12, 14, 16, 18, 20, 22, 24	50	26

For Unified Coarse Threading
with One Tap & One Round Split Die for each size

How to order : CODE

Screw plate set, unified coarse thread, CAPACITY of THREAD CUTTING (MINIMUM – MAXIMUM in mm), NUMBERS/set

Unit Per Set

CODE	Model	Thread Cutting Size	Diam of Die mm	Pcs/ Set
63 22 21	OK31	1/4, 5/16, 3/8, 7/16, 1/2	38	12
63 22 22	OK35	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	50	16
63 22 23	OK35-1/2	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4	50	18
63 22 24	OK37	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	50	20
63 22 25	OK37-1/2	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1	50	22

For Whitworth Coarse Threading
with One Tap & One Round Split Die for each size

How to order : CODE

Screw plate set, whitworth coarse thread, CAPACITY of THREAD CUTTING (MINIMUM – MAXIMUM in mm), NUMBERS/set

Unit Per Set

CODE	Model	Thread Cutting Size	Diam. of Die mm	Pcs/ Set
63 22 31	OK 1	1/4, 5/16, 3/8, 7/16, 1/2	38	12
63 22 32	OK 2	1/4, 3/8, 1/2, 5/8, 3/4	50	12
63 22 33	OK 5	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	50	16
63 22 35	OK 7	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	50	20
63 22 36	OK 7-1/2	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1	50	22
63 22 37	OK 40	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4	50 57	11
63 22 38	OK 50	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2	50 75	28

For Whitworth Coarse Threading
with 3 Taps & One Round Split Die for each size

How to order : CODE

Screw plate set, whitworth coarse thread with 3 taps, CAPACITY of THREAD CUTTING (MINIMUM – MAXIMUM in mm), NUMBERS/set

Unit Per Set

CODE	Model	Thread Cutting Size	Diam. of Die mm	Pcs/ Set
63 22 41	OK 101	1/4, 5/16, 3/8, 7/16, 1/2	38	22
63 22 42	OK 102	1/4, 3/8, 1/2, 5/8, 3/4	50	22
63 22 43	OK 105	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	50	30
63 22 45	OK 107	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1	50	38
63 22 46	OK 107-1/2	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1	50	42
63 22 47	OK 140	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4	50 57	46
63 22 48	OK 150	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2	50 75	54

For Straight Pipe Threading (PS)
with One Tap & One Round Split Die for each size

How to order : CODE

Screw plate set, pipe threading, CAPACITY of THREAD CUTTING (MINIMUM – MAXIMUM in mm), NUMBERS/set

Unit Per Set

CODE	Model	Thread Cutting Size	Diam. of Die mm	Pcs/ Set
63 22 51	R1	1/8, 1/4, 3/8, 1/2	50	10
63 22 52	R2	1/8, 1/4, 3/8, 1/2, 5/8, 3/4	50	14
63 22 53	R3	1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1	50 57	18
63 22 54	R4	1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4	50 63	22

Remarks: Arrangement of Taper or straight thread for above sizes is according to users selection.

Tap Wrenches

The jaws are made of tool steel, carefully hardened and tempered for perfect performance. The handle is knurled for safe, easy operation.

Straight Type

T-Type

Unit Per Pc.

CODE	Nominal Size	Applicable Size	Overall Length mm
		Straight Type	
63 34 01	6.0	M 1- 6	170
02	10.0	M 1-10	200
03	13.0	M 4-13	255
04	20.0	M 6-20	350
05	25.0	M 10-25	450
06	32.0	M 19-32	780
07	38.0	M 19-38	900
08	50.0	M 25-50	1,000

Unit Per Pc.

CODE	Nominal Size	Applicable Size	Overall Length mm
		T Type	
63 34 11	5.0	M 3- 5	80
12	6.0	M 3- 6	90
13	10.0	M 5-10	115
14	13.0	M 10-13	125

Round Die Stocks

Adjustable round die stocks. Made of steel. Select suitable diameter of stock to fit your round dies.

Unit Per Pc.

CODE	Round Die O.D. mm	CODE	Round Die O.D. mm
63 34 21	16	**63 34 27**	63
22	20	**28**	70
23	25	**29**	75
24	38	**30**	100
25	50	**31**	115
63 34 26	57	**63 34 32**	125

Lathe Dogs

Body is made of cast iron and the square head screw of hardened steel. The opening is machined with the face at a right angle. Please indicate straight or bent tail when ordering.

Straight Tail

Bent Tail

Unit Per Pc.

Straight Type CODE	Nominal Size mm	Applicable Round Bar Size mm	**Bent Type** CODE
63 23 01	13	9 - 13	**63 23 16**
02	19	12 - 19	**17**
03	25	12 - 25	**18**
04	32	12 - 32	**19**
05	38	12 - 38	**20**
63 23 06	45	13 - 45	**63 23 21**
07	50	19 - 50	**22**
08	63	25 - 63	**23**
09	75	30 - 75	**24**
10	90	40 - 90	**25**
63 23 11	100	44 - 100	**63 23 26**
12	125	60 - 125	**27**
13	150	80 - 150	**28**

Drill Chucks with Key

These drill chucks are offered for light-duty and heavy-duty portable, bench, or floor type power tools in a wide range of capacities for either threaded or tapered mounting spindles.

Unit Per Pc.

CODE	Capacity mm	Dimensions		Jacobs Taper Hole No.
		Length mm	Diam mm	
63 23 31	4.0	40	26	J#D
32	5.0	40	26	"
33	5.0	50	33	J#1
34	6.5	50	33	"
35	6.5	58	38	"
63 23 36	8.0	58	38	J#1
37	10.0	70	46	J#2 Short
38	13.0	90	55	J#6
39	14.0	98	60	J#3
40	16.0	98	60	J#3
63 23 41	19.0	125	75	J#4
42	22.0	125	75	"
43	25.0	142	80	J#5

Keyless Drill Chucks

The keyless drill chuck is usually used on precision drilling machinery where close tolerance drilling is essential. Designed for both toolroom and production machinery where accuracy, gripping power and keyless features are desired.

Size mm Capacity	Dimensions mm		Taper No.
	Diam.	Length	
13	50	103	JT No.6 or (JT No.25)

63 23 46	Keyless drill chuck 13 mm	Pc.

Drill Sleeves

Designed for drilling with Morse taper shanks. The smaller Morse taper number is for the hole size of the drill insertion and the larger Morse taper number for the outside socket fitting.

Unit Per Pc.

CODE	Size MT No.	For MT No.		Overall Lenght mm
		Hole	Shank	
63 23 51	MT 1 x 2	1	2	92
52	MT 1 x 3	1	3	99
53	MT 2 x 3	2	3	112
54	MT 2 x 4	2	4	124
55	MT 3 x 4	3	4	140
63 23 56	MT 3 x 5	3	5	156
57	MT 3 x 6	3	6	218
58	MT 4 x 5	4	5	171
59	MT 4 x 6	4	6	218
60	MT 5 x 6	5	6	218

Morse Taper Shank Drill Sockets

Designed to be used with drill, reamer and other shanks which have a morse taper shank.

Unit Per Pc.

CODE	Size MT No.	For MT No.		Overall Length mm
		Hole	Shank	
63 23 61	MT 1 x 1	1	1	145
62	MT 1 x 2	1	2	160
63	MT 2 x 2	2	2	175
64	MT 1 x 3	1	3	175
65	MT 2 x 3	2	3	194

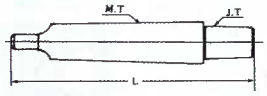
(to be continued)

Unit Per Pc.

CODE	Size MT No.	For MT No.		Overall Length mm
		Hole	Shank	
63 23 66	MT 3 x 3	3	3	215
67	MT 2 x 4	2	4	215
68	MT 3 x 4	3	4	240
69	MT 4 x 4	4	4	265
70	MT 3 x 5	3	5	268
63 23 71	MT 4 x 5	4	5	300
72	MT 5 x 5	5	5	335
73	MT 4 x 6	4	6	355
74	MT 5 x 6	5	6	390

Drill Chuck Arbors

For use with drilling machines, lathes, etc. When ordering, please specify nominal numbers.



Unit Per Pc.

CODE	Nominal No.	J.T. No.	M.T. No.	Overall Length mm
63 23 76	1 x 1	1	1	88
77	1 x 2	1	2	100
78	1 x 3	1	3	108
79	2 x 1	2	1	92
80	2 x 2	2	2	110
63 23 81	2 x 3	2	3	130
82	2-1/2 x 2	2-1/2	2	110
83	2-1/2 x 3	2-1/2	3	130
84	3 x 2	3	2	120
85	3 x 3	3	3	140
63 23 86	3 x 4	3	4	160
87	4 x 3	4	3	150
88	4 x 4	4	4	175
89	5 x 4	5	4	185

Drifts (Center Keys), Drill for Sockets & Sleeves

For removing taper shanks without any damage from drill sockets or drilling machines. This improved type works more efficiently and is safer.

Ordinary Type

Improved Type

Unit Per Pc.

CODE	No.	For
63 23 91	1	For Sleeve #1
92	2	" #2
93	3	" #3
94	4	" #4, 5 & 6
63 23 95	Improve - 2	For MT. #1 ~ 2
96	" - 3	" #3 ~ 4

Lathe Centers

Body is made of tool steel with a high speed steel tip or a carbide tip. Both types of tip ends are properly hardened. The shank is ground to morse tapers and the included angle of the point is 60°.

High Speed Steel Tipped

Carbide Tipped

Unit Per Pc

High Speed Steel CODE	Morse Taper No.	Overall Length mm	Carbide Tipped CODE
63 24 01	0	72	63 24 11
02	1	82	12
03	2	100	13
04	3	125	14
05	4	155	15
63 24 06	5	200	63 24 16
07	6	270	17

Rolling Centers

Specially designed to withstand high-speed heavy-duty operations. Incorporated are a taper roller bearing, thrust ball bearing, ball bearing and other special bearings.

Unit Per Pc

CODE	MT No.	Center Angle
63 24 21	1	60°
22	2	60°
23	3	60°
24	4	60°
25	5	60°
63 24 26	6	75°
27	7	75°

Live Centers

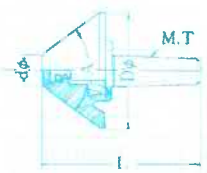
This S type is recommended for use on precision finishing work with high speed revolution.

Unit Per Pc

CODE	MT No.	Overall Length mm
63 24 31	2	121
32	3	146
33	4	195
34	5	245
35	6	340

Bevel Rolling Centers

Used in combination with a lathe or an external grinding machine, the bevel rolling center serves as a center pusher for steel pipe or a workpiece with a large central opening and without a centering hole.



Unit Per Pc

CODE	MT No.	Hand Angle A	Bevel Diam. mm Small d	Large D
63 24 41	2	70°	12	62
42	3A	70°	19	75
43	3B	75°	30	105
44	4	75°	30	130
45	4B	75°	32	150
63 24 46	5	75°	32	150
47	5B	75°	90	200
48	6	75°	90	200
49	6B	75°	120	250
50	7	75°	120	250

Screw Extractors

With the screw extractor, the broken bolt or screw in a threaded hole can be easily removed without injuring the threads.

Unit Per Pc

CODE	Applicable Drill Size mm	Overall Length mm	Applicable Bolt mm	Applicable Pipe mm
63 24 71	2.0	50	4.8 ~ 6.4	
72	2.7	60	6.8 ~ 8	
73	4.0	68	8 ~ 11	
74	6.4	76	11 ~ 14.3	
75	7.2	86	14.3 ~ 19	3.2
63 24 76	9.1	86	17.5 ~ 24	6.5
77	10.3	95	19 ~ 25	
78	12.3	95	24 ~ 28	10.0
79	13.5	105	25 ~ 35	
80	15.5	105	28 ~ 38	13.0
63 24 81	20.5	111	35 ~ 44	19.0
82	27	118	44 ~ 54	25.0
83	33	127	54 ~ 64	
84	40	143	64 ~ 76	
85	49	159	76 ~ 90	

Screw Extractor Set

How to order : CODE

Screw extractor set, APPLICABLE SIZE (MINIMUM – MAXIMUM in mm), NUMBERS/set

Unit Per Set

CODE	Applicable Drill Size mm	No. of pieces
63 24 86	2.0, 2.7, 4.0, 6.4, 7.2	5
87	2.0, 2.7, 4.0, 6.4, 7.2, 10.3	6
88	6.4, 7.2, 10.3	3

Carbide Rotary Burs

Designed for the efficient bevelling of gears, burring, planing, shaping, and milling. These rotary burs are advantageous for use with portable grinding tools of 10,000 R.P.M. or more. Please specify the type, size of the blade and the shank when ordering.

How to order : CODE

Rotary bur, carbide, TYPE, DIAM of SHANK mm, DIAM of BLADE mm

Unit Per Pc

CODE	Type	Figure	Diameter Shank mm	Diameter Blade mm	Overall Length mm
63 25 01	Cylindrical Flat End (A)		3	3	38
02			6	4	60
03			6	6	55
04			6	8	55
05			6	9	55
06			6	13	70

(to be continued)

Unit Per Pc.

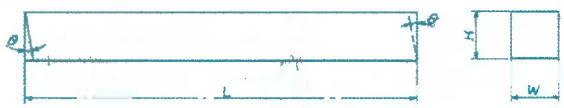
CODE	Type	Figure	Diameter Shank mm	Diameter Blade mm	Overall Length mm
63 25 11	Cylindrical Radius End (B)		3	3	38
12			6	4	60
13			6	6	55
14			6	8	55
15			6	9	58
16			6	13	70H
17			6	13	70
63 25 21	Ball Shape (C)		3	3	38
22			6	4	60
23			6	8	50
24			6	9	50
25			6	13	60
63 25 31	Tree Shape Radius End (D)		6	4	60
32			6	6	55
33			6	8	55
34			6	9	55
35			6	13	70
63 25 41	Cone Shape Radius End (E)		3	3	38
42			6	4	60
43			6	6	57
44			6	8	57
45			6	9	70
46			6	13	84H
47			6	13	84
63 25 51	Tree Shape Pointed End (F)		3	3	38
52			6	4	60
53			6	8	50
63 25 56	Flame Shape (G)		6	8	50
57			6	9	50
58			6	13	75H
59			6	13	75
63 25 61	Cone Shape (H)		6	8	50
62			6	9	55

High Speed Steel Tool Bits

(Ref. JIS B 4151 – 87)

For use in cutting hard materials like heat-treated alloy steels, die steels, bronze, stainless steels, etc. Ground on all 4 sides. Cut to standard tool holder lengths with a standard bevel on each end. Bits require grinding only to make them ready for use in tool holders.

Square Tool Bits



For turning, boring, threading tool holders.

Unit Per Pc.

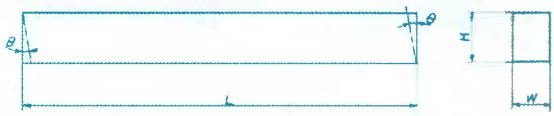
CODE	Size mm Square H & W	Size mm Length L	CODE	Size mm Square H & W	Size mm Length L
63 26 01	5	50	63 26 08	25	200
02	6	63	09	5	80
03	8	63	10	6	160
04	10	80	11	8	160
05	12	100	12	10	160

(to be continued)

Unit Per Pc.

CODE	Size mm Square H & W	Size mm Length L	CODE	Size mm Square H & W	Size mm Length L
63 26 06	16	125	63 26 13	12	160
07	20	160			

Rectangular Flat Tool Bits

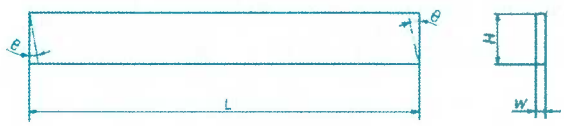


For planing tool holders.

Unit Per Pc.

CODE	Size mm W x H x L	CODE	Size mm W x H x L
63 26 16	6 x 10 x 160	63 26 22	6 x 10 x 200
17	6 x 12 x 160	23	6 x 12 x 200
18	8 x 12 x 160	24	8 x 12 x 200
19	8 x 16 x 160	25	8 x 16 x 200
20	10 x 12 x 160	26	10 x 12 x 200
63 26 21	10 x 16 x 160	63 26 27	10 x 16 x 200

Rectangular Plate Tool Bits

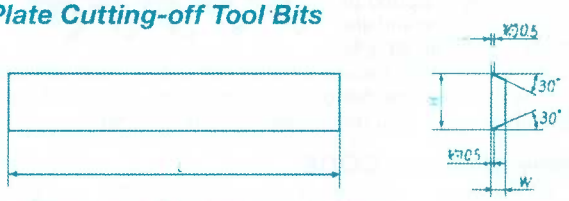


For cutting off and side tool holders

Unit Per Pc.

CODE	Size mm W x H x L	CODE	Size mm W x H x L
63 26 31	3 x 12 x 160	63 26 34	4 x 19 x 160
32	3 x 16 x 160	35	5 x 19 x 160
33	4 x 16 x 160		

Plate Cutting-off Tool Bits

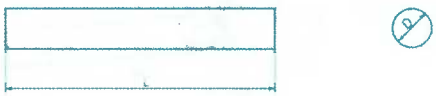


For cutting off and side tool holders

Unit Per Pc

CODE	Size mm W x H x L	CODE	Size mm W x H x L
63 26 51	3.2 x 12.7 x 90	63 26 53	4.8 x 19.0 x 140
52	3.2 x 15.9 x 115	54	6.4 x 25.4 x 165

Round Bar Tool Bits



For old style boring toel holders

Unit Per Pc.

CODE	Size mm Dia x L	CODE	Size mm Dia x L
63 26 61	4 x 40	63 26 65	10 x 80
62	5 x 50	66	12 x 100
63	6 x 63	67	16 x 125
64	8 x 63	68	20 x 160

Tool Bit Material

High Speed Steel

High speed, steel tool bit material is not hardened as it is made for general use. The material is available in two types, square and rectangular, to suit the users requirements. These plates are supplied in 300 mm length pieces.

Square

Rectangular

Unit Per Pc.

CODE	Size mm W x H x L	CODE	Size mm W x H x L
Square			
63 26 71	6 x 6 x 300	**63 26 75**	16 x 16 x 300
72	8 x 8 x 300	**76**	19 x 19 x 300
73	10 x 10 x 300	**77**	25 x 25 x 300
74	13 x 13 x 300		
Rectangular			
63 26 81	3 x 13 x 300	**63 26 89**	6 x 13 x 300
82	3 x 16 x 300	**90**	6 x 16 x 300
83	3 x 19 x 300	**91**	6 x 19 x 300
84	3 x 25 x 300	**92**	6 x 25 x 300
85	5 x 13 x 300	**93**	8 x 13 x 300
63 26 86	5 x 16 x 300	**63 26 94**	8 x 16 x 300
87	5 x 19 x 300	**95**	8 x 19 x 300
88	5 x 25 x 300	**96**	8 x 25 x 300

Single Point Tools

with Cemented Carbide Tip

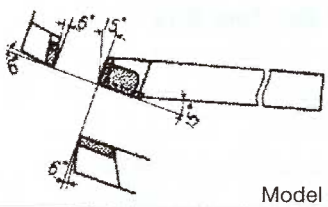
(Ref. JIS B 4105 – 91)

For square shank holders. The carbide tips are finely ground to be ready for use and are covered with an easy to remove cellulose sheath. Choose the cutter most suitable for the work you are doing from the examples below. Please specify whether you require left or right hand tips.

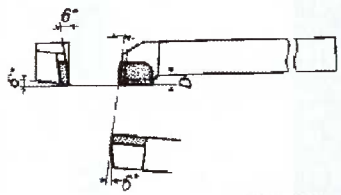
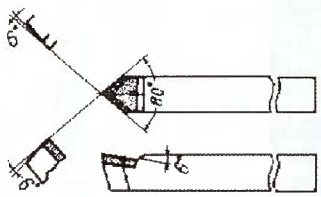
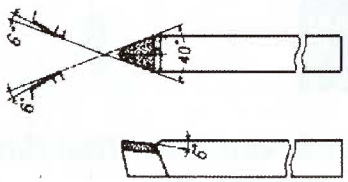
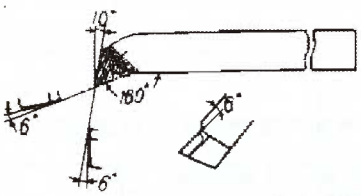
How to order : CODE

Tool, single point with cemented carbide tip, RIGHT or LEFT HAND, MODEL NO. SHANK SIZE mm

Unit Per Pc.

Right Hand CODE	Right Hand Model No.	Shank Size W x H x L mm	Left Hand CODE	Left Hand Model No.
Model 31 Right 32 Left				
Model 31 Right				Model 32 Left
63 27 01	31-1	13 x 13 x 100	**63 27 07**	32-1
02	2	16 x 16 x 120	**08**	2
03	3	19 x 19 x 140	**09**	3
04	4	25 x 25 x 160	**10**	4
05	5	25 x 30 x 180	**11**	5
06	6	30 x 35 x 200	**12**	6

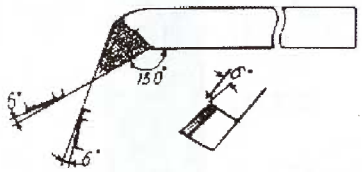
Unit Per Pc.

Right Hand CODE	Right Hand Model No.	Shank Size W x H x L mm	Left Hand CODE	Left Hand Model No.
Model 33 Right 34 Left				
Model 33 Right				Model 34 Left
63 27 13	33-0	10 x 10 x 80	**63 27 20**	34-0
14	1	13 x 13 x 100	**21**	1
15	2	16 x 16 x 120	**22**	2
16	3	19 x 19 x 140	**23**	3
17	4	25 x 25 x 160	**24**	4
18	5	25 x 30 x 180	**25**	5
19	6	30 x 35 x 200	**26**	6
Model 35 Straight				
63 27 27	35-0	10 x 10 x 80		
28	1	13 x 13 x 100	Remark :	
29	2	16 x 16 x 120	No Right or Left	
30	3	19 x 19 x 140	Hand.	
31	4	25 x 25 x 160	Straight Type	
32	5	25 x 30 x 180	only.	
33	6	30 x 35 x 200		
Model 36 Straight				
63 27 34	36-0	10 x 10 x 80		
35	1	13 x 13 x 100	Remark :	
36	2	16 x 16 x 120	No Right or Left	
37	3	19 x 19 x 140	Hand.	
38	4	25 x 25 x 160	Straight Type	
39	5	25 x 30 x 180	only.	
40	6	30 x 35 x 200		
Model 37 Right 38 Left				
Model 37 Right				Model 38 Left
63 27 41	37-1	13 x 13 x 100	**63 27 47**	38-1
42	2	16 x 16 x 120	**48**	2
43	3	19 x 19 x 140	**49**	3
44	4	25 x 25 x 160	**50**	4
45	5	25 x 30 x 180	**51**	5
46	6	30 x 35 x 200	**52**	6

Unit Per Pc.

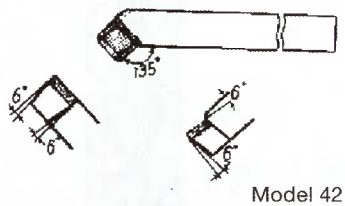
Right Hand CODE	Right Hand Model No.	Shank Size W x H x L mm	Left Hand CODE	Left Hand Model No.

Model 39 Right
40 Left



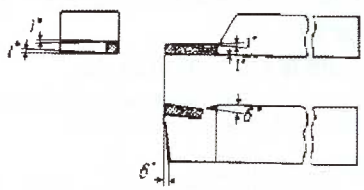
Model 39 Right			Model 40 Left	
63 27 53	39-0	10 x 10 x 80	**63 27 60**	40-0
54	1	13 x 13 x 100	**61**	1
55	2	16 x 16 x 120	**62**	2
56	3	19 x 19 x 140	**63**	3
57	4	25 x 25 x 160	**64**	4
58	5	25 x 30 x 180	**65**	5
59	6	30 x 35 x 200	**66**	6

Model 41 Right
42 Left



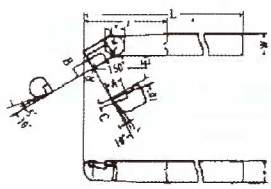
Model 41 Right			Model 42 Left	
63 27 67	41-1	13 x 13 x 100	**63 27 73**	42-1
68	2	16 x 16 x 120	**74**	2
69	3	19 x 19 x 140	**75**	3
70	4	25 x 25 x 160	**76**	4
71	5	25 x 30 x 180	**77**	5
72	6	30 x 35 x 200	**78**	6

Model 43 Straight



63 27 79	43-1	10 x 16 x 100	Remark : No Right or Left Hand. Straight Type only.
80	2	13 x 19 x 120	
81	3	16 x 22 x 140	
82	4	19 x 25 x 160	
83	5	22 x 32 x 180	
84	6	25 x 38 x 200	

Model 45 Right
46 Left

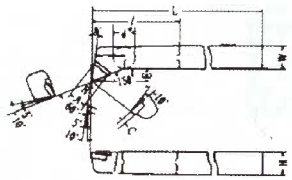


Model 45 Right			Model 46 Left	
63 27 85	45-1	13 x 13 x 140	**63 27 90**	46-1
86	2	16 x 16 x 160	**91**	2
87	3	19 x 19 x 190	**92**	3
88	4	25 x 25 x 230	**93**	4

Unit Per Pc.

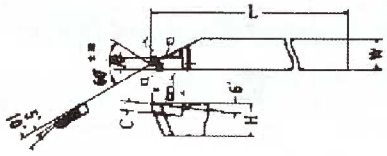
Right Hand CODE	Right Hand Model No.	Shank Size W x H x L mm	Left Hand CODE	Left Hand Model No.

Model 47 Right
48 Left



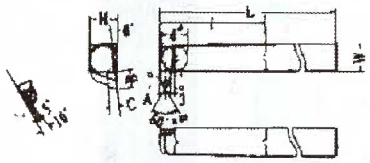
Model 47 Right			Model 48 Left	
63 27 94	47-1	13 x 13 x 100	**63 27 98**	48-1
95	2	16 x 16 x 160	**99**	2
96	3	19 x 19 x 190	**63 28 01**	3
97	4	25 x 25 x 230	**02**	4

Model 49 Right
50 Left



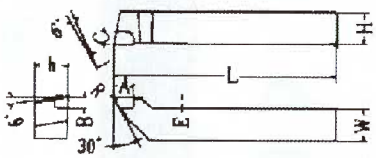
Model 49 Right			Model 50 Left	
63 28 03	49-1	13 x 13 x 100	**63 28 07**	50-1
04	2	16 x 16 x 120	**08**	2
05	3	19 x 19 x 140	**09**	3
06	4	25 x 25 x 160	**10**	4

Model 51 Right
52 Left



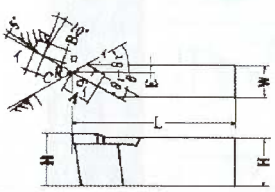
Model 51 Right			Model 52 Left	
63 28 11	51-1	13 x 13 x 140	**63 28 15**	52-1
12	2	16 x 16 x 160	**16**	2
13	3	19 x 19 x 190	**17**	3
14	4	25 x 25 x 230	**18**	4

Model 91 Right
92 Left



Model 91 Right			Model 92 Left	
63 28 19	91-1	19 x 25 x 160	**63 28 22**	92-1
20	2	25 x 25 x 160	**23**	2
21	3	25 x 32 x 160	**24**	3

Model 93 Right
94 Left

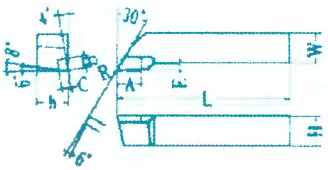


(to be continued)

Unit Per Pc.

Right Hand CODE	Model No.	Shank Size W x H x L mm	Left Hand CODE	Model No.
Model 93 Right				Model 94 Left
63 28 25	93-1	25 x 38 x 150 050°	63 28 29	94-1
26	2	25 x 38 x 150 058°	30	2
27	3	34 x 47 x 150 050°	31	3
28	4	34 x 47 x 150 058°	32	4

Model 95 Straight



63 28 33	95-1	25 x 25 x 160	Straight only.

Cemented Carbide Tips

(Ref. JIS B 4104 – 89)

These carbide tips are used with carbide tipped turning cutters. Tips are fitted with cement.

Unit Per Pc

Sketch	CODE	Model No.	Dimensions mm A	B	C	R
MODEL 01	63 29 01	01-0	10	6	3	4
	02	1	13	9	3	5
	03	2	16	11	4	5
	04	3	19	13	5	5
	05	4	22	15	6	8
	06	5	25	17	7	8
	07	6	30	20	8	8
MODEL 02	63 29 08	02-0	10	6	3	
	09	1	13	9	3	
	10	2	16	11	4	
	11	3	19	13	5	
	12	4	22	15	6	
	13	5	25	17	7	
	14	6	30	20	8	
MODEL 03	63 29 15	03-0	10		3	
	16	1	12		3	
	17	2	15		4	
	18	3	18		5	
	19	4	24		6	
	20	5	24		7	
	21	6	28		8	
MODEL 04	63 29 22	04-0	10	6	3	4
	23	1	13	9	3	5
	24	2	16	11	4	5
	25	3	19	13	5	5
	26	4	22	15	6	8
	27	5	25	17	7	8
	28	6	30	20	8	8
MODEL 05	63 29 30	05-1	5	8	3	
	31	2	6	10	4	
	32	3	7	12	5	
	33	4	9	16	6	
	34	5	10	18	7	
	35	6	11	20	8	
MODEL 06	63 29 36	06-0	10	10	3	2
	37	1	13	13	3	2.5
	38	2	16	16	4	3
	39	3	19	19	5	4
	40	4	22	22	6	4
	41	5	25	25	7	5
	42	6	30	30	8	6

(to be continued)

Unit Per Pc.

Sketch	CODE	Model No.	Dimensions mm A	B	C	R
MODEL 07	63 29 43	07-0	10	10	3	
	44	1	13	13	3	
	45	2	16	16	4	
	46	3	19	19	5	
	47	4	25	20	6	
	48	5	25	22	7	
	49	6	30	25	8	
MODEL 08	63 29 50	08-1	3	8	3	
	51	3	4	13	4	
	52	4	5	15	5	
	53	5	6	17	6	
	54	6	8	20	8	
MODEL 09-J RIGHT OR LEFT						(α)
	63 29 55	09-J-1R	25	12	8	40°
	56	2R	25	12	8	32°
	57	3R	25	14	10	40°
	58	4R	25	14	10	32°
	59	09-J-1L	25	12	8	40°
	60	2L	25	12	8	32°
	61	3L	25	14	10	40°
	62	4L	25	14	10	32°
	63 29 63	09-C-1R	16	8	10	6
	64	09-C-1L	16	8	10	6
	63 29 65	09-E-1R	20	10	7	
	68	09-E-1L	20	10	7	

Cemented Carbide Throw-away Inserts

(Ref. JIS B 4120 – B 4123-85)

When ordering, cemented carbide throw-away inserts, please specify the following points.

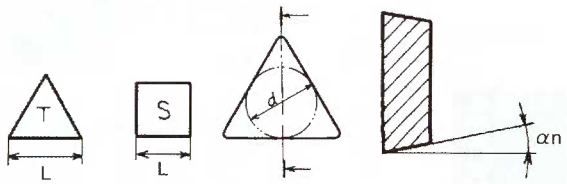
1. Shape

Shape	Included Angle	Figure
Regular Hexgon	120°	
Regular Octagon	135°	
Regular Pentagon	108°	
Square	90°	
Equilateral Triangle	60°	
Rhombus	80° 55° 75° 50° 86° 35°	
Rhombic Hexagon	80°	

(to be continued)

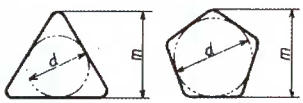
Shape	Included Angle	Figure
Rectangle	90°	
Parallerogram	85° 82° 55°	
Circle	-	

2. Basic size (L)
3. Basic inscribed circle (d)
4. Normal clearance angle (αn)

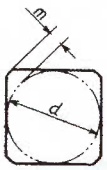


5. Height of corner (m)

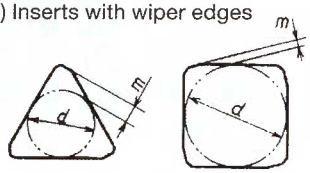
a) Inserts with odd number of sides and corners



b) Inserts with even number



c) Inserts with wiper edges



6. Thickness of the insert (s)

7. With or without hole
8. With or without chip breaker

Hole	Chip breaker	Shape
Without	Without	
	One side	
	Both side	
With	Without	
	One side	
	Both side	

How to order : 63 - 29 - 71

Throw-away insert, cemented carbide, SHAPE, BASIC SIZE, BASIC INSCRIBED CIRCLE, NORMAL CLEARANCE ANGLE, HEIGHT OF CORNER, THICKNESS OF THE INSERT, WITH or WITHOUT HOLE, WITH or WITHOUT CHIP BREAKER

High Speed Steel Tip Welded Tool Bits

(Ref. JIS B 4152 – 88)

These tool bits are supplied in a variety of shapes and sizes depending upon the type of work they are used for. The tips are made of hardened high speed steel welded to the shanks and covered in cellulose for protection. Please specify the model number you require and whether the bits should be for left or right hand use from the information provided below.

How to order : CODE

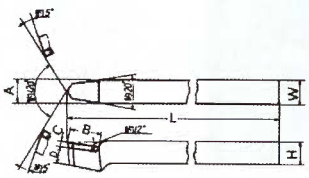
Tool bit, tip welded, high speed steel, TYPE of SHAPE, RIGHT or LEFT HAND, NOMINAL SHANK SIZE

Unit Per Pc.

CODE	Nominal Shank Size	Tip Size mm			Shank Size mm		
		A	B	C	W	H	L

Pointed Nose Straight Tool

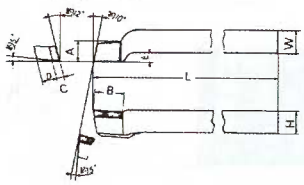
(Model No. 10)



63 30 01	12	12	16	4	12	12	125
02	16	16	20	5	16	16	140
03	20	20	25	6	20	20	160
04	25	25	32	8	25	25	200
05	32	32	40	10	32	32	250

Right Hand or Left Hand Knife Tool

(Model No. 13)

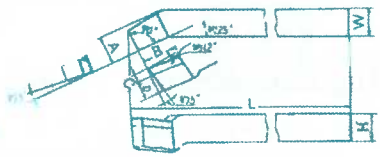


63 30 06	Right	12	12	16	4	12	12	125
07		16	15	20	5	16	16	140
08		20	17	25	6	20	20	160
09		25	23	32	8	25	25	200
10		32	29	40	10	32	32	250
63 30 11	Left	12	12	16	4	12	12	125
12		16	15	20	5	16	16	140
13		20	17	25	6	20	20	160
14		25	23	32	8	25	25	200
15		32	29	40	10	32	32	250

Unit Per Pc.

CODE	Nominal Shank Size	Tip Size mm A	B	C	Shank Size mm W	H	L

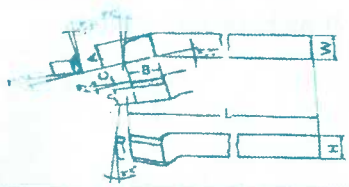
Right Hand or Left Hand Bent Tool



(Model No. 14)

63 30 16	Right 12	12	16	4	12	12	125
17	16	16	20	5	16	16	140
18	20	20	25	6	20	20	160
19	25	25	32	8	25	25	200
20	32	32	40	10	32	32	250
63 30 21	Left 12	12	16	4	12	12	125
22	16	16	20	5	16	16	140
23	20	20	25	6	20	20	160
24	25	25	32	8	25	25	200
25	32	32	40	10	32	32	250

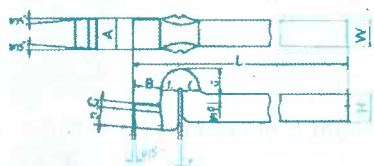
Right Hand or Left Hand Bent Finishing Tool



(Model No. 15)

63 30 26	Right 12	12	16	4	12	12	125
27	16	16	20	5	16	16	140
28	20	20	25	6	20	20	160
29	25	25	32	8	25	25	200
30	32	32	40	10	32	32	250
63 30 31	Left 12	12	16	4	12	12	125
32	16	16	20	5	16	16	140
33	20	20	25	6	20	20	160
34	25	25	32	8	25	25	200
35	32	32	40	10	32	32	250

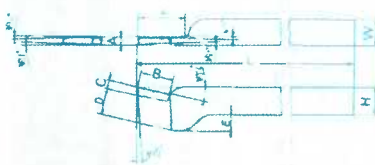
Spring Finishing Tool



(Model No. 22)

63 30 36	12	15	13	4	12	12	125
37	16	19	16	5	16	16	140
38	20	22	19	6	20	20	160
39	25	30	25	8	25	25	200
40	32	38	32	10	32	32	250

Parting Tool

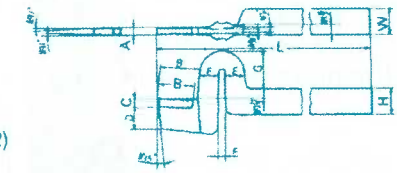


(Model No. 31)

Unit Per Pc.

CODE	Nominal Shank Size	Tip Size mm A	B	C	Shank Size mm W	H	L
63 30 41	12	4	16	4	12	12	125
42	16	5	20	5	16	16	140
43	20	6	25	6	20	20	160
44	25	8	32	8	25	25	200
45	32	10	40	10	32	32	250

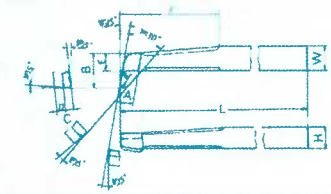
Spring Parting Tool



(Model No. 32)

63 30 46	12	4	16	4	12	12	140
47	16	5	20	5	16	16	160
48	20	6	25	6	20	20	180
49	25	8	32	8	25	25	220
50	32	10	40	10	32	32	280

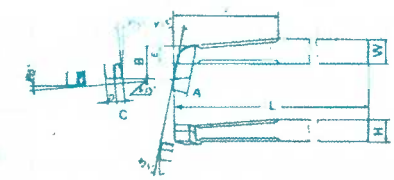
Round Nose Boring Tool



(Model No. 40)

63 30 51	12	8	16	4	12	12	160
52	16	10	20	4.5	16	16	180
53	20	12	25	5	20	20	200
54	25	16	32	6	25	25	250
55	32	20	40	8	32	32	315

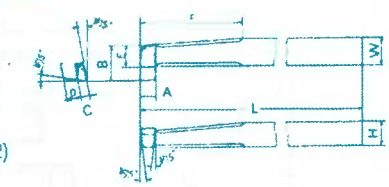
Boring Tool



(Model No. 41)

63 30 56	12	8	16	4	12	12	160
57	16	10	20	4.5	16	16	180
58	20	12	25	5	20	20	200
59	25	16	32	6	25	25	250
60	32	20	40	8	32	32	315

Bore Finishing Tool



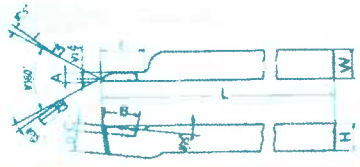
(Model No. 42)

63 30 61	12	8	16	4	12	12	160
62	16	10	20	4.5	16	16	180
63	20	12	25	5	20	20	200
64	25	16	32	6	25	25	250
65	32	20	40	8	32	32	315

Unit Per Pc.

CODE	Nominal Shank Size	Tip Size mm			Shank Size mm		
		A	B	C	W	H	L

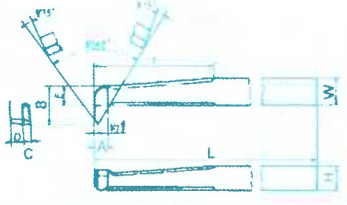
External Threading Tool



(Model No. 51)

63 30 66	12	6	16	4	12	12	125
67	16	8	20	5	16	16	140
68	20	10	25	6	20	20	160
69	25	12	32	8	25	25	200
70	32	16	40	10	32	32	250

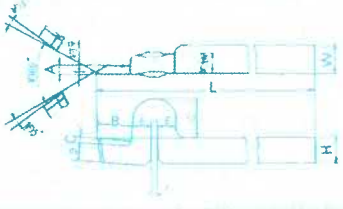
Internal Threading Tool



(Model No. 52)

63 30 71	12	8	16	4	12	12	160
72	16	9	20	4.5	16	16	180
73	20	10	25	5	20	20	200
74	25	12	32	6	25	25	250
75	32	14	40	8	32	32	315

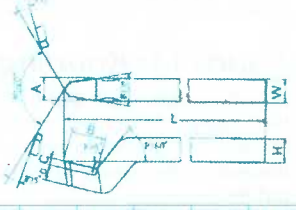
Spring Threading Tool



(Model No. 53)

63 30 76	12	6	16	4	12	12	140
77	16	8	20	5	16	16	160
78	20	10	25	6	20	20	180
79	25	12	32	8	25	25	220
80	32	16	40	10	32	32	280

Pointed Nose Straight Tool



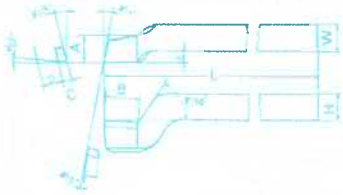
(Model No. 60)

63 30 81	16	16	20	5	16	16	180
82	20	20	25	6	20	20	220
83	20 x 25	20	28	8	20	20	250
84	25	25	32	8	25	25	280
85	32	32	40	10	32	32	355
86	40	40	45	12	40	40	425

Unit Per Pc.

CODE	Nominal Shank Size	Tip Size mm			Shank Size mm		
		A	B	C	W	H	L

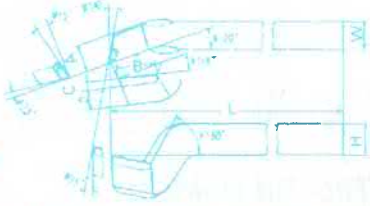
Right Hand or Left Hand Knife Tool



(Model No. 62)

63 30 87	Right 16	15	20	5	16	16	180
88	20	17	25	6	20	20	220
89	20 x 25	17	28	8	20	25	250
90	25	23	32	8	25	25	280
91	32	29	40	10	32	32	355
92	40	35	45	12	40	40	425
63 30 93	Left 16	15	20	5	16	16	180
94	20	17	25	6	20	20	220
95	20 x 25	17	28	8	20	25	250
96	25	23	32	8	25	25	280
97	32	29	40	10	32	32	355
98	40	35	45	12	40	40	425

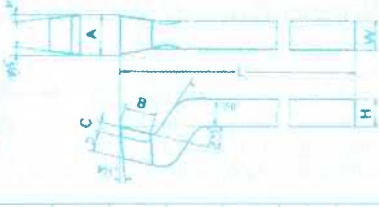
Right Hand or Left Hand Bent Tool



(Model No. 63)

63 31 01	Right 16	16	20	5	16	16	180
02	20	20	25	6	20	20	220
03	20 x 25	20	28	8	20	25	250
04	25	25	32	8	25	25	280
05	32	32	40	10	32	32	355
06	40	40	45	12	40	40	425
63 31 07	Left 16	16	20	5	16	16	180
08	20	20	25	6	20	20	220
09	20 x 25	20	28	8	20	25	250
10	25	25	32	8	25	25	280
11	32	32	40	10	32	32	355
12	40	40	45	12	40	40	425

Square Nose Straight Tool



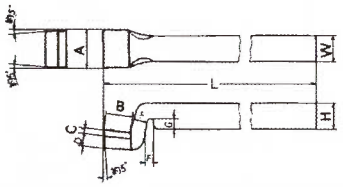
(Model No. 64)

63 31 13	16	19	16	5	16	16	180
14	20	22	19	6	20	20	220
15	20 x 25	22	22	8	25	25	250
16	25	30	25	8	25	25	280
17	32	38	32	10	32	32	355
18	40	45	40	12	40	40	425

Unit Per Pc.

CODE	Nominal Shank Size	Tip Size mm			Shank Size mm		
		A	B	C	W	H	L

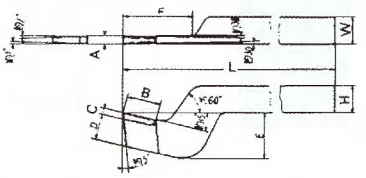
Spring Finishing Tool



(Model No. 65)

63 31 19	16	19	16	5	16	16	180
20	20	22	19	6	20	20	220
21	25	30	25	8	25	25	280
22	32	38	32	10	32	32	355
23	40	45	38	12	40	40	425

Parting Tool



(Model No. 66)

63 31 24	16	5	20	5	16	16	180
25	20	6	25	6	20	20	220
26	20 x 25	6	28	8	20	25	250
27	25	8	32	8	25	25	280
28	32	10	40	10	32	32	355
29	40	13	45	12	40	40	425

Tool Bit Holders

3-Way Insertion

A tool for holding square tool bits in three ways. Furnished with an Allen hexagon key.

Unit Per Pc.

CODE	No.	Tool Bit Size mm	Holder Size mm T x H x L
63 32 01	1	6	12 x 16 x 110
02	2	10	14 x 17 x 120
03	3	13	18 x 20 x 145
04	4	16	20 x 25 x 175
05	5	19	25 x 32 x 250
63 32 06	6	22	29 x 35 x 270
07	7	25	32 x 38 x 300

Spring Cut-off Tool Holders

This design relieves the cutter blade from excessive pressure, avoiding chattering and climbing of the blade during cutting operation. For holding plate tool bits.

Unit Per Pc.

CODE	No.	Tool Bit Size mm	Holder Size mm T x H x L
63 32 16	1	3.2 x 12.7 x 90	13 x 17 x 110
17	2	4.0 x 15.9 x 115	15 x 20 x 135
18	3	4.8 x 19.0 x 140	17 x 25 x 160
19	4	6.4 x 25.4 x 165	22 x 32 x 200

Boring Tool Holders

for Square Shank Tool Bit

Quickly exchangeable caps, straight (90°) or angular (30°).

Unit Per Pc.

CODE	No.	Tool Bit Size mm	Sleeve Bar Size mm	Holder Size mm
63 32 21	1	5	13ø x 210	16 x 18 x 100
22	2	6	16ø x 250	22 x 24 x 120
23	3	8	19ø x 300	25 x 28 x 140
24	4	10	22ø x 400	30 x 33 x 180

Plain Boring Bars

for Square Shank Tool Bit

This plain bar boring tool has square holes at each end allowing for the use of straight or angular cutters.

Unit Per Pc.

CODE	No.	Tool Bit Size mm	Plain Bar Size mm
63 32 31	1	5	13ø x 200
32	2	6	16ø x 250
33	3	8	19ø x 300
34	4	10	22ø x 400

Knurling Tool Holders

Self centering knuckle or joint has ample bearings to resist the severe strains of both end and side thrust. Two types, A & B are available. Please specify which type is required when ordering.

1. Type - A

Fitted with 1 pair of knurls for fine, medium, or coarse work.

Unit Per Pc.

CODE	No.	Holder Size mm	Knurl Size mm
63 32 41	A-1	9.5 x 22 x 140	16 diam.
42	A-2	13 x 29 x 165	19 "
43	A-3	16 x 35 x 191	19 "

2. Type - B

Carries three pairs of knurls for fine, medium and coarse work.

Unit Per Pc.

CODE	No.	Holder Size mm	Knurl Size mm
63 32 44	B-1	9.5 x 22 x 140	16 diam.
45	B-2	13 x 29 x 165	19 "
46	B-3	16 x 35 x 191	19 "

Knurls for Knurling Holders

Individually hob-cut from extra high carbon tool steel, heat treated, tempered and tested to obtain sharp, perfectly formed teeth in every knurl. Can be furnished in coarse, medium or fine grade and in either straight line or diamond pattern.

Straight Line

Diamond

How to order : CODE

Knurl, TYPE of THREAD, PITCH, SIZE mm, APPLICABLE TYPE of HOLDER

Unit Per Pc.

CODE	Type	Pitch	Size (mm)			Applicable Holder
			OD	BD	HD	
63 32 51	Straight Line	14	16	5	5.5	A-1 B-1
52		21				
53		33				
63 32 54	Diamond	14				
55		21				
56		33				
63 32 57	Straight Line	14	19	6	6	A-2 A-3 B-2 B-3
58		21				
59		33				
63 32 60	Diamond	14				
61		21				
62		33				

Thread Restorers

(File Type)

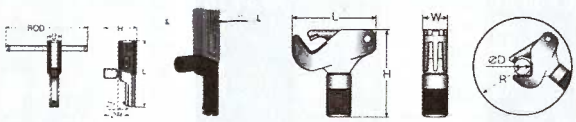
A square bar type restorer with 8 different lands. Where a die cannot be used, a few easy passes with the appropriate land of the restorer over the damaged face of a bolt or a pipe will restore the thread without reducing the diameter. As only the displaced metal is removed, the original fit is preserved.

Unit Per Pc.

CODE	Thread	Thread Size on Each Restorer
63 33 01	Metric	0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.50, 3.00
02	PF, BSP	11, 12, 14, 16, 19, 20, 22, 28
03	SAE, UN	12, 13, 14, 16, 18, 20, 24, 28
04	BSW, BSF	11, 12 14, 16, 18, 20 22, 26

Universal Thread Repair Tools

Thread repair tools automatically adjust to any thread diameter and pitch, can be used on left hand or right hand threads, both inch and metric and need no prior measurement of the thread. Often the thread of a component is damaged at the end of the thread eliminating the use of taps or dies for carrying out the repair. These thread restorers have the capability to enter below the damaged area and work outwards to complete the repair. The blades are made of high quality hardened tool steel. The blades are guided by the existing undamaged section of thread, in order to regroove the damaged section.



For Internal Thread — For External Thread

Internal Thread Repair

1	2	3
Turn knurled knob K to fully retract the blade B into the housing H. Insert Internal tool into the threaded hole or bore to be repaired.	Turn knurled knob K to extend blade B into a thread groove on an undamaged section and tighten by hand only.	Rotate the Internal tool by the cross-rod, as shown, in the desired direction.

External Thread Repair

1 Open	2 Close	3 Turn
Turn handle (A) to raise floating blades (B). Place the External tool over thread to be repaired.	Turn handle (A) to lower floating blades into grooves of thread and tighten by hand only.	Turn the External tool in direction of the arrow.

(to be continued)

Internal Tools

Unit Per Pc.

CODE	Size		Size mm						Weight
	øD	Pipes	L	B	H	Rod	ør	øR	grm
63 33 11	8-11	1/16"- 3/16"	109	18	45	116	16	38	160
12	12-16	1/4"- 3/8"	109	18	45	116	17	39	170
13	16-20	3/8"- 1/2"	111	21	53	130	20	45	250
14	22-32	1/2"- 7/8"	136	27	64	161	27	54	450
15	32-54	7/8"- 1-3/4"	163	38	81	192	35	62	950
63 33 16	32-68	7/8"-2-1/4"	163	50	92	192	41	70	1,100

Name of Mfr. : Nes Thread Repair Experts

External Tools

Unit Per Pc.

CODE	Size		Size mm				Weight
	øD	Pipes	L	W	H	R	grm
63 33 21	4 - 18	Up to 7/16"	61	23	62	68	225
22	17 - 38	3/8" - 1-1/8"	105	32	110	117	550
23	35 - 152	1-3/8" - 6"	305	44	130	254	1,800

Name of Mfr. : Nes Thread Repair Experts

Universal Thread Repair Tool Sets

Thread repair tool set contain different models of thread repair tools.

Unit Per Set

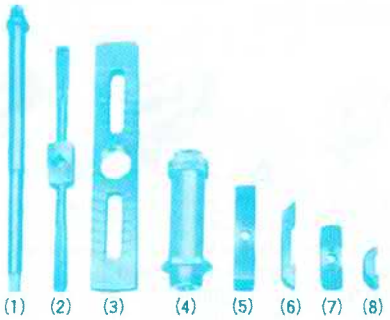
CODE	Contain Tools	Model
63 33 31	Internal 8-11, 12-16 & 16-20	1007
32	Internal 8-11, 12-16, 16-20 & 22-32	1008
33	Internal 22-32, 32-54 & 32-68	1036
34	External 4-18 & 17-38	1000
35	External 4-18, 17-38 & 35-152	1300
36	Internal 8-11, 12-16 External 4-18	1015
37	Internal 8-11, 12-16, 16-20 External 4-18	1017
38	Internal 8-11, 12-16, 16-20, 22-32 External 4-18 & 17-38	1025

Name of Mfr.: Nes Thread Repair Experts

Valve Seat Cutters

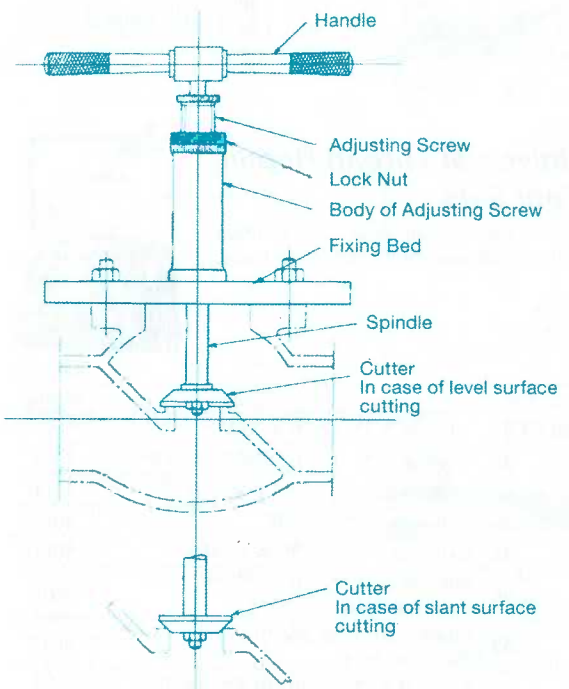
A set is comprised as follows:

(1) Spindle
(2) Handle
(3) Fixing Bed
(4) Lock Nut & Adjusting Screw
(5) 4" cutter
(6) 3" cutter
(7) 2" cutter
(8) 1" cutter



These valve seat cutting tools are easier than ordinary type cutters in assembly and handling for precision cutting work. Remove the valve cap or flange and fit the suitable cutter to the spindle. Then, set the fixing bed using a tightening bolt for the cap or flange. Check that the cutter fits horizontally with the valve seat and is in the center position. At this point you set the adjustable screw to find the best position of the cutter. After adjustment, begin the cutting operation by turning the handle clockwise. In case of slant surface cutting, please refer to the following drawing.

A standard set contains 1", 2", 3", and 4" cutters, but other sized cutters, 1/2", 3/4", 1-1/4", 1-1/2", 2-1/2", 5", and 6" are also available upon request.



63 34 51	Valve seat cutter, 1"-4" complete	Set

Hole Saws

Made of a selected high speed steel or tungsten carbide tipped for cutting smooth and accurate hole. Available cutting depth is 5 mm for standard type hole saw and 36 mm for deep cut type hole saw.

Standard Type

Deep Cut Type

High Speed Steel for Sheet Metal
Standard Type

Unit Per Pc.

CODE	Hole Diam	Arbor Diam	CODE	Hole Diam	Arbor Diam
63 35 01	12 mm	6 mm	63 35 46	57 mm	6 mm
02	13	"	47	58	"
03	14	"	48	59	8 mm
04	15	"	49	60	"
05	16	"	50	61	"
63 35 06	17 mm	6 mm	63 35 51	62 mm	8 mm
07	18	"	52	63	"
08	19	"	53	64	"
09	20	"	54	65	"
10	21	"	55	66	"
63 35 11	22 mm	6 mm	63 35 56	67 mm	8 mm
12	23	"	57	68	"
13	24	"	58	69	"
14	25	"	59	70	"
15	26	"	60	71	"
63 35 16	27 mm	6 mm	63 35 61	72 mm	8 mm
17	28	"	62	73	"
18	29	"	63	74	"
19	30	"	64	75	"
20	31	"	65	76	"
63 35 21	32 mm	6 mm	63 35 66	77 mm	8 mm
22	33	"	67	78	"
23	34	"	68	79	"
24	35	"	69	80	"
25	36	"	70	81	"
63 35 26	37 mm	6 mm	63 35 71	82 mm	8 mm
27	38	"	72	83	"
28	39	"	73	84	"
29	40	"	74	85	"
30	41	"	75	86	"
63 35 31	42 mm	6 mm	63 35 76	87 mm	8 mm
32	43	"	77	88	"
33	44	"	78	89	"
34	45	"	79	90	"
35	46	"	80	91	"
63 35 36	47 mm	6 mm	63 35 81	92 mm	8 mm
37	48	"	82	93	"
38	49	"	83	94	"
39	50	"	84	95	"
40	51	"	85	96	"
63 35 41	52 mm	6 mm	63 35 86	97 mm	8 mm
42	53	"	87	98	"
43	54	"	88	99	"
44	55	"	89	100	"
45	56	"			

Carbide Tipped for Stainless steel Standard Type

Unit Per Pc.

CODE	Hole Diam	Arbor Diam	CODE	Hole Diam	Arbor Diam
63 36 01	15 mm	6 mm	63 36 44	58 mm	6 mm
02	16	"	45	59	"
03	17	"	46	60	8 mm
04	18	"	47	61	"
05	19	"	48	62	"
63 36 06	20 mm	6 mm	63 36 49	63 mm	8 mm
07	21	"	50	64	"
08	22	"	51	65	"
09	23	"	52	66	"
10	24	"	53	67	"
63 36 11	25 mm	6 mm	63 36 54	68 mm	8 mm
12	26	"	55	69	"
13	27	"	56	70	"
14	28	"	57	71	"
15	29	"	58	72	"
63 36 16	30 mm	6 mm	63 36 59	73 mm	8 mm
17	31	"	60	74	"
18	32	"	61	75	"
19	33	"	62	76	"
20	34	"	63	77	"
63 36 21	35 mm	6 mm	63 36 64	78 mm	8 mm
22	36	"	65	79	"
23	37	"	66	80	"
24	38	"	67	81	"
25	39	"	68	82	"
63 36 26	40 mm	6 mm	63 36 69	83 mm	8 mm
27	41	"	70	84	"
28	42	"	71	85	"
29	43	"	72	86	"
30	44	"	73	87	"
63 36 31	45 mm	6 mm	63 36 74	88 mm	8 mm
32	46	"	75	89	"
33	47	"	76	90	"
34	48	"	77	91	"
35	49	"	78	92	"
63 36 36	50 mm	6 mm	63 36 79	93 mm	8 mm
37	51	"	80	94	"
38	52	"	81	95	"
39	53	"	82	96	"
40	54	"	83	97	"
63 36 41	55 mm	6 mm	63 36 84	98 mm	8 mm
42	56	"	85	99	"
43	57	"	86	100	"

Tungsten Carbide Tipped for Stainless Steel Deep Cut Type

Unit Per Pc.

CODE	Hole Diam	Arbor Diam	CODE	Hole Diam	Arbor Diam
63 37 01	15 mm	10 mm	63 37 44	58 mm	10 mm
02	16	"	45	59	"
03	17	"	46	60	12 mm
04	18	"	47	61	"
05	19	"	48	62	"
63 37 06	20 mm	10 mm	63 37 49	63 mm	12 mm
07	21	"	50	64	"
08	22	"	51	65	"
09	23	"	52	66	"
10	24	"	53	67	"
63 37 11	25 mm	10 mm	63 37 54	68 mm	12 mm
12	26	"	55	69	"
13	27	"	56	70	"
14	28	"	57	71	"
15	29	"	58	72	"
63 37 16	30 mm	10 mm	63 37 59	73 mm	12 mm
17	31	"	60	74	"
18	32	"	61	75	"
19	33	"	62	76	"
20	34	"	63	77	"
63 37 21	35 mm	10 mm	63 37 64	78 mm	12 mm
22	36	"	65	79	"
23	37	"	66	80	"
24	38	"	67	81	"
25	39	"	68	82	"
63 37 26	40 mm	10 mm	63 37 69	83 mm	12 mm
27	41	"	70	84	"
28	42	"	71	85	"
29	43	"	72	86	"
30	44	"	73	87	"
63 37 31	45 mm	10 mm	63 37 74	88 mm	12 mm
32	46	"	75	89	"
33	47	"	76	90	"
34	48	"	77	91	"
35	49	"	78	92	"
63 37 36	50 mm	10 mm	63 37 79	93 mm	12 mm
37	51	"	80	94	"
38	52	"	81	95	"
39	53	"	82	96	"
40	54	"	83	97	"
63 37 41	55 mm	10 mm	63 37 84	98 mm	12 mm
42	56	"	85	99	"
43	57	"	86	100	"

65
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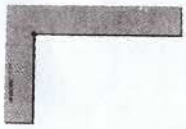
Rules/Tapes P. 65-6	Counters P. 65-6	Finding Pastes P. 65-6	Edges/ Squares  P. 65-7
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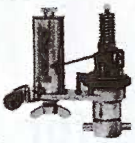
Engine Indicators  P. 65-45 ~ 47	Inspection Mirrors P. 65-48	Thickness Indicators P. 65-48 ~ 49	Detecting Instruments P. 65-49 ~ 56

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652307	65-31	652401	65-32	652559	65-45	652803	65-52	653058	65-15	653156	65-17	653228	65-18
652308	65-31	652402	65-32	652560	65-45	652804	65-52	653059	65-15	653157	65-17	653229	65-18
652309	65-31	652403	65-32	652561	65-45	652805	65-52	653061	65-15	653158	65-17	653230	65-18
652310	65-31	652404	65-32	652601	65-45	652806	65-52	653062	65-15	653159	65-17	653231	65-18
652311	65-31	652405	65-32	652602	65-45	652807	65-52	653063	65-15	653160	65-17	653232	65-18
652312	65-31	652406	65-32	652603	65-45	652808	65-52	653064	65-15	653161	65-17	653233	65-18
652313	65-31	652407	65-32	652604	65-45	652821	65-52	653065	65-15	653162	65-17	653234	65-18
652314	65-31	652408	65-32	652605	65-45	652822	65-53	653066	65-15	653163	65-17	653235	65-18
652315	65-31	652409	65-32	652606	65-45	652825	65-53	653067	65-15	653164	65-17	653236	65-18
652316	65-31	652410	65-32	652607	65-45	652831	65-53	653068	65-15	653165	65-17	653237	65-18
652317	65-31	652411	65-32	652608	65-45	652833	65-54	653069	65-15	653166	65-17	653238	65-18
652318	65-31	652412	65-32	652609	65-45	652834	65-55	653070	65-15	653167	65-17	653239	65-18
652319	65-31	652413	65-32	652611	65-45	652901	65-56	653071	65-15	653168	65-17	653240	65-18
652320	65-31	652414	65-32	652612	65-45	652902	65-56	653072	65-15	653169	65-17	653241	65-18
652321	65-31	652415	65-32	652613	65-45	653001	65-15	653073	65-15	653170	65-17	653242	65-18
652322	65-31	652416	65-32	652614	65-45	653002	65-15	653074	65-15	653171	65-17	653243	65-18
652323	65-31	652417	65-32	652615	65-45	653003	65-15	653075	65-15	653172	65-17	653244	65-18
652324	65-31	652418	65-32	652616	65-45	653004	65-15	653101	65-16	653173	65-17	653245	65-18

653246	65-18	653320	65-19	653450	65-33	653581	65-35
653247	65-18	653321	65-19	653451	65-33	653582	65-35
653248	65-18	653322	65-19	653452	65-33	653583	65-35
653251	65-18	653323	65-19	653453	65-33	653584	65-35
653252	65-18	653324	65-19	653454	65-33	653585	65-35
653253	65-18	653325	65-19	653455	65-33	653586	65-35
653254	65-18	653326	65-19	653456	65-33	653587	65-35
653255	65-18	653327	65-19	653460	65-33	653588	65-35
653256	65-18	653328	65-19	653461	65-33	653589	65-35
653257	65-18	653329	65-19	653462	65-34	653590	65-35
653258	65-18	653330	65-19	653501	65-35	653591	65-35
653259	65-18	653331	65-19	653502	65-35	653592	65-35
653260	65-18	653332	65-19	653503	65-35	653593	65-36
653261	65-18	653333	65-19	653504	65-35	653594	65-36
653262	65-18	653334	65-19	653505	65-35	653595	65-36
653263	65-18	653335	65-19	653506	65-35		
653264	65-18	653336	65-19	653507	65-35		
653265	65-18	653337	65-19	653508	65-35		
653266	65-18	653338	65-19	653509	65-35		
653267	65-18	653339	65-19	653510	65-35		
653268	65-18	653340	65-19	653511	65-35		
653269	65-18	653341	65-19	653512	65-35		
653270	65-18	653342	65-19	653515	65-35		
653271	65-18	653343	65-19	653516	65-35		
653272	65-18	653344	65-19	653517	65-35		
653273	65-18	653345	65-19	653518	65-35		
653274	65-18	653346	65-19	653519	65-35		
653275	65-18	653347	65-19	653520	65-35		
653276	65-18	653348	65-19	653521	65-35		
653277	65-18	653401	65-32	653522	65-35		
653278	65-18	653402	65-32	653523	65-35		
653279	65-18	653403	65-32	653524	65-35		
653280	65-18	653404	65-32	653525	65-35		
653281	65-18	653405	65-32	653526	65-35		
653282	65-18	653406	65-32	653531	65-35		
653283	65-18	653407	65-32	653532	65-35		
653284	65-18	653408	65-32	653533	65-35		
653285	65-18	653409	65-32	653534	65-35		
653286	65-18	653410	65-32	653535	65-35		
653287	65-18	653411	65-32	653536	65-35		
653288	65-18	653412	65-32	653537	65-35		
653289	65-18	653415	65-32	653538	65-35		
653290	65-18	653416	65-32	653539	65-35		
653291	65-18	653417	65-32	653540	65-35		
653292	65-18	653418	65-32	653541	65-35		
653293	65-18	653419	65-32	653542	65-35		
653294	65-18	653420	65-32	653551	65-35		
653295	65-18	653421	65-32	653552	65-35		
653296	65-18	653422	65-32	653553	65-35		
653297	65-18	653423	65-32	653554	65-35		
653298	65-18	653424	65-32	653555	65-35		
653301	65-18	653425	65-32	653556	65-35		
653302	65-18	653426	65-32	653557	65-35		
653303	65-18	653431	65-33	653558	65-35		
653304	65-19	653432	65-33	653559	65-35		
653305	65-19	653433	65-33	653560	65-35		
653306	65-19	653434	65-33	653561	65-35		
653307	65-19	653435	65-33	653562	65-35		
653308	65-19	653436	65-33	653565	65-35		
653309	65-19	653437	65-33	653566	65-35		
653310	65-19	653438	65-33	653567	65-35		
653311	65-19	653439	65-33	653568	65-35		
653312	65-19	653440	65-33	653569	65-35		
653313	65-19	653441	65-33	653570	65-35		
653314	65-19	653442	65-33	653571	65-35		
653315	65-19	653445	65-33	653572	65-35		
653316	65-19	653446	65-33	653573	65-35		
653317	65-19	653447	65-33	653574	65-35		
653318	65-19	653448	65-33	653575	65-35		
653319	65-19	653449	65-33	653576	65-35		

Outside Calipers

For the easy measurement of the outer diameter of pipes and other round objects. Made of hardened steel with tips of tempered steel.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 01 01	100	**65 01 07**	350
02	125	**08**	400
03	150	**09**	450
65 01 04	200	**65 01 10**	600
05	250	**11**	750
06	300	**12**	1,000

Spring Outside Calipers

For the outside measurement of threads. The tips are specially shaped to fit suitably to the threads.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 01 21	100	**65 01 24**	200
22	125	**25**	250
23	150	**26**	300

Lock-Joint Transfer Outside Calipers

For measuring the outer diameter of pipes or cables which may have rims or other obstructive shapes which would be difficult to measure with regular calipers.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 01 31	100	**65 01 34**	200
32	125	**35**	250
33	150	**36**	300

Inside Calipers

For measuring the inside diameter of pipes, fittings, etc. Made of hardened steel with points of tempered steel to prevent wear.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 01 51	100	**65 01 57**	350
52	125	**58**	400
53	150	**59**	450
65 01 54	200	**65 01 60**	600
55	250	**61**	750
56	300	**62**	1,000

Spring Inside Calipers

Has points of a shape suitable to work in threads.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 01 71	100	**65 01 74**	200
72	125	**75**	250
73	150	**76**	300

Lock-Joint Transfer Inside Calipers

For measuring the inner diameter of equipment which may have rims or obstructions which would make it difficult to measure with a regular caliper.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 01 81	100	**65 01 84**	200
82	125	**85**	250
83	150	**86**	300

One-Side Calipers

For measuring the thickness of the walls of pipes or valves, etc. Made of hardened steel with tempered steel points.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 02 01	100	**65 02 04**	200
02	125	**05**	250
03	150	**06**	300

Steel Compasses

Made of hardened steel with points that are extra hard tempered for scribing circles on iron plates.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 02 11	75	**65 02 19**	400
12	100	**20**	450
13	125	**21**	500
14	150	**22**	600
65 02 15	200	**65 02 23**	750
16	250	**24**	900
17	300	**25**	1,000
18	350	**26**	1,200

Spring Dividers

Made of hardened steel with points that are extra tempered for scribing on iron surfaces. Has a rigid spring and an adjustable, quick setting screw.

Unit Per Pr.

CODE	Size mm	CODE	Size mm
65 02 31	75	**65 02 35**	200
32	100	**36**	250
33	125	**37**	300
34	150		

Outside Micrometers

Graduated in 0.01 mm increments with standard measurement sizes from 25 mm to 500 mm. Micrometers measuring up to 1,000 mm are also available upon request.

Unit Per Pc.

CODE	Range mm	CODE	Range mm
65 03 01	0 - 25	65 03 11	250 - 275
02	25 - 50	12	275 - 300
03	50 - 75	13	300 - 325
04	75 - 100	14	325 - 350
05	100 - 125	15	350 - 375
65 03 06	125 - 150	65 03 16	375 - 400
07	150 - 175	17	400 - 425
08	175 - 200	18	425 - 450
09	200 - 225	19	450 - 475
10	225 - 250	20	475 - 500

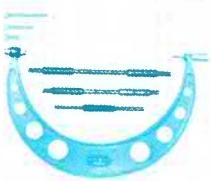
Outside Micrometers
with Counter

A numeral counter indicates sizes simulaneously as the measurements are being taken. The display is very easy to read. Graduated in 0.01 mm increments from 25 mm to 500 mm on the standard size micrometer but micrometers up to 1,000 mm are also available upon request.

Unit Per Pc.

CODE	Range mm	CODE	Range mm
65 03 41	0 - 25	65 03 51	250 - 275
42	25 - 50	52	275 - 300
43	50 - 75	53	300 - 325
44	75 - 100	54	325 - 350
45	100 - 125	55	350 - 375
65 03 46	125 - 150	65 03 56	375 - 400
47	150 - 175	57	400 - 425
48	175 - 200	58	425 - 450
49	200 - 225	59	450 - 475
50	225 - 250	60	475 - 500

Outside Micrometers
with Interchangeable Anvils



Each micrometer is equipped with a series of interchangeable anvils. Each anvil is marked to show its capacity and is fitted with an adjustable collar to prevent wear. Graduated in 0.01 mm increments.

Unit Per Set

CODE	Range mm	No. of Anvils	CODE	Range mm	No. of Anvils
65 03 81	0 - 100	4	65 03 86	500 - 600	4
82	0 - 150	6	87	600 - 700	4
83	150 - 300	6	88	700 - 800	4
84	300 - 400	4	89	800 - 900	4
85	400 - 500	4	90	900 - 1,000	4

Tubular Type Inside Micrometers

A single rod type micrometer made from strong but light tubing. The measuring anvils are ground to a radius to be used on either flat or curved surfaces. Graduated in 0.01 mm increments. Micrometers with counter displays are also available upon request.

Unit Per Pc.

CODE	Range mm	CODE	Range mm
65 04 01	50 - 63	65 04 11	275 - 300
02	50 - 75	12	300 - 325
03	75 - 100	13	325 - 350
04	100 - 125	14	350 - 375
05	125 - 150	15	375 - 400
65 04 06	150 - 175	65 04 16	400 - 425
07	175 - 200	17	425 - 450
08	200 - 225	18	450 - 475
09	225 - 250	19	475 - 500
10	250 - 275		

Jointed Inside Micrometers

Each set of the anvils for the jointed inside micrometers is adjusted to suit the particular micrometer. Each is given a mark and must not be used on any other micrometer. When assembling, clean the joining faces perfectly. Graduated in 0.01 mm increments.

Unit Per Set

CODE	Range mm	No. of Rods	CODE	Range mm	No. of Rods
65 04 41	50 - 150	3	65 04 44	50 - 1,000	8
42	50 - 300	5	45	50 - 1,500	10
43	50 - 500	6	46	100 - 1,000	12

Internal Groove Micrometers
(Inside Micrometer Calipers)

This caliper type jaw facilitates quick reading for internal grooves of all types including "O" rings, seals, oil grooves, washer grooves as well as bores and recesses. Graduated in 0.01 mm increments in sizes from 25 mm to 150 mm. Micrometers up to 50 mm in size with counters are also available.

Unit Per Pc.

CODE	Range mm	CODE	Range mm
Without Counter		With Counter	
65 04 51	5 - 30	65 04 61	5 - 30
52	25 - 50	62	25 - 50
53	50 - 75		
54	75 - 100		
55	100 - 125		
56	125 - 150		

Depth Micrometers

Measures the depth of holes, projections, etc. Provided with a hardened tip and threaded ground screw, adjustable for wear. The face of the base is hardened and planed to maintain a level surface. Graduated in increments of 0.01 mm.

How to order : CODE

Depth micrometer, RANGE mm, BASE SIZE mm

Unit Per Pc.

CODE	Range mm	Base Size mm
65 04 71	0 - 25	65.3 x 16
72	0 - 25	101.6 x 16

Depth Micrometers
with Slidable Rod

Basically the same instrument as the depth micrometer but with a graduated sliding rod. The base length for all micrometers is 120 mm. Graduated in increments of 0.01 mm. The diameter of the rod is 6 mm.

Unit Per Pc.

CODE	Range mm	CODE	Range mm
65 04 76	0 - 200	65 04 78	0 - 300
77	0 - 250		

Vernier Calipers

Made of high grade stainless steel with a satin chrome finish. Available in metric graduation, or in both, metric and inch graduation.

Unit Per Pc.

CODE	Length mm	Graduation	CODE	Length mm	Graduation
In Metric			In Metric & Inch		
65 05 01	100	0.05	65 05 11	150 - 6	0.05 - 0.001
02	150	"			
03	200	"	12	200 - 8	"
04	300	"	13	300 - 12	"
05	450	"			
65 05 06	500	"			
07	600	"			
08	1,000	"			

Digital Calipers

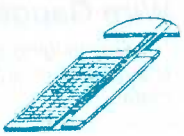
A compact, easy to use caliper graduated in 0.01 mm increments. All measurements are shown on a digital display making it easier to take quick, precise measurements. The graphic display will indicate whether the tool is set for the measurement of inside or outside diameters.

Specifications

Length	150 mm
Graduation	0.01 mm
Display	5 Digit LCD
Max. Response Speed	1,000 mm/sec.
Power Source	Dry Battery SR44 One Year Life Time
Weight	170 grm

65 05 21	Digital caliper, 150 mm	Pc.

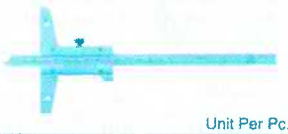
Rope Gauges



Made of wood or brass. Ideal for determining the correct diameter of ropes and wires. Available in metric system only. Measures ropes of up to 90 mm diameter.

65 05 31	Rope gauge, brass, up to 90 mm	Pc.
32	Rope gauge, wood, up to 90 mm	"

Vernier Depth Gauges



Made of hardened stainless steel. Graduated in increments of 0.05 mm in metric sizes only.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
65 05 36	150	65 05 41	400
37	200	42	450
38	250	43	500
39	300	44	600
40	350	45	1,000

Thickness Gauges
(Feeler Gauges)

Particularly popular with machinists and tool makers for gauging narrow slots as well as for adjusting the air gaps of valves on motors. The leaves are made of tempered steel and have the thickness marked on them. The gauges listed below are classified as A Type because they have straight leaves. Type B gauges with tapered leaves are also available upon request.

In Metric

Unit Per Pc.

CODE	Type	Range mm	Length mm	No. of Leaves	Combination mm
65 05 51	75A10	0.03 - 0.3	75	10	0.30, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.10, 0.15, 0.20
52	100A10		100		
53	150A10		150		
54	200A10		200		
55	300A10		300		
65 05 56	75A13	0.03 - 0.3	75	13	3.00, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.10, 0.15, 0.20, 0.30, 1.00, 2.00
57	100A13		100		
58	150A13		150		
65 05 59	75A19	0.03 - 1.0	75	19	1.00, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.70, 0.80
60	100A19		100		
61	150A19		150		
65 05 62	75A25	0.03 - 1.0	75	25	1.00, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.10, 0.11, 0.12, 0.13, 0.14, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.60, 0.70, 0.80, 0.90
63	100A25		100		
64	150A25		150		

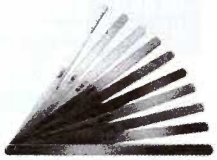
In Inch

Unit Per Pc.

CODE	Type	Range (inch)	Length (inch)	No. of Leaves	Combination inch
65 05 66	172A	0.0015-0.015	3	9	0.0015, 0.002, 0.003, 0.004, 0.006, 0.008, 0.010, 0.012, 0.015
67	172B		4		
68	1172C		6		
65 05 69	66	0.0015-0.025	3	26	0.0015, 0.002, 0.0025, 0.003, 0.004, 0.005, 0.006, 0.007, 0.008, 0.009, 0.010, 0.011, 0.012, 0.013, 0.014, 0.015, 0.016, 0.017, 0.018, 0.019, 0.020, 0.021, 0.022, 0.023, 0.024, 0.025

Gap Gauges
for Motor

Similar to feeler or thickness gauges but with longer leaves in order to measure between the stator and coil of a generator.



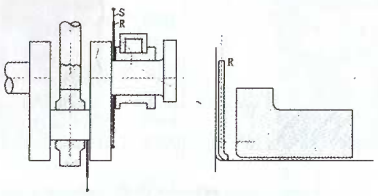
Unit Per Pc.

CODE	Length mm	No. of Leaves	Combination of Leaves mm
65 05 81	300	9	0.04, 0.05, 0.06, 0.07, 0.08, 0.10, 0.15, 0.20, 0.30
82	400		
83	500		
84	600		
85	800		
86	1,000		

Bearing Feeler Gauges

Used for measuring main bearing clearance of marine engine.

When the rod "S" has been pressed through the pipe "R", the pipe "R" can be pushed away from the brass by further pressing on the rod "S" and when a distance "a" is obtained it is easy to feel the fit of the feeler in the clearance.



Obs. Keep "R" against the journal as long as the feeler is in the bearing.

Unit Per Set

CODE	No.	Range mm	Contents mm
65 05 87	090 012	0.75-0.95	0.75, 0.80, 0.85, 0.90, 0.95
88	090 022	0.65-0.85	0.65, 0.70, 0.75, 0.80, 0.85
89	090 032	0.05-0.35	0.05, 0.1, 0.15, 0.2, 0.25, 0.30. 0.35
90	090 042	0.40-0.70	0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70
91	090 052	0.75-1.05	0.75, 0.80, 0.85, 0.90, 0.95, 1.00, 1.05
92	090 062	0.40-0.60	0.40, 0.45, 0.50, 0.55, 0.60
93	090 072	0.10-1.10	0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80, 0.90, 1.00, 1.10

Remark : All Blades are consist of: 0.05, 0.10 and 0.15 mm thickness gauges. Spare blades all included.

Screw Pitch Gauges
(Thread Gauges)

Designed to quickly determine the pitch of nut, bolt, and screw threads.

Unit Per Pc.

CODE	No.	Standard	Degree	Leaves
65 06 01	137	Whitworth	55°	4 ~ 60 thrds 26's
65 06 02	156	Metric	60°	0.25 ~ 2.5 pitch 28's
03	158	"	60°	0.5 ~ 7.0 pitch 17's
04	159	"	60°	1.0 ~ 11.5 pitch 22's
65 06 05	ISO	Metric	60°	0.2 ~ 6.0 pitch 24's
65 06 06	JIS	"	60°	0.25 ~ 6.0 pitch 22's
65 06 07	474	Unify	60°	4 ~ 80 thrds 28's

Involute Gear Tooth Gauges

Designed to indicate the gear pitch by simply using the leaves on the gear teeth. Every leaf is 50 mm long and 19 mm wide.

Unit Per Pc.

CODE	Type	Leaves	No. of Leaves
65 06 11	DP (S)	6 ~ 80 thread per inch	14
12	DP (L)	2 ~ 5 thread "	7
13	MP (S)	0.5 ~ 5 mm pitch	13
14	MP (L)	6.0 ~ 12.0 mm "	7

Screw Cutting Gauges
(Acme Screw Thread Gauges)

A very useful gauge to determine the correct thread angle of various tools after the cutting operation. Available in 29° or 30° in round or square type respectively.

Unit Per Pc.

CODE	Description
65 06 21	Round type, 29° 1-10 Threads
22	Round type, 30° 3-10 mm Pitch
65 06 23	Square type, 29° 1-10 Threads
24	Square type, 30° 3-10 mm Pitch

Center Gauges

A handy gauge used for inspecting the center angles of the lathe and the angles of screw making tools. Available in 55° and 60°. Made of hardened steel.

Unit Per Pc.

CODE	Degree	Description
65 06 31	55°	Whitworth Standard
32	60°	U.S. or American National Standard
33	60°	Metric Standard

Wire Gauges

For gauging steel wires, drill rods, sheets, plates, and wires of non-ferrous metal.

Unit Per Pc.

CODE	ABR.	Description
65 06 41	B.W.G.	U.K. Bermingham wire gauge, Nos.1-36
42	S.W.G.	U.K. Imperial Std. wire gauge, Nos.1-36
43	B.S.W.G.	U.S. BS Std. wire gauge, Nos.0-36
44	JIS	Japanese Ind. Std. 0.1-12 mm

Drill Gauges

For measuring the diameter of drills.

Unit Per Pc.

CODE	Range	Intervals
65 06 51	0.3 - 1.0 mm	0.05 mm
52	1.0 - 6.0 mm	0.1 mm
53	1.0 - 13.0 mm	0.5 mm
54	6.0 - 13.0 mm	0.1 mm
55	1/16 - 1/2 inch	1/64 inch

Measuring Cups

Stainless steel or plastic made cup for measuring liquid volume. Graduated in liters only.

Unit Per Pc.

Plastic		Stainless Steel	
CODE	Ltr	CODE	Ltr
17 40 26	0.3	**17 40 31**	0.2
27	0.6	**32**	0.5
28	1.0	**33**	1.0
29	2.0	**34**	2.0

Measuring Glass Cylinders

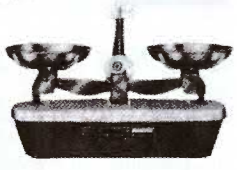
A graduated cylinder for measuring liquid, or liquefied chemicals more accurately.

Unit Per Pc.

CODE	For measurement	CODE	For measurement
65 07 11	10 ml	**65 07 15**	200 ml
12	20 ml	**16**	500 ml
13	50 ml	**17**	1,000 ml
14	100 ml		

Precision Balance Scales

Designed to weigh small quantities (medicines, etc.) to an accurate degree. Scales are available for weighing in grams or in kilograms.



Unit Per Set

CODE	Capacity	Sensitivity	Tray Diam.
65 07 01	100 grm	100 mg	70 mm
02	200 "	200 mg	80 mm
03	500 "	500 mg	110 mm
04	1 Kgs	1 grm	130 mm
05	2 Kgs	1 grm	157 mm
65 07 06	5 "	2 grm	187 mm

Spring Balance Scales

For weighing items in bulk. Capacity range from 200 grm to 50 kgs. Available in metric graduation only. Plastic or steel platform trays.

Unit Per Pc.

CODE	Max. Weighing grm or kgs	CODE	Max. Weighing grm or kgs
17 40 01	200 grm	**17 40 07**	8 kgs
02	400 grm	**08**	10 kgs
03	800 grm	**09**	12 kgs
04	1 Kgs	**10**	20 kgs
05	2 Kgs	**11**	30 kgs
17 40 06	4 Kgs	**17 40 12**	50 kgs

Tubular Spring Balances

Hand Held Type

This balance is the most accurate and durable of its type. Useful for most applications. Graduated in kilograms only.

Unit Per Pc.

CODE	Capacity	Graduation	CODE	Capacity	Graduation
65 07 31	0.5 kgs	5 grm	**65 07 37**	10 kgs	100 grm
32	1 "	10 "	**38**	12 "	200 "
33	2 "	20 "	**39**	15 "	200 "
34	4 "	50 "	**40**	20 "	200 "
35	5 "	50 "	**41**	25 "	200 "
65 07 36	8 "	100 "	**65 07 42**	30 "	500 "

Dial Spring Balances

Hook Type

Painted metal case with brass dial and white markings, shock absorbing mechanism and zinc plated hook. Multipurpose use (weighing cold stores, bulk foods, etc.).

Unit Per Pc.

CODE	Capacity	Graduation	CODE	Capacity	Graduation
65 07 51	10 kgs	50 grm	**65 07 55**	100 kgs	500 grm
52	20 "	100 "	**56**	160 "	1 kgs
53	30 "	200 "	**57**	200 "	1 "
54	50 "	500 "	**58**	300 "	2 kgs

Spring Platform Scales

Designed for heavy duty use in industry or agriculture. Relieving gear prevents damage to the mechanism during loading and unloading to ensure a longer life. Fitted with wheels for easy handling.

Unit Per Pc.

CODE	Capacity	Graduation	CODE	Capacity	Graduation
65 07 66	50 kgs	100 grm	65 07 68	150 kgs	500 grm
67	100 "	200 "	69	250 "	500 "

Stainless Steel Straight Rules

These engineer's precision rules are made of stainless steel and dull chromed to make the graduations easy to read. Graduated in increments of 0.5 mm.

Unit Per Pc

CODE	Length mm	CODE	Length mm
65 08 01	150	65 08 04	1,000
02	300	05	1,500
03	600	06	2,000

Six-Folding Rules

Available in stainless steel, and wood. Machine marked graduations. Length: 1 mtr.

How to order : CODE

Rule, six-folding, MATERIAL, GRADUATION

Unit Per Pc

CODE	Material	Graduation
65 08 11	Stainless Steel	Metric - Silver
12	Wood	Metric - Yellow
13	"	Metric & Inch - Yellow

Convex Rules
(Tape Rules)

Locking, power-return, white steel convex rule. 12 mm (1/2) wide flexible steel blade in a plastic case. Available in metric standard or in metric and inch sizes.

Unit Per Pc

CODE	Length	CODE	Length
Metric		Metric & Inch	
65 08 21	2 mtr	65 08 26	2 m/ 6'
22	3.5 "	27	3.5 m/12'
23	5 "	28	5 m/16'

Measuring Tapes

13 mm wide measuring tape available in linen, steel, or stainless steel. The tape is easy to ravel and unravel and the metric graduations are clearly visible. The tape is contained in a black, vinyl laminated, metal case with a flush handle.

Unit Per Pc.

CODE	Length	CODE	Length	CODE	Length
Linen Tape		Steel Tape		Stainless Steel Tape	
65 08 31	10 mtr	65 08 36	10 mtr	65 08 41	10 mtr
32	20 "	37	20 "	42	20 "
33	30 "	38	30 "	43	30 "
34	50 "	39	50 "	44	50 "
35	100 "				

Oil Gauging Tapes
(Steel Dipping Tapes)

So called ullage tape. Made of steel or stainless steel with a chromed brass drawing weight attached. Metric or metric and inch graduated tapes are available. The tapes are mounted to a strong frame with a wooden carrying handle. Tapes of lengths up to 50 mtr are also available upon request.

How to order : CODE

Tape, oil gauge, MATERIAL and COLOUR of TAPE, GRADUATION, LENGTH

Unit Per Pc

Steel				Stainless Steel	
White Tape		Black Tape			
CODE	Length mm	CODE	Length mm	CODE	Length mm
Metric		Metric		Metric	
65 08 51	15	65 08 61	15	65 08 71	15
52	20	62	20	72	20
53	30	63	30	73	30
Metric & Inch		Metric & Inch		Metric & Inch	
65 08 56	15M/ 50'	65 08 66	15M/ 50'	65 08 76	15M/ 50'
57	20M/ 66'	67	20M/ 66'	77	20M/ 66'
58	30M/100'	68	30M/100'	78	30M/100'

Note: White Tape = Black graduation on white back ground
Black Tape = White graduation on black back ground

Palm Tally Counters

Metal body mechanism four digits counter for counting inventories, etc. with actuating push button and reset button. Handy and suitable to fit in your palm.

65 18 55	Tally counter, Palm, 4 - digits	Pc.

Water Finding Paste
(Water Ribbons or Marking Blue)

A paste for use with oil gauging tape. The colour of the paste will change from yellow to red upon contact with water.

65 08 90	Water finding paste, 75 grm	Tube

Gasoline and Oil Finding Paste

A chemical paste used with oil gauging tape for measuring the presence of various types of oils. The colour of the paste will generally change from light blue to red upon contact with oil. This paste will detect almost any kind of oil including mineral oil, vegetable oil, and animal oil, and solvents such as benzol, alcohol, acrylic solution, alkaline solution, and spirits.

65 08 91	Gasoline and oil finding paste, 75 grm	Tube

Steel Straight Edges

Precision made of fine tool steel to industrial standards. The surface is ground and planed to a smooth surface. Perfect for use as a straight edge or as a level to check if surfaces are flat. The types shown above, the standard (rectangular) and beveled edge types without graduation are most common.

Other types such as a fold out or I-beam straight edge with graduations are also available upon request.

Standard Type | Beveled Type

Unit Per Pc.

Standard Type			Beveled Type (one side)		
CODE	Size mm L x W x T	Weight kgs	CODE	Size mm L x W x T	Weight kgs
65 09 01	150 x 24 x 3	0.08	65 09 16	150 x 24 x 3	0.08
02	200 x 24 x 3	0.11	17	200 x 24 x 3	0.11
03	250 x 30 x 4	0.3	18	250 x 30 x 4	0.3
04	300 x 35 x 5	0.4	19	300 x 35 x 5	0.4
05	450 x 40 x 5	0.7	20	450 x 40 x 5	0.7
65 09 06	600 x 40 x 5	0.9	65 09 21	600 x 40 x 5	0.9
07	750 x 60 x 6	1.7	22	750 x 60 x 6	1.7
08	900 x 50 x 6.5	2.3	23	900 x 50 x 6.5	2.3
09	1,000 x 50 x 6.5	2.6	24	1,000 x 50 x 6.5	2.6
10	1,500 x 75 x 6.5	5.8	25	1,500 x 75 x 6.5	5.8
65 09 11	2,000 x 85 x 8	11.0	65 09 26	2,000 x 85 x 8	11.0

Carpenters' Squares

For carpenters or machinists use. Made of polished tool steel and graduated in 1 mm increments.

Unit Per Pc.

CODE	65 09 31	65 09 32	65 09 33
Size mm	150 x 75	300 x 150	500 x 250

Precision Flat Try Squares

For machinists and tool makers. Made of carbon tool steel. Two types are available as listed below based upon the degree of accuracy. Graduated flat squares are also available upon request.

Unit Per Pc.

CODE	Size mm	Tolerance (mm)	CODE	Size mm	Tolerance (mm)
1 st. Grade			2 nd. Grade		
65 09 36	50 x 40	0.013	65 09 51	50 x 40	0.02
37	75 x 50	0.014	52	75 x 50	0.027
38	100 x 70	0.015	53	100 x 70	0.03
39	125 x 80	0.016	54	125 x 80	0.032
40	150 x 100	0.018	55	150 x 100	0.035
65 09 41	200 x 130	0.02	65 09 56	200 x 130	0.04
42	250 x 165	0.022	57	250 x 160	0.045
43	300 x 200	0.025	58	300 x 200	0.05
44	400 x 200	0.03	59	400 x 200	0.06
45	500 x 300	0.035	60	500 x 300	0.07
65 09 46	600 x 300	0.04	65 09 61	600 x 300	0.08
47	750 x 400	0.048	62	750 x 400	0.096
48	1,000 x 550	0.06	63	1,000 x 550	0.12

Precision Try Squares with Base

Recommended for use where extreme accuracy is required. Base and blades are hardened, ground and lapped to insure that the square has a straight, parallel setup. 1st and 2nd grades are available according to their tolerance. Non graduated types are most commonly used but graduated types are also available upon request.

Unit Per Pc.

CODE	Size mm Blade x Handle	Tolerance (mm)	CODE	Size mm Blade x Handle	Tolerance (mm)
1 st. Grade			2 nd. Grade		
65 09 66	50 x 40	0.013	65 09 81	50 x 40	0.02
67	75 x 50	0.014	82	75 x 50	0.027
68	100 x 70	0.015	83	100 x 70	0.03
69	125 x 80	0.016	84	125 x 80	0.032
70	150 x 100	0.018	85	150 x 100	0.035
65 09 71	200 x 130	0.02	65 09 86	200 x 130	0.04
72	250 x 165	0.022	87	250 x 165	0.045
73	300 x 200	0.025	88	300 x 200	0.05
74	400 x 200	0.03	89	400 x 200	0.06
75	500 x 300	0.035	90	500 x 300	0.07
65 09 76	600 x 300	0.04	65 09 91	600 x 350	0.08
77	750 x 400	0.048	92	750 x 400	0.096
78	1,000 x 550	0.06	93	1,000 x 550	0.12

Combination Square Sets

Combination sets are useful for all types of mechanical jobs. The set is comprised of a straight rule protractor, a square head, and a center head. The protractor is graduated to read from zero to 180° in both directions. The rule is made of stainless steel and is graduated in both 0.5 mm and 1 mm increments. The square head has a level and a scriber point. The protractor head, center head, and square head are all made of cast iron.

Unit Per Pc.

CODE	65 10 01	65 10 02	65 10 03	65 10 04
Rule's Length	225 mm	300 mm	450 mm	600 mm
Weight	0.9 kgs	1 kgs	1.1 kgs	1.2 kgs

Combination Squares

Same composition as above without protractor.

Unit Per Pc.

CODE	65 10 06	65 10 07	65 10 08	65 10 09
Rule's Length	225 mm	300 mm	450 mm	600 mm

Surface Plates

Machine finished economical surface plate made of cast iron. Most Common sizes are listed below in box type and round type.

Box Type

Round Type

Unit Per Pc.

Box Type			Round Type		
CODE	Size mm W x L x H	Weight kgs	CODE	Size mm Dia x H	Weight kgs
65 10 21	200 x 200 x 50	5.4	**65 10 38**	50 x 30	0.5
22	250 x 200 x 55	8	**39**	75 x 30	1.0
23	250 x 250 x 55	9	**40**	100 x 30	2.9
24	300 x 250 x 58	15	**41**	125 x 30	3.8
25	300 x 300 x 50	16	**42**	150 x 40	5.5
65 10 26	400 x 300 x 65	22	**65 10 43**	200 x 40	6.0
27	400 x 400 x 75	31	**44**	250 x 50	10.5
28	450 x 300 x 65	26	**45**	300 x 60	16.0
29	450 x 350 x 75	35	**46**	400 x 60	26.0
30	450 x 450 x 90	50	**47**	500 x 70	49.0
65 10 31	500 x 350 x 90	45	**65 10 48**	600 x 90	69.0
32	500 x 500 x 100	60			
33	600 x 450 x 100	60			
34	600 x 600 x 100	80			
35	750 x 600 x 125	105			
65 10 36	900 x 600 x 125	200			

Vee Blocks
(V-Blocks)

Machine finished and made of cast iron. Two types available, the A type which is composed of three 90° v-shaped indentations of various depths and the B type which has one 90° v-shaped indentation. A set of two pieces can be used in mechanical processing and inspection as a holding table for marking off round rods and right angle bodies, or to hold round marks. An A type block equipped with a clip is also available upon request.

A-Type

B-Type

Unit Per Pc.

CODE	Nominal Size	Dimensions mm (W x H x L)	CODE	Nominal Size	Dimensions mm (W x H x L)
	A-Type			B-Type	
65 10 51	50	50 x 32 x 20	**65 10 56**	75	75 x 60 x 30
52	75	75 x 40 x 30	**57**	100	100 x 67 x 40
53	100	100 x 60 x 30	**58**	125	125 x 80 x 50
54	125	125 x 80 x 50	**59**	150	150 x 90 x 65
55	150	150 x 90 x 65	**60**	175	175 x 115 x 75
	-	-	**65 10 61**	200	200 x 140 x 100

Pocket Levels

Compact and lightweight. The housing is made of Nickel plated hexagonal brass.

Unit Per Pc.

CODE	65 10 71	65 10 72
Overall Length	65 mm	90 mm
Across Flat	10 mm	12 mm

Bench Levels

A popular level made of cast iron. Provided with a level vial and a plumb vial.

Unit Per Pc.

CODE	Length mm	Weight kgs	CODE	Length mm	Weight kgs
65 10 76	150	0.4	**65 10 80**	450	1.2
77	230	0.55	**81**	600	1.4
78	300	0.72	**82**	900	1.9
79	380	1.0			

Surface Gauges

These surface gauges are handy, well proportioned and rigid. Composed of a heavy, cast iron base and a mild steel rod supporting a scriber which has tempered points. Common sizes are listed below but gauges with longer spindles, up to 1,000 mm in the round base and 2,000 mm in the square base are available upon request.

Round Base

Square Base

Unit Per Pc.

Round Base			Square Base		
CODE	Spindle Length (mm)	Base Size (mm)	CODE	Spindle Length (mm)	Base Size (mm)
65 11 01	150	55 x 35	**65 11 11**	150	64 x 40 x 22
02	200	55 x 35	**12**	200	70 x 45 x 25
03	250	65 x 35	**13**	250	75 x 55 x 25
04	300	75 x 35	**14**	300	85 x 65 x 28
05	350	75 x 35	**15**	350	85 x 65 x 28
65 11 06	400	105 x 55	**65 11 16**	400	110 x 80 x 45
07	450	105 x 55	**17**	450	110 x 80 x 45
08	500	105 x 55	**18**	500	130 x 105 x 55

Hand Tachometers
Horn Type

This tachometer indicates speed instantaneously and therefore enables speed fluctuations to be read off the dial. A circumference disc is provided to measure the circumference speed. 10 revolutions of this disc is equal to 1 mtr. So by dividing the number indicated on the gauge by 10, you can determine the number of revolutions per minute. When ordering, indicate the RPM capacity from the list below.

Unit Per Set

CODE	Range (R.P.M.)	Speed	Speed Range (R.P.M.)
65 13 01	400 - 5,000	2	400 - 1,600, 1,250 - 5,000
02	100 - 4,000	3	100 - 400, 300 - 1,200, 1,000 - 4,000
03	750 - 30,000	3	750 - 3,000, 2,500-10,000, 7,500 - 30,000
04	250 - 10,000	3	250 - 1,000, 750 - 3,000, 2,500 - 10,000
05	300 - 12,000	3	300 - 1,200, 900 - 3,600, 2,500 - 12,000
06	75 - 10,000	4	75 - 300, 250 - 1,000, 3,000 - 12,000, 2,500 - 10,000
07	90 - 12,000	4	90 - 360, 300 - 1, 200, 900 - 3,600, 3,000 - 12,000

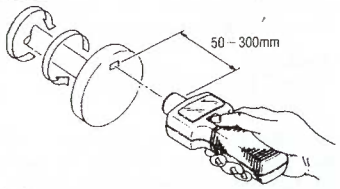
Hand Tachometers

Digital Type

A light and compact battery operated tachometer for measuring revolution with high accuracy.

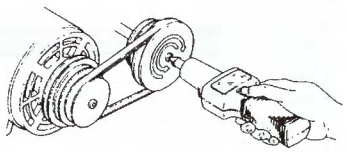
Non Contact Measurement

Revolution speed is easily read by directing the probe to the revolving shaft end to which a reflection tape is attached.



Contact Measurement

With optional contact adaptor the R.P.M. and surface speed can be easily read by pressing the head lightly against the revolution shaft.



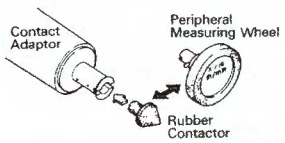
Specifications

Measuring Range	30 - 30,000 rpm
Resolution	0.1 rpm
Accuracy	0.01 %, ±1 digit
Sampling Time	1.0 - 2.0 sec.
Display	6 digit LCD
Data Hold	3 minutes
Measuring Distance	300 mm (contactless use)
Power Source	4 x R6P, 1.5 volt (AA size)

65 13 10	Hand tachometer, digital type measuring range 30 - 30,000 rpm	Set

Note: Contact adaptor is ordered separately.

Contact Adaptors for Digital Type Hand Tachometer



Unit Per Set

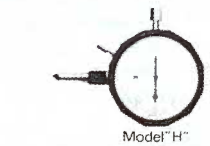
CODE	Measuring Unit	Contents
65 13 13	1/10 mtr/min.	1 surface speed wheel and 3 rubber tips
14	1/10 yard/min.	

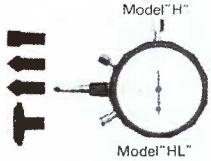
Hand Tachometers

Hasler Type

A clockwork type interior instrument, automatically engages the indicating mechanism when the instrument is started and releases after three seconds.

The tachometer is non magnetic and can therefore be used in electric power stations, etc.





Unit Per Pc.

CODE	Type	R.P.M. (Revolution)		R.P.M. (Surface Speed)	
		Range	Graduation	Range	Graduation
65 13 21	H	0 - 10,000	2	0 - 1,000	0.2 Mtr
22	L	0 - 1,000	0.2	0 - 100	0.02 "
65 13 23	HL	Combined "H" and "L"		Combined "H" and "L"	

(to be continued)

Electronic Stethoscopes

Electronic stethoscope enables you to check symptoms in machinery, before they become a problem. Machine noise or vibrations are picked up by the stethoscope's probe and a transducer converts the vibrations to an electronic signal.

Start by pressing the probe against the machine body and adjust the sound level. When the probe is moved to a new position it should be easy to establish whether the probe is now nearer to or further away from the source of the noise.

The condition of the machine can be checked based upon one's own personal experience with the sound of the machinery or by comparing the sound to a reference signal of a healthy machine.

Specifications

Frequency Range	30 Hz - 15 KHz
Output Volume	Adjustable
Battery	9 V alkaline (IEC 6LR61)
Battery Lifetime	Approx. 20 hours

65 13 31	Electronic stethoscope	Set

Ultrasonic Bearing Indicators

It can aid in identification of mechanically deteriorated bearings and bearings with inadequate/contaminated lubricant. It does this by detecting high frequency (acoustic emissions) stress waves associated with friction and other faults with machinery in poor condition (impacts etc.). It can be used to monitor bearings in motors, pumps, fans, gearboxes and other rotating machinery applications. It has two outputs – a decibel (dB) reading and a Distress® level which are both measured and displayed simultaneously by the Portamonitor™.

OPERATION

* The instrument listens for frictions and impacts caused by poor lubrication or bearing damage.
* Sound is generated by bearings and this propagates through the machine.
* By using a sensor that sends a signal, the user can detect this noise and by using signal processing, the user can determine the condition of the bearing.

The distress signal is a useful indicator of whether the bearing is damaged, poorly lubricated or malfunctioning, and therefore in need of maintenance. This is useful as it is automatically calculated and displayed by the Portamonitor™ so requires minimum input from the user and gives a reliable and instant indication of the state of the bearing.

Unit Per Set

CODE	65 13 32		
Model	Portamonitor™		
Sensor ;			
Sensing Element	Resonant piezoelectric at 100 kHz		
Calibration	Factory set		
Signal Measurement :		Range	Resolution
Distress® (dst)	Fault indicating parameter	0 to 40	1 unit
dB Level (dB)	Logarithmically scaled mean signal level	10 to 80 dB	1 dB
Features ;			
Display	LCD, 2 lines by 8 characters		
Distress® Display	Numeric or Text ("OK" if < 10, "Suspect" if between 10 & 15, "Poor" if > 15)		
Reading in progress	Flashing LED indicator (in addition to LCD display Massage)		
Internal Batteries	NiMH rechargeable battery via micro USB port – Typically over 1,000 measurements between charges		
Overall Dimensions	98 mm (3.86 in) x 62 mm (2.44 in) x 34 mm (1.34 in)		
Weight	225 grm (7.94 ounce)		

Accessories included ;
*Carrying case
*Operating instructions
*Protective case
*Portamonitor™ bearing indicator main unit
*USB cable

Name of Mfr. : Coltraco Ultrasonics

Sound Scopes

Binaural Receiver Type

Stethoscope type sound inspection instrument for detecting worn out parts, cracks of engines, motors, missing gear box, compressors, dynamos, etc. Furthermore useful for tracing irregularities in pipe-lines of gas, water, oil and electrical equipment.

65 13 33	Sound scope, binaural receiver type	Pc.

Seawater Hydrometers

A glass instrument for measuring the density and saturation of salt in seawater. A ballasted float carrying a scale that indicates density as related to fresh water. Zero is 1,000; the density of seawater is about 1,026, but varies, in different areas between 1,000 and about 1,040.

How to order : CODE

Hydrometer, seawater, GRADUATION, LENGTH

Unit Per Pc.

CODE	Graduation	Length	CODE	Graduation	Length
65 13 41	1,000 - 1,030	200 mm	65 13 43	1,000 - 1,040	200 mm
42	" - "	250 "	44	" - "	250 "

Salinity Refractometers

For measuring the salinity and specific gravity of seawater, and utilizes a new material that is durable against salty samples. The salinity of seawater is displayed in parts per mill (‰). This refractometer requires no battery due to optical device.

Features
- Easy to read display.
- Screen shading.

With the same measurement range as MASTER-S/Mill M, MASTER-S/Millα is an Automatic Temperature Compensation (ATC) model with water resistant properties (IP65).

Unit Per Pc.

CODE	65 13 45	65 13 46
Model	MASTER-S/Mill M	MASTER-S/Millα
Scale Range	Salinity : 0 to 100 ‰ Specific gravity : 1.000 to 1.070	
Minimum Scale	Salinity : 1 ‰ Specific Gravity : 0.001	
Accuracy	-	Salinity : ±2 ‰ Specific gravity : ±0.001 (10°C to 30°C)
Functions	Calibration with water	Calibration with water & Automatic Temperature Compensation
Size	3.2 x 3.4 x 20.7 cm	
Weight	110 grm	

Name of Mfr. Atago

Seawater Specific Gravity Refractometers, Digital Type

Designed to measure the salinity specific gravity of a solution of seawater and water only. Fully digital, surprisingly compact size (pocket size) allows you to easily carry it around and use it outdoors or inside factories.

Features
- Just 2-3 drops of sample.
- Easy and quick measuring.
- Measurement displayed in just 3 seconds.
- Hot or cold samples can be measured.
- ATC - measurements are shown as if measured at 20°C.
- Zero setting (calibration) can be done with distilled or tap water!
- Class IP65 - Dust-tight and Protected against water jets. Rinse clean under running water.

Unit Per Pc.

CODE	65 13 47
Model	PAL-07S
Measuring Range	Sea water (S.G.) : 1.000 to 1.070 Temperature : 10.0 to 40.0°C
Resolution	Sea water (S.G.) : 0.001 Temperature : 0.1°C
Measurement Accuracy	Sea water (S.G.) : ±0.002 Temperature : ±1°C
Temperature Compensation Range	10 to 40°C (Automatic Temperature Compensation)
Ambient Temperature	10 to 40°C

(to be continued)

Sample Volume	0.3 ml
Measurement Time	3 seconds
Power Supply	2 x AAA batteries
International Protection Class	IP 65 Dust-tight and protected against water jets
Dimensions mm	55 (W) x 31 (D) x 109 (H)
Weight	100 grm

Name of Mfr. : Atago

Ethylene Glycol Refractometers

Digital Type

Anti-freezing solution (coolant) which main ingredient is ethylene glycol is widely used as mixed in cooling water of car's radiator, as cooling medium for central air - conditioning system, freezer/ refrigerator, cooling coil, cooling fixture, and so on.

The "Pocket" coolant refractometer can easily measure the coolant in brine and other agents of Ethylene Glycol. Measured value displayed digitally. The freezing point of the sample can also be measured and displayed.

Unit Per Pc

CODE	65 13 48
Model	PAL-91S
Measuring Range	Ethylene glycol : 0.0 to 90.0% (V/V) (Main scale) Freezing point of Ethylene glycol : 0 to -50°C (Secondary scale) Temperature : 10.0 to 40.0°C
Resolution	Ethylene glycol : 0.2% (V/V) (Main scale) Freezing point of Ethylene glycol : 1°C (Secondary scale) Temperature : 0.1°C
Measurement Accuracy	Ethylene glycol : ±0.4% (V/V) (Main scale) Freezing point of Ethylene glycol : ±1°C (Secondary scale) Temperature : ±1°C
Temperature Compensation Range	10 to 40°C (Automatic Temperature Compensation)
Sample Volume	0.3 ml
Measurement Time	3 seconds
Power Supply	2 x AAA batteries
International Protection Class	IP 65 Dust-tight and protected against water jet
Dimensions mm	55 (W) x 31 (D) x 109 (H)
Weight	100 grm

Name of Mfr. : Atago

Refractometers

for Urea Concentration of Diesel Exhaust Fluid

Digital Type

The PAL-Urea is specifically designed to measure the Urea concentration of DEF(Diesel Exhaust Fluid), also known as AdBlue* in Europe. The PAL-Urea is light & compact, with no moving parts to break. Simply place a few drops of DEF on the prism, press "Start" and the precise Urea concentration is displayed digitally in 3 seconds.

Unit Per Pc.

CODE	65 13 49
Model	PAL-Urea
Measurement Temperature	Urea : 0.0 to 55.0% Temperature : 10 to 40°C
Resolution	Urea : 0.1% Temperature : 0.1°C
Measurement Accuracy	Urea : ±0.3% Temperature : ±1°C
Temperature Compensation Range	10 to 40°C (Automatic Temperature Compensation)
Sample Volume	0.3 ml
Measurement Time	3 seconds
Power Supply	2 x AAA batteries
International Protection Class	IP 65 Dust-tight and protected against water jets
Dimensions mm	55 (W) x 31 (D) x 109 (H)
Weight	100 grm

Name of Mfr. : Atago

A.P.I. Hydrometers

for Petroleum

A glass instrument for measuring the density of petroleum, made to the industrial standards of the A.P.I. (American Petroleum Institute). Graduated in 0.1 and 300 mm in length.

Unit Per Pc

CODE	No.	Range	CODE	No.	Range
65 13 51	1	-1 - 11	65 13 56	6	49 - 61
52	2	9 - 21	57	7	59 - 71
53	3	19 - 31	58	8	69 - 81
54	4	29 - 41	59	9	79 - 91
55	5	39 - 51	60	10	89 - 101

Note: A.P.I. Number differs in certain countries, therefore when ordering, please be sure to specify the No. as well as the range in order to avoid confusion and misdelivery.

Hydrometers or Light Oil

General purpose hydrometer to determine the gravity of light oil. The set consists of 3 pieces, and the length of hydrometer is 300 mm.

Unit Per Set

CODE	65 13 64	65 13 65	65 13 66
Range	0.700 ~ 1.000	0.700 ~ 1.200	0.750 ~ 0.900
Consists of	0.700 ~ 0.800 0.800 ~ 0.900 0.900 ~ 1.000	0.700 ~ 0.850 0.850 ~ 1.000 1.000 ~ 1.200	0.750 ~ 0.800 0.800 ~ 0.850 0.850 ~ 0.900
Nos in Set	3's		

Fuel Drip Bunker Samplers

Designed for obtaining good representative fuel samples during bunkering operation. A representative oil sample will provide an accurate representation of the contaminants, additives, oxidation particulates and wear condition.

* Lightweight and very easy to install - obtaining a representative bunker fuel sample quick and easy.
* Complete with bunker fuel sampler joint rings.
* GL & Lloyds Register approved with certificate numbers etched on the flange, GL Certified for MARPOL compliance.
* IMO MARPOL 73/78 Annex VI compliant - helps you stay within the legal requirements for bunker fuel sampling.

The sample is collected in a cubitainer, a consumable item of typically 5 litre capacity which is attached to the needle valve. The tube should always be installed with the holes facing the fluid direction. Adjust the needle valve to give a slow and steady drip. Time the fill rate to estimate that it will provide for sufficient sample over the expected delivery period.

It is recommended that four representative samples are obtained from the delivery.
The distribution of the samples being:
1. Supplier's sample;
2. Vessel's sample for on-board retention;
3. On-board analysis sample;
4. Sample for independent analysis.

Material: Stainless steel 304/316
Nominal Flange Thickness: 25 / 26 mm
Total Thickness (including gaskets): 31 / 32 mm

Sampler Sizes

Part Number	Nom. Pipe Size (B)	ID (mm)	OD (mm)	Weight	Flange Standard Correlations
FG-K1-122-KW	50 mm /2"	63	95	3.4 kgs	JISB2210 5K, 10K, 16K, BS 4504 PN10, PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-123-KW	75 mm /3"	86	127	3.9 kgs	JISB2210 5K, 10K, 16K, BS 4504 PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-124-KW	100 mm /4"	116	157	4.3 kgs	BS 4504 PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-125-KW	125 mm /5"	144	188	4.8 kgs	JISB2210 5K, 10K, 16K, BS 4504 PN16, BS10 D, E, ANSI B16.5 150
FG-K1-126-KW	150 mm /6"	171	216	5.5 kgs	JISB2210 5K, 10K, 16K, BS 4504 PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-127-KW	175 mm /7"	194	241	6.2 kgs	JISB2210 5K, 10K
FG-K1-128-KW	200 mm /8"	221	266	6.5 kgs	JISB2210 5K, 10K, 16K, BS 4504 PN10, PN16, BS10 D, E, F, ANSI B16.5 150
FG-K1-129-KW	225 mm /9"	260	307	6.6 kgs	ANSI B16.5 300
FG-K1-130-KW	250 mm /10"	281	328	7.1 kgs	JISB2210 10K, 16K, BS 4504 PN10, PN16, BS10 D, E, F, ANSI B16.5 150, 300
FG-K1-131-KW	275 mm /11"	319	361	7.2 kgs	JISB2210 10K, BS 4504 PN10, PN16, BS10 D, E
FG-K1-132-KW	300 mm /12"	340	401	7.5 kgs	JISB2210 16K, BS10 F, ANSI B16.5 150, 300
FG-K1-133-KW	350 mm /14"	375	420	8.0 kgs	BS 4504 PN10, PN16, BS10 D, E, F, ANSI B16.5 150, 300

Unit Per Pc.

CODE	Nom. Pipe Size	CODE	Nom. Pipe Size
65 13 24	50 mm/2"	**65 13 30**	200 mm/ 8"
25	75 mm/3"	**34**	225 mm/ 9"
26	100 mm/4"	**35**	250 mm/10"
27	125 mm/5"	**36**	275 mm/11"
28	150 mm/6"	**37**	300 mm/12"
65 13 29	175 mm/7"	**65 13 38**	350 mm/14"

Name of Mfr. : Parker Kittiwake

Cubitainers for Sampling Flange Device

Drip samplers use disposable 'Cubitainers'. These hold the oil sample before mixing and transfer to the sample bottles. They also keep out all external contamination. Supplied in 5 litre size, and packs of 24, with numbered, tamper-evident caps, pourer carton and spout

65 13 39	Cubitainer for sampling flange device, 5 ltr capacity, 24's/case	C/S

Fuel Oil Sample Bottles and Labels

750ml HDPE (High Density Polyethylene) fuel oil sample bottle packs and mailer kits complete with numbered tamper evident caps, labels and mailing cartons used for storage and safe transportation of the samples. Sample bottles have been tested and approved for transportation of fuel oil samples by air freight or courier service. All consumables are available either as convenient individual packs, or supplied in bulk to refineries and bunker barge operations.

65 13 40	Bottle, HDPE for fuel oil sample, 750 ml, with seals and IATA* approved mailing cartons, 36's	Kit

*IATA - International Air Transport Association

Sampling Bottles
(Samplers)

Designed for sampling petroleum products in tanks or seawater. Made of brass and stainless steel. Available in 500 cc and 1,000 cc sampling capacity.

1. Mouth Collecting Type Sampler

Top lid can be opened at any intermediate level inside tanks and other containers. Sample can be easily collected from any pre-determined depth inside the tank.

2. Bottom Collecting Type Sampler : (Bottom Penetrate Type)

Sample can be collected from bottom (Bottom Collecting Type) at any intermediate level of tanks and other containers, or at any pre-determined depth inside the tanks.

How to order : CODE

Sampling bottle, COLLECTING TYPE, MATERIAL, CAPACITY

Unit Per Pc.

Mouth Collecting Type			Bottom Collecting Type		
CODE	Material	Capacity	CODE	Length mm	Weight kgs
65 13 71	Brass	500 cc	**65 13 75**	Brass	500 cc
72		1,000 cc	**76**		1,000 cc
65 13 73	S.Steel	500 cc	**65 13 77**	S.Steel	500 cc
74		1,000 cc	**78**		1,000 cc

Salinometers

An instrument for indicating the proportion of salt in a given quantity of water. It indicates the saline content 1/32 to 4/32 for boiler water or 1,000 to 1,040 for sea water. Available in glass or brass material.

How to order : CODE

Salinometer, for BOILER WATER or SEA WATER, MATERIAL

Unit Per Set

CODE	Material	For	Graduation
65 13 81	Glass	Boiler Water	1/32 - 4/32 at 200°F
82	Brass		
65 13 83	Glass	Sea Water	1,000 - 1,040 at 200°F
84	Brass		

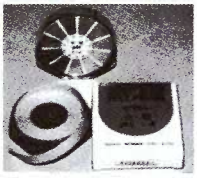
Salinometer Pots

Made of heavy plated copper or brass with a wooden handle. The standard size is approx. H 300 mm x D 62 mm. When ordering, please specify the material you require.

Unit Per Pc.

CODE	**65 13 86**	**65 13 87**
Material	Copper	Brass

pH Test Paper
(Litmus Paper)



For measuring acidity and alkalinity (hydrogen ion concentration) based on a scale of 0 to 14 where 7 represents the value for pure water at 25°C or neutrality. Values less than 7 represent increasing hydrogen-ion concentration or increasing acidity, and a value greater than 7 represents decreasing hydrogen-ion concentration or increasing alkalinity.

65 13 90	pH test paper pH, 0 ~ 14	Pc.

Compact pH Meters

Pocket-size pH meter for small sample measurement with waterproof construction.

It provides several measuring methods, immersion measurement, scoop measurement or flat measurement.

Specifications

Measurement Range	pH2 - pH12
Accuracy	±0.1 pH
Readout	3-1/2 digit LCD
Principle	Glass electrode
Sample Temperature	5-40°C
Power Source	3V lithium batteries (CR-2032) x 2 pcs
Size	165 x 29 x 19 mm
Weight	53 grm

65 13 93	Compact pH meter, pH 2-12	Pc.

Digital pH Meters

Compact, pocket size meter with one touch calibration and temperature compensation.

Meters with a probe in a sealed case and sealed connections to keep out moisture. Operation is simple with one touch, automatic calibration.

Simply dip the probe in standard solution and the microprocessor automatically distinguishes between standard solutions of pH 4, 7, or 9.

The microprocessor will also perform the temperature compensation of the pH and display a diagnostic message. Has a long battery life of approximately 600 hours and will automatically switch off to reserve power if left on for over 30 minutes.

Specifications

Measurement Range	pH	0 to 14
	Temperature	0 to 80°C
Display	Liquid crystal display	
Item Displayed	Displays both pH value and liquid temperature	
Power Supply	1 x 6F22 (S - 006P) dry cell	

65 13 95	Digital pH meter, 0 - 14 pH	Set

Standard Dial Gauges
(Dial Indicators)

This standard dial gauge is simple, reliable, easy to read, very sensitive and shock proof. The bezel is rotated for zero setting. The most common types are listed below.

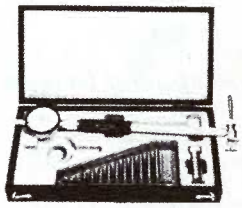
How to order : CODE

Dial gauge, standard, TOTAL RANGE, NON-WATER PROOF or WATER PROOF

Unit Per Pc.

CODE	Total Range	Graduation	Remark
65 14 01	5 mm	0.01 mm	Non-Water Proof
02	"	"	Water Proof
65 14 03	10 mm	"	Non-Water Proof
04	"	"	Water Proof

Cylinder Gauges
(Bore Gauges)



This range of gauges is designed mainly for the measurement of cylinder bores but the ovality, taper, wear and other bore conditions may be measured with equal ease. Furnished without a dial gauge. When ordering, please indicate if the dial gauge is required.

Dial Gauges not included

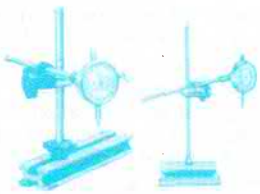
(to be continued)

Unit Per Set

CODE	Measuring Range	Graduation	Length of Below Grip	No. of Anvil
65 14 11	18 ~ 35 mm	0.01 mm	100 mm	9
12	35 ~ 60 "		150 "	6
13	50 ~ 100 "		150 "	11
65 14 14	100 ~ 160 mm	0.01 mm	150 mm	13
15	160 ~ 250 "		250 "	6
16	250 ~ 400 "		250 "	5

Dial Gauge Stands

The substantial "T" slotted base is accurately machined for all working surfaces and the vertical and horizontal arms ensure fully universal movements of the dial gauge. All dial gauge stands are furnished without a dial gauge.



Slidable Base Fixed Base

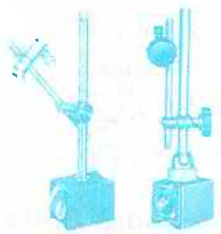
Unit Per Pc.

CODE	Base	Base Size W x L x H	Pole Size H x ø
65 14 21	Slidable	50 x 220x 32 mm	200 x 12 mm
22	Fixed	85 x 120x 31 mm	270 x 10 mm

Dial Gauge Stands

Magnetic Base

A gauge stand with a magnetic base which can be switched on or off when it is necessary to move the gauge. Types other than those listed below are available upon request. Just submit the specifications when you place your purchase order.



Standard Universal

Unit Per Pc

CODE	Type	Base Size W x L x H	Pole Size H x ø
65 14 26	Standard	50 x 60 x 57 mm	175 x 12 mm
27	Universal	64 x 65 x 57 mm	200 x 12 mm

Pressure Gauges, Bourdon Tube Type (Manometers)

This category contains the following popular gauges.

Pressure Gauges

Service as a gauge for air, water, steam, oil or sea water and any liquid or gases which are not corrosive to brass. Brass case, friction fit beaded ring and phosphor bronze Bourdon tube.

Compound Gauges

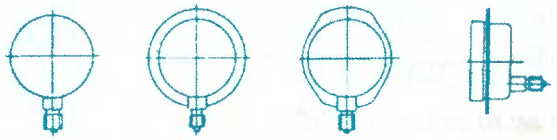
For installations where it is necessary to read both pressure and vacuum on one side. Brass case and friction fit beaded ring. Phosphor bronze Bourdon tube.

Vacuum Gauges

For vacuum reading. Brass case, friction fit beaded ring and phosphor bronze Bourdon tube.

Due to the great variety of casing, fitting connections, etc. in above gauges, please refer to the following illustrations and the "Guide of how to order" when ordering. The thread connection is the same as pipe straight threads (PF) which are of the "B.S.P." (British Standard Pipe Threads).

Type of Casing



A-Type (Rimless Type) B-Type (Round Rim Type) C-Type (Cut Rim Type) D-Type (Buried Type)

Type of Fitting Connection

U-Type (Round Cornered) Shank T-Type (Square) Shank S-Type (Hexagonal) Nut Attached

Range and Applications

Symbol	Type	Surrounding Temperature Range of the Gauges
-	Ordinary Type	-5 C ~ 40°C
M	Ordinary Type for Steam	10°C ~ 50°C
H	Heat-Resistant Type	-5°C ~ 80°C
V	Vibration-Resistant Type	-5°C ~ 40°C
MH	Heat-Resistant Type for Steam	10°C ~ 50°C
HV	Heat and Vibration Resistant Type	-5°C ~ 80°C

Size and Pressure Range

Name	Pressure Gauge	Compound Gauge	Vacuum Gauge
Type of Casing	A, B, C, D	A, B, C, D	A, B, C, D
Connection Size PF	1/4", 3/8", 1/2"	1/4", 3/8", 1/2"	1/4", 3/8", 1/2"
Diameter of Gauge (mm)	50, 60, 75, 100, 150, 200	60, 75, 100, 150, 200	
Minimum Range	0.5-0 kgf/cm²	1 kgf/cm² - -76 cmHg	0 ~ -76 cmHg
Maximum Range	2,000 - 0 kgf/cm²	20 kgf/cm² - -76 cmHg	

Guide of How to order

When ordering, please fill the following column.

1	2	3	4	5	6	7
☐	☐	☐	☐	☐	☐	☐

1. Name : Pressure Gauge / Compound Gauge / Vacuum Gauge
2. Type of Casing : A, B, C, D
3. Purpose Where Used : -, M, H, V, MH, HV
4. Type of Fitting Connection : U, T, S
5. Connection Size : PF1/4", PF3/8", PF1/2"
6. Diameter of Gauge : 50, 60, 75, 100, 150, 200 mm
7. Pressure Range : 100 - 0 kgf/cm² / 10 kgf/cm² to - 76 cmHg / 0 to - 76 cmHg etc.

Example : 65 - 15 - 01

1) Pressure gauge, 2) rimless case, 3) ordinary for steam, 4) with hexagonal nut, 5) PF1/4" thread, 6) 100 mm diameter, 7) 100 – 0 kgf/cm² capacity

Pressure Gauges

Casing : (B) Round Rim
Fitting : (T) Square Shank

Unit Per Pc

CODE	Pressure Range MPa	Thread	Case Diam. mm
65 30 01	0 – 0.1	G 3/8	75
02	0 – 0.2		
03	0 – 0.25		
04	0 – 0.3		
05	0 – 0.35		
65 30 06	0 – 0.4	G 3/8	75
07	0 – 0.5		
08	0 – 0.6		
09	0 – 0.7		
10	0 – 1.0		
65 30 11	0 – 1.6		
12	0 – 2.0		
13	0 – 2.5		
14	0 – 3.0		
15	0 – 3.5		
65 30 16	0 – 0.2	G 1/4	60
17	0 – 0.25		
18	0 – 0.3		
19	0 – 0.35		
20	0 – 0.4		
65 30 21	0 – 0.5	G 1/4	60
22	0 – 0.6		
23	0 – 0.7		
24	0 – 1.0		
25	0 – 1.6		
65 30 26	0 – 2.0		
27	0 – 2.5		
28	0 – 3.0		
29	0 – 3.5		

(to be continued)

Casing : (A) Rimless
Fitting : (T) Square Shank

Unit Per Pc.

CODE	Pressure Range MPa	Thread	Case Diam. mm
65 30 31	0 – 0.1	G 1/4	60
32	0 – 0.2		
33	0 – 0.25		
34	0 – 0.3		
35	0 – 0.35		
65 30 36	0 – 0.4		
37	0 – 0.5		
38	0 – 0.6		
39	0 – 0.7		
40	0 – 1.0		
65 30 41	0 – 1.6		
42	0 – 2.0		
43	0 – 2.5		
44	0 – 3.0		
45	0 – 3.5		
65 30 46	0 – 0.2	G 1/4	75
47	0 – 0.25		
48	0 – 0.3		
49	0 – 0.35		
50	0 – 0.4		
65 30 51	0 – 0.5		
52	0 – 0.6		
53	0 – 0.7		
54	0 – 1.0		
55	0 – 1.6		
65 30 56	0 – 2.0		
57	0 – 2.5		
58	0 – 3.0		
59	0 – 3.5		
65 30 61	0 – 0.2	G 3/8	75
62	0 – 0.25		
63	0 – 0.3		
64	0 – 0.35		
65	0 – 0.4		
65 30 66	0 – 0.5		
67	0 – 0.6		
68	0 – 0.7		
69	0 – 1.0		
70	0 – 1.6		
65 30 71	0 – 2.0		
72	0 – 2.5		
73	0 – 3.0		
74	0 – 3.5		
75	0 – 5.0		

Ammonia Compound Gauges

Designed for use with ammonia and equipped with a heavy-duty stainless steel bushed rotary movement, a micrometer pointer, alloy steel Bourdon spring, and steel socket with a male connection.

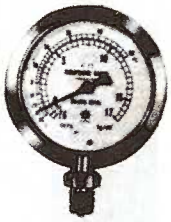
Guide of How to Order

CODE..... 65 - 15 - 06

Name ..... Ammonia compound gauge
Type of Casing ..... Round rim case
Purpose Where Used .....
Type of Fitting Connection .. Hexagonal nut attached
Connection Size ..... PF1/4"
Diameter of Gauge ..... 100 mm
Pressure Range ..... 0 ~ 100 kgf/cm²

Refrigerant Compound Gauges

Designed for use with refrigerants that are not corrosive to bronze. Equipped with a plain rotary, non-rust movement and a brass seamless Bourdon spring. Brass case, self-finish colour with brass ring.



Guide of How to Order

CODE..... 65 - 15 - 11

Name..... Refrigerant compound gauge
Type of Casing ..... Rimless
Kind of Refrigerant..... R-22
Type of Fitting Connection ... Hexagonal nut attached
Connection Size..... PF1/4"
Diameter of Gauge..... 100 mm
Pressure Range ..... 0 - 17 kgf/cm²

Glycerine Filled Pressure Gauges

Vibration – Resistant

The internal mechanism for the pointer operation is filled with glycerine to protect the accuracy of the gauge from mechanical vibration and to extend the working life of the gauge.

Guide of How to Order

CODE..... 65 - 15 - 16

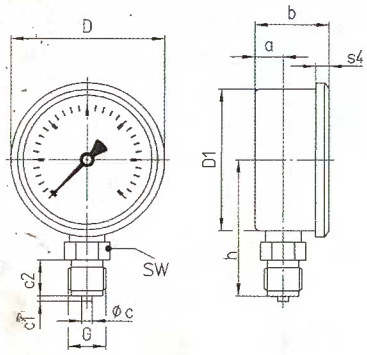
Name..... Pressure gauge, glycerine filled
Type of Casing ..... Round rim case
Purpose Where Used..... Vibration service
Type of Fitting Connection ... Square shank
Connection Size..... PF1/2"
Diameter of Gauge..... 75 mm
Pressure range..... 0 - 15 kgf/cm²

Pressure Gauges

Filled with Glycerine

These gauges can be used for any gaseous media or low viscous fluid that does not corrode the brass parts. Their special mechanical design and case filling provide best properties for the use in marine applications.

Bottom Connection Direct Mounting (Fig. 1)



Dimensions according to drawing (mm)

NG	D	D1	b	c	c1	c2	G	h	SW
63	62	67	35	5	2	13	G1/4B	54	14
80	79	86	44	6	3	20	G1/2B	76	22
100	99	106	55	6	3	20	G1/2B	87	22

Unit Per Pc.

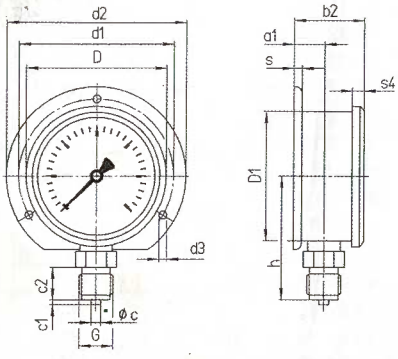
CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 31 01	-1 ~ 1.5	63	MREM11151500G
65 31 02		80	MREG21151500G
65 31 03		100	MREM31151500G
65 31 04	-1 ~ 3	63	MREM11152500G
65 31 05		80	MREG21152500G
65 31 06		100	MREM31152500G
65 31 07	-1 ~ 5	63	MREM11153500G
65 31 08		80	MREG21153500G
65 31 09		100	MREM31153500G
65 31 10	-1 ~ 9	63	MREM11154500G
65 31 11		80	MREG21154500G
65 31 12		100	MREM31154500G
65 31 13	0 ~ 4	63	MREM11105500G
65 31 14		80	MREG21105500G
65 31 15		100	MREM31105500G
65 31 16	0 ~ 6	63	MREM11106500G
65 31 17		80	MREG21106500G
65 31 18		100	MREM31106500G
65 31 19	0 ~ 10	63	MREM11107500G
65 31 20		80	MREG21107500G
65 31 21		100	MREM31107500G
65 31 22	0 ~ 16	63	MREM11108500G
65 31 23		80	MREG21108500G
65 31 24		100	MREM31108500G
65 31 25	0 ~ 25	63	MREM11109500G
65 31 26		80	MREG21109500G
65 31 27		100	MREM31109500G
65 31 28	0 ~ 40	63	MREM11110500G
65 31 29		80	MREG21110500G
65 31 30		100	MREM31110500G
65 31 31	0 ~ 60	63	MREM11111500G
65 31 32		80	MREG21111500G
65 31 33		100	MREM31111500G
65 31 34	0 ~ 100	63	MREM11112500G
65 31 35		80	MREG21112500G
65 31 36		100	MREM31112500G
65 31 37	0 ~ 160	63	MREM11113500G
65 31 38		80	MREG21113500G
65 31 39		100	MREM31113500G

(to be continued)

Unit Per Pc.

CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 31 40	0 - 250	63	MREM11114500G
65 31 41		80	MREG21114500G
65 31 42		100	MREM31114500G
65 31 43	0 - 400	63	MREM11115500G
65 31 44		80	MREG21115500G
65 31 45		100	MREM31115500G
65 31 46	0 - 600	63	MREM11116500G
65 31 47		80	MREG21116500G
65 31 48		100	MREM31116500G

Bottom Connection with Back Flange (Fig. 2)



Dimensions (mm)

NG	D	D1	b2	c	c1	c2	d1	d2	d3	G	h	SW
63	62	67	38	5	2	13	75	85	3.7	G1/4B	54	14
80	79	86	46	6	3	20	95	110	4.8	G1/2B	76	22
100	99	106	58.5	6	3	20	116	132	4.8	G1/2B	87	22

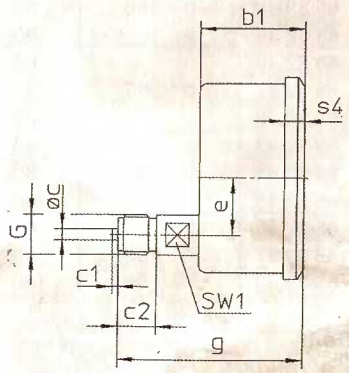
Unit Per Pc.

CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 31 51	-1 ~ 1.5	63	MREM11151510G
65 31 52		80	MREG21151510G
65 31 53		100	MREM31151510G
65 31 54	-1 ~ 3	63	MREM11152510G
65 31 55		80	MREG21152510G
65 31 56		100	MREM31152510G
65 31 57	-1 ~ 5	63	MREM11153510G
65 31 58		80	MREG21153510G
65 31 59		100	MREM31153510G
65 31 60	-1 ~ 9	63	MREM11154510G
65 31 61		80	MREG21154510G
65 31 62		100	MREM31154510G
65 31 63	0 ~ 4	63	MREM11105510G
65 31 64		80	MREG21105510G
65 31 65		100	MREM31105510G
65 31 66	0 ~ 6	63	MREM11106510G
65 31 67		80	MREG21106510G
65 31 68		100	MREM31106510G
65 31 69	0 ~ 10	63	MREM11107510G
65 31 70		80	MREG21107510G
65 31 71		100	MREM31107510G
65 31 72	0 ~ 16	63	MREM11108510G
65 31 73		80	MREG21108510G
65 31 74		100	MREM31108510G
65 31 75	0 ~ 25	63	MREM11109510G
65 31 76		80	MREG21109510G
65 31 77		100	MREM31109510G

(to be continued)

65 31 78	0 ~ 40	63	MREM11110510G
65 31 79		80	MREG21110510G
65 31 80		100	MREM31110510G
65 31 81	0 ~ 60	63	MREM11111510G
65 31 82		80	MREG21111510G
65 31 83		100	MREM31111510G
65 31 84	0 ~ 100	63	MREM11112510G
65 31 85		80	MREG21112510G
65 31 86		100	MREM31112510G
65 31 87	0 ~ 160	63	MREM11113510G
65 31 88		80	MREG21113510G
65 31 89		100	MREM31113510G
65 31 90	0 - 250	63	MREM11114510G
65 31 91		80	MREG21114510G
65 31 92		100	MREM31114510G
65 31 93	0 - 400	63	MREM11115510G
65 31 94		80	MREG21115510G
65 31 95		100	MREM31115510G
65 31 96	0 - 600	63	MREM11116510G
65 31 97		80	MREG21116510G
65 31 98		100	MREM31116510G

Rear Connection with Direct Mounting (Fig. 3)



Dimensions (mm)

NG	D	D1	b1	c	c1	c2	e	G	g	SW
63	62	67	36	5	2	13	18	G1/4B	58	14
80	79	86	38.5	6	3	20	-	G1/2B	82	22
100	99	106	55	6	3	20	30	G1/2B	97	22

Unit Per Pc.

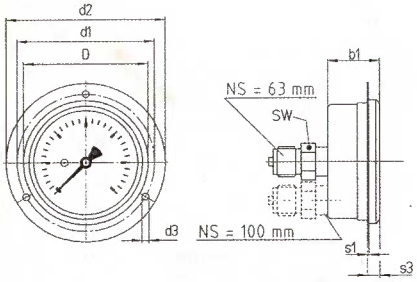
CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 32 01	-1 ~ 1.5	63	MREM15151500G
65 32 02		80	MREG22151500G
65 32 03		100	MREM32151500G
65 32 04	-1 ~ 3	63	MREM15152500G
65 32 05		80	MREG22152500G
65 32 06		100	MREM32152500G
65 32 07	-1 ~ 5	63	MREM15153500G
65 32 08		80	MREG22153500G
65 32 09		100	MREM32153500G
65 32 10	-1 ~ 9	63	MREM15154500G
65 32 11		80	MREG22154500G
65 32 12		100	MREM32154500G
65 32 13	0 ~ 4	63	MREM15105500G
65 32 14		80	MREG22105500G
65 32 15		100	MREM32105500G
65 32 16	0 ~ 6	63	MREM15106500G
65 32 17		80	MREG22106500G
65 32 18		100	MREM32106500G

(to be continued)

Unit Per Pc.

CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 32 19	0 ~ 10	63	MREM15107500G
65 32 20		80	MREG22107500G
65 32 21		100	MREM32107500G
65 32 22	0 ~ 16	63	MREM15108500G
65 32 23		80	MREG22108500G
65 32 24		100	MREM32108500G
65 32 25	0 ~ 25	63	MREM15109500G
65 32 26		80	MREG22109500G
65 32 27		100	MREM32109500G
65 32 28	0 ~ 40	63	MREM15110500G
65 32 29		80	MREG22110500G
65 32 30		100	MREM32110500G
65 32 31	0 ~ 60	63	MREM15111500G
65 32 32		80	MREG22111500G
65 32 33		100	MREM32111500G
65 32 34	0 ~ 100	63	MREM15112500G
65 32 35		80	MREG22112500G
65 32 36		100	MREM32112500G
65 32 37	0 ~ 160	63	MREM15113500G
65 32 38		80	MREG22113500G
65 32 39		100	MREM32113500G
65 32 40	0 - 250	63	MREM15114500G
65 32 41		80	MREG22114500G
65 32 42		100	MREM32114500G
65 32 43	0 - 400	63	MREM15115500G
65 32 44		80	MREG22115500G
65 32 45		100	MREM32115500G
65 32 46	0 - 600	63	MREM15116500G
65 32 47		80	MREG22116500G
65 32 48		100	MREM32116500G

Rear Connection with Front Flange (Fig.4)



Dimensions (mm)

NG	D	D1	b	d1	d2	d3	e	G	g	SW
63	62	67	35	75	85	3.7	18	G1/4B	58	14
80	79	86	44	95	110	4.8	-	G1/2B	82	22
100	99	106	55	116	132	4.8	30	G1/2B	97	22

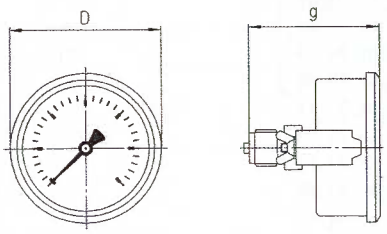
Unit Per Pc.

CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 32 51	-1 ~ 1.5	63	MREM15151520G
65 32 52		80	MREG22151520G
65 32 53		100	MREM32151520G
65 32 54	-1 ~ 3	63	MREM15152520G
65 32 55		80	MREG22152520G
65 32 56		100	MREM32152520G
65 32 57	-1 ~ 5	63	MREM15153520G
65 32 58		80	MREG22153520G
65 32 59		100	MREM32153520G

(to be continued)

65 32 60	-1 ~ 9	63	MREM15154520G
65 32 61		80	MREG22154520G
65 32 62		100	MREM32154520G
65 32 63	0 ~ 4	63	MREM15105520G
65 32 64		80	MREG22105520G
65 32 65		100	MREM32105520G
65 32 66	0 ~ 6	63	MREM15106520G
65 32 67		80	MREG22106520G
65 32 68		100	MREM32106520G
65 32 69	0 ~ 10	63	MREM15107520G
65 32 70		80	MREG22107520G
65 32 71		100	MREM32107520G
65 32 72	0 ~ 16	63	MREM15108520G
65 32 73		80	MREG22108520G
65 32 74		100	MREM32108520G
65 32 75	0 ~ 25	63	MREM15109520G
65 32 76		80	MREG22109520G
65 32 77		100	MREM32109520G
65 32 78	0 ~ 40	63	MREM15110520G
65 32 79		80	MREG22110520G
65 32 80		100	MREM32110520G
65 32 81	0 ~ 60	63	MREM15111520G
65 32 82		80	MREG22111520G
65 32 83		100	MREM32111520G
65 32 84	0 ~ 100	63	MREM15112520G
65 32 85		80	MREG22112520G
65 32 86		100	MREM32112520G
65 32 87	0 ~ 160	63	MREM15113520G
65 32 88		80	MREG22113520G
65 32 89		100	MREM32113520G
65 32 90	0 - 250	63	MREM15114520G
65 32 91		80	MREG22114520G
65 32 92		100	MREM32114520G
65 32 93	0 - 400	63	MREM15115520G
65 32 94		80	MREG22115520G
65 32 95		100	MREM32115520G
65 32 96	0 - 600	63	MREM15116520G
65 32 97		80	MREG22116520G
65 32 98		100	MREM32116520G

Rear Connection with U-clamp fixing (Fig. 5)



Dimensions (mm)

NG	D	D1	b	c	c1	c2	e	G2	g	SW1
63	62	67	35	5	2	13	18	G1/4B	58	14
80	79	86	44	6	3	20	-	G1/2B	82	22
100	99	106	55	6	3	20	30	G1/2B	97	22

Unit Per Pc.

CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 33 01	-1 ~ 1.5	63	MREM15151530G
65 33 02		80	MREG22151530G
65 33 03		100	MREM32151530G

(to be continued)

Unit Per Pc.

CODE	Measuring Range (bar)	Dial Size mm	SIKA Code
65 33 04	-1 ~ 3	63	MREM15152530G
65 33 05		80	MREG22152530G
65 33 06		100	MREM32152530G
65 33 07	-1 ~ 5	63	MREM15153530G
65 33 08		80	MREG22153530G
65 33 09		100	MREM32153530G
65 33 10	-1 ~ 9	63	MREM15154530G
65 33 11		80	MREG22154530G
65 33 12		100	MREM32154530G
65 33 13	0 ~ 4	63	MREM15105530G
65 33 14		80	MREG22105530G
65 33 15		100	MREM32105530G
65 33 16	0 ~ 6	63	MREM15106530G
65 33 17		80	MREG22106530G
65 33 18		100	MREM32106530G
65 33 19	0 ~ 10	63	MREM15107530G
65 33 20		80	MREG22107530G
65 33 21		100	MREM32107530G
65 33 22	0 ~ 16	63	MREM15108530G
65 33 23		80	MREG22108530G
65 33 24		100	MREM32108530G
65 33 25	0 ~ 25	63	MREM15109530G
65 33 26		80	MREG22109530G
65 33 27		100	MREM32109530G
65 33 28	0 ~ 40	63	MREM15110530G
65 33 29		80	MREG22110530G
65 33 30		100	MREM32110530G
65 33 31	0 ~ 60	63	MREM15111530G
65 33 32		80	MREG22111530G
65 33 33		100	MREM32111530G
65 33 34	0 ~ 100	63	MREM15112530G
65 33 35		80	MREG22112530G
65 33 36		100	MREM32112530G
65 33 37	0 ~ 160	63	MREM15113530G
65 33 38		80	MREG22113530G
65 33 39		100	MREM32113530G
65 33 40	0 - 250	63	MREM15114530G
65 33 41		80	MREG22114530G
65 33 42		100	MREM32114530G
65 33 43	0 - 400	63	MREM15115530G
65 33 44		80	MREG22115530G
65 33 45		100	MREM32115530G
65 33 46	0 - 600	63	MREM15116530G
65 33 47		80	MREG22116530G
65 33 48		100	MREM32116530G

Gauge-Pointer Pullers

A handy tool for taking off gauge pointers without damaging the gauge reading surface. Useful for almost all pressure, vacuum, and compound gauges or any other pointer types.

65 15 51	Gauge pointer puller	Pc.

Performance Testing Kits

for Pressure Switches and Pressure Gauges

A kit specifically designed to test the performance reliability of pressure switches or pressure gauges. The unit works by applying regulated amounts of air or oil pressure upon the switch or gauge to check the level of accuracy with which the switch or gauge reacts. This unit is easy to operate, compact, and lightweight making it suitable for use in a variety of situations.

Depending upon the model type for this machine either the oil pressure gauges or oil and air pressure gauges can be tested.

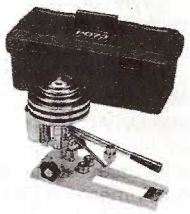
Unit Per Set

CODE	**65 15 61**	**65 15 62**	**65 15 63**
Model	AAH-001	AAH-003	AAH-004
Testing Application	Pressure Switch, Pressure Gauge		
Pseudo Input Pressure	Oil		Oil & Air
Input Adjusting Range	0-35 kg/cm²	0-35 kg/cm²	Oil press, 0-35 kg/cm² Air press, 0-8 kg/cm²
Input Indication Gauge	10 kg/cm² 50 kg/cm²	4 kg/cm² 10 kg/cm² 50 kg/cm²	Oil press, 5 kg/cm² 35 kg/cm² 50 kg/cm² Air press, 4 kg/cm² 10 kg/cm²
Measuring Accuracy	Class 0.5		
Dimensions	485 × 290 × 155 mm		
Weight	11 kgs		13 kgs

Name of Mfr.: Saginomiya Seisakusho Inc.

Dead-Weight Testers

Portable Type



Used as the standard pressure gauge for testing and calibration of other pressure gauges, and also as the standard pressure generator for devices used in research and production applications. Can be measured pressure simply and rapidly at any place.

A closely adjusting valve allows easy minute pressure change. A standard pressure gauge can be installed instead of a dead weight for pressure measurements.

Specifications-1

Model	Measuring Range MPa			Effective Sectional Area cm²	Dead-weight corresponds MPa		
					Piston		
	Max.	Min.	Smallest Division		0.05	0.1	0.2
PD-73	1	0.05	0.005	1/2	1		
	2		0.01		1		
	3				1		
	5		0.05		1		
	10	0.1		1/4		1	
	20	0.2				1	
	30	0.5	0.1	1/8			1
	50						1

Specifications-2

Measuring Range Max. MPa	Dead-weight corresponds MPa Dead-weight 0.005	0.01	0.02	0.05	0.1	0.2	0.3	0.5
1	1	1	2	2	8			
2		1	2	2	2	8		
3		1	2	2	2	1		5
5				1	2	1		9
10				1	2	1		1
20				1	2	1		1
30					1	2	1	1
50					1	2	1	1

Specifications-3

Measuring Range Max. MPa	Dead-weight corresponds MPa 1	2	5	Total	Net Weight of Entire Dead-weight kgs
1				1.005	5
2				2	10
3				3.1	16
5				5	26
10	9			10.05	26
20	3	8		20.05	51
30	1	2	5	31.5	40
50	1	2	9	51.5	66

Unit Per Set

CODE	Max. Measuring Range MPa	CODE	Max. Measuring Range MPa
65 15 65	1	**65 15 69**	10
66	2	**70**	20
67	3	**71**	30
68	5	**72**	50

Recalibration Sets

for Temperature and Pressure Calibrator

With dry block temperature calibrator and the pressure calibrator, the vessel have necessary calibrated test equipment according to SOLAS and DNV on board. According to these regulations the test equipment for temperature and pressure must be recalibrated. This set includes a temperature hand held instrument, a temperature reference sensor and a pressure reference. The temperature hand held instrument have 2 different models : MH 3710 for standard calibration requirements or MH 3750 for highest accuracy requirements.

With the temperature reference sensor TF 650-6-300, you can measure the actual accuracy of the dry block calibrator, and the pressure reference type D2, you can measure precision pressure.

Recalibration of temperature calibrators is done with recalibration instrument type MH 3710 or MH 3750 and temperature sensor type TF 650-6-300. Recalibration of pressure calibrators is done with recalibration instrument type D2.

Crew can make the recalibration on their own. Checking the recalibration set is very easy because only the small case has to be returned to manufacturer once a year.

Specifications

Temperature hand held instrument MH in combination with Temperature reference sensor TF

Measuring input	Pt100
Measuring range	-50.00...650.0 °C
Resolution up to	0.1 °C
Miscellaneous	Min. / max.-memory, hold function, auto-off
MH 3710 (Standard-Set)	Accuracy 0.3 % full scale
MH 3750 (Premium-Set)	Integrated alarm and data logger function • User-specific characteristic curve of sensor • Real-time clock with day, month and year • Measured value memory 16384 • Accuracy < ±0.2 °C
Temperature reference sensor TF 650-6-300	
Measuring range	-50...650 °C
Sensor	Stainless steel Tube D = 6 mm, L = 300 mm
Cable / Handle	Silicone cable (1 m) with 4-pin Mini-DIN-plug
Pressure reference type D2	
Functionality	• µC based with internal EEPROM • DMS pressure cell • Pressure- and temperature tested • Min. / max.-memory, hold function, auto-off
Pressure ranges	-1....40 bar / 0.01, -1....60 bar / 0.01, 0...400 bar / 0.1, 0...700 bar / 0.1, 0...1,000 bar / 0.1
Accuracy	< ±0.1 % full scale
Temperature range	0...50 °C
Degree of protection	IP67

Unit Per Set

CODE	Set consist of	
65 15 74	Temperature hand held instrument MH 3710	Temperature reference sensor TF650-6-300 and Pressure reference D2
65 15 73	Temperature hand held instrument MH 3750	

Name of Mfr. SIKA

Rechargeable Digital Pressure Calibrators

Designed for ease of use whilst meeting a wide range of application needs including calibration, maintenance and commissioning.

The dual parameter display shows the INPUT and OUTPUT vales in large clear digits.

PI600 - for micro pressure calibration
PI620 - for medium to low pressure calibration
PI670 - for high pressure calibration

Unit Per Set

CODE	**65 15 52**	**65 15 53**	**65 15 54**
Model	PI600	PI620	PI670
Pressure Range	-100 KPa to 100 KPa	-100 KPa to 20 MPa	0 to 70 MPa

(to be continued)

Accuracy	±0.05% F.S.±2 temperature effects : 0.001%/°C±	
mA Input	25 mA	
V Input	24V DC ±5%	
Pressure Media	Compatible gas	Diisooctyl sebacate
DC current Measurement	0 to 200 mA	
Battery	Rechargeable, one-time charging for 8 hours	
Display	4.5" LCD, 18mm Digits Height	
Dimension	270 x 110 x 70 mm	
Weight	2 kgs	2.5 kgs

Name of Mfr. : Clip-on

Digital Pressure Meters PM205/DMT-1

Digital pressure meter is a micro-processor controlled, accurate and versatile digital pressure measuring and calibration instrument with integrated fast peak-, max. -and min. – function. The instrument is used in two modes:

MANO Mode : The pressure is measured twice per second and displayed. The top display indicates the actual pressure, the bottom display shows the MAX, - or MIN.- pressure since the last RESET.

PEAK Mode : The pressure is measured 5,000 times per second and is brought to the display twice per second.

A ZERO function allows the user to set any value as a new zero reference. Barometric pressure variations can thus be compensated.

The digital pressure meter is supplied with an internal battery with 1,000 hours continuous operation in MANO-Mode, guaranteed by the AUTO SWITCH-OFF function, which activates if no key inputs are detected within the previous 15 minutes.

Supplied with all relevant certificates.

Unit Per Pc.

CODE	**65 15 21**
Model	PM205/DMT-1
Pressure Range (R)	3 - 30 - 60 - 300 - 700 - 1,000 bar
Readings per Second	5,000 (PEAK mode)
Accuracy	± 0.2% FS
Zero Function	Yes
Peak Function	Max. or Min.
Display	LCD
Selectable Read out	bar. mbar/hPa, kPa, MPa, PSI, kp/cm²
Standard Process Coupling	1/4" BSP male
Power Supply	Lithium battery 3.0V size CR2430
Battery Life	1,000 hours continuous operation in MANO-Mode 150 hours continuous operation in PEAK-Mode
Protection Class (EN 60529)	IP65
Dimensions H x D x W	118 mm x 42 mm x 76 dia mm
Weight	0.21 kgs

Name of Mfr.: Scan Sense

Pressure Calibrators

PM305/310L/310H, Ex models

PM305 is a self-contained portable pressure meter for commissioning, service, calibration and maintenance. PM305 is supplied with integral pressure sensor, signal-conditioning electronics, graphic display and internal battery. This can be supplied in ranges up to 1,200 bar with internal or external sensor. The optional PreCal Windows® based software will enable automatic calibration and generate test reports which will comply with ISO 9000 requirements.

PM310L - for low pressure calibration
Using PM305 together with a small hand pump it works as a complete, portable, one-hand operated pressure calibrator named PM310L. The hand pump mounted directly on the pressure inlet of PM305 makes it possible to generate pressures from 0 to 40/60 bar (G) using dry air as pressure medium. PM310L is supplied in a case with a complete kit of test hose and fittings.

PM310H – for high pressure calibration
Using PM305 together with a hydraulic pump a unique handheld high pressure calibrator named PM310H. Originally designed for use on North sea platforms, the PM310H is extremely rugged and is made for field use. Using oil or water as a pressure medium, the PM310H generates pressure up to 700 bar (G) with accuracy of 0.03% FS. PM310H is supplied ready to use in carrying case complete with test hose and fittings.

Unit Per Set

CODE	**65 15 77**	**65 15 78**	**65 15 79**
Model	PM305	PM310L	PM310H
Pressure Range	0 to 1,200 Bar	0 to 60 Bar	0 to 700 Bar
Accuracy	± 0.03% FS. (10 - 40°C), temperature effects: 0.001% of reading/°C		
mA Input	0-30 mA (± 0.03% FS.)**		
V Input	0-15 VDC (± 0.05% FS.)**		
Pressure Media	All liquids/gas compatible with wetted parts alloy	All liquids/gas compatible with wetted parts alloy	Oil or distillate water
Functions	Programmable: Input mA/mV/V/Switch Test, Range, Conversion, Engineering units, Filter. Min/Max/Tare, History log, Internal/External sensor, Battery indicator, Leak test, Selectable language (optional), Remote operation (optional).		
Engineering Units	Bar, kPa, Mpa, atm, psi (lb/in²), at (kgf/cm²), torr, mHg at 0°C, in Hg at 32°F, cmH_2O at 4°C, mH_2O at 4°C, in H_2O at 39.2°F		
EEx / IS certification	EEx ia IIC T4 "Ex Mark", NEMKO 02ATEX 1374X		
ATEX production notification	NEMKO 02ATEX445Q ATEX according to directive 94/9/EC		
Dimensions W × H × D	92 × 105 × 33 mm		
Weight	650 grm	1.4 kgs	3.6 kgs

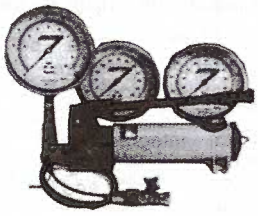
Remark : ** Ambient temperature 25°C, temperature effect: ± 0.008%/°C

Name of Mfr. : Scan Sense

7TH 65

Marine Gauge Calibrators

Model JF MGC



The MGC series is using quality mechanical gauges as pressure reference. Connect the reference gauge and the unit-under-test to the hydraulic pump and calibrate.

The MGC-LOW consists of 2 or 3 dual-scaled precision pressure gauges with ±1% F.S. accuracy and a hydraulic handpump fitted with hose, valve, and couplings.

The MGC-HIGH consists of 3 or 4 dual-scaled precision pressure gauges with ±0.6% F.S. accuracy and a hydraulic jack pump fitted with hose, valve and couplings. The gauges provide a clear indication of pressure for comparison to the unit-under-test. The operator can then identify the extent of any error and adjust or replace faulty pressure indicators.

Major Feature :

- Accuracy to ±0.6% F.S. of connected gauge.
- Pressure range 0 to 300 bar.
- 2 different models.
- Pressure units bar and kg/cm², dual scale.
- Dual scale and easy-to-read gauges.
- Hydraulic pumps.

Unit Per Set

CODE	65 15 98	65 15 99
Model	MGC-LOW	MGC-HIGH
Pressure Specification	0 to 300 bar	
Accuracy	±1% F.S. of connected gauge	±0.6% F.S. of connected gauge
Pressure Units	bar and kg/cm², dual scale	
Pressure Medium	Hydraulic oil	
Dimensions mm	530 x 130 x 390	640 x 420 x 200
Weight kgs	6	11
Type Approval Certificate	DNV Marine Approval No. A-10549	

Name of Mfr.: Ametek Calibration Instruments

Standard Delivery

MGC-LOW	MGC-HIGH
2-3 gauges (select system) - System 1: 6 and 16 bar & kg/cm² - System 2: 16 and 40 bar & kg/cm² - System 3: 40 and 100 bar & kg/cm² - System 4: 10, 40 and 300 bar & kg/cm²	3-4 gauges (select system) - System 1: 6, 16 and 40 bar & kg/cm² - System 2: 10, 40, 100 and 300 bar & kg/cm² - System 3: 10, 40 and 100 bar & kg/cm² - System 4: 10, 40 and 300 bar & kg/cm²
Carrying case, plastic	Carrying case, aluminium
T-620 hydraulic pump or T-620 H	P-142 hydraulic pump
1.64 ft (0.5 m) hose	16.4 ft (5 m) hose
BSP adapters: 1/4" BSP male x 1/4" BSP male (60R115) 1/4" BSP female x 1/4" BSP female (60R324) 1/4" BSP female x 3/8" BSP female (60R325) 1/2" BSP female x 1/4" BSP female (60R326) 1/4" BSP female x 3/4" BSP female (60R327)	BSP adapters: 1/4" BSP male x 1/4" BSP male (60R115) 1/4" BSP female x 1/4" BSP female (60R324) 1/4" BSP female x 3/8" BSP female (60R325) 1/2" BSP female x 1/4" BSP female (60R326) 1/4" BSP female x 3/4" BSP female (60R327)
Traceable calibration certificate	Traceable calibration certificate
User manual	User manual

Ordering Information

Model MGC-LOW Series

Order Number		Description
		Base Model Number
MGC-LOW		MGC-LOW Gauge Calibrator
		System
	System 1	2 gauges: 6 and 16 bar / kg/cm²
	System 2	2 gauges: 16 and 40 bar / kg/cm²
	System 3	2 gauges: 40 and 100 bar / kg/cm²
	System 4	3 gauges: 10, 40 and 300 bar/kg/cm²
MGC-LOW	System 1	Sample order number JOFRA MGC-LOW System 1 with 2 gauges: 6 and 16 bar / kg/cm² (dual-scale) and standard accessories

Model MGC-HIGH Series

Order Number		Description
		Base Model Number
MGC-HIGH		MGC-HIGH Gauge Calibrator
		System
	System 1	3 gauges: 6, 16 and 40 bar / kg/cm²
	System 2	4 gauges: 10, 40, 100 and 300 bar / kg/cm²
	System 3	3 gauges: 10, 40 and 100 bar / kg/cm²
	System 4	3 gauges: 10, 40 and 300 bar / kg/cm²
MGC-HIGH	System 1	Sample order number JOFRA MGC-HIGH System 1 with 3 gauges: 6, 16 and 40 bar / kg/cm² (dual-scale) and standard accessories

Portable Load Weighing Shackle Kits

LS-3200-PLW

A portable load weighing kit for accurate weighing and force measurements. Compact and rugged construction, Eex ia intrinsically safe system. Shackle type, range from 12 to 120 tons. Supplied with a handheld reader for readout and storage of data and with traceable certificate so it can be used as a reference for verification or test of lifting equipment, dead-end anchor and deck machinery.

Applications

Hoisting and cranes security / Hoisting gear, elevators and winches / Stationary weighing / General industry (harsh environment) / Offshore / Marine and harbour environments

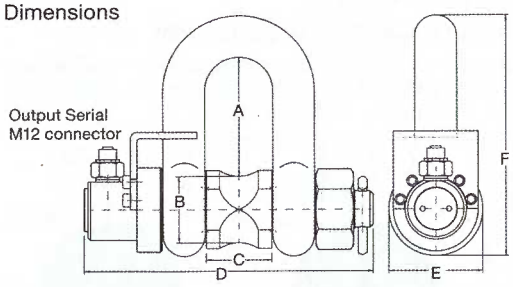
Specifications	
Mechanical Characteristics Load Cell	
Nominal Load, fs (Metric)	12 ton / 17 ton / 25 ton / 35 ton / 55 ton / 85 ton / 120 ton
Overload Admissible	150% of rated load without zero charge
Safety Factor (0.2% yield)	5 x fs
Material in Loadcell	Stainless steel
Protection Class	IP67
Electrical Characteristics Load Cell	

(to be continued)

(to be continued)

Operating Principle	Full bridge strain gauge
Strain Gauge Bridge Impedance	4,000 Ω
Output Signal	Rated load, equal mV/V
Power Supply	Universal reader
EMC	EN 55011A (1999)/ EN 61000-6-2 (1999)
Ex	Eex ia IIC T5 (acc. to ATEX 94/9/EC)
Electrical Connection Load Cell and Universal Reader	
Cable Length (Standard)	6 mtr
Specifications Universal Reader	
Display	Graphic LCD, 5 digits
Functions	Min/Max/Tara, History Log, Battery Indicator
Unit	Kg, lb, ton, sh tn
Power Supply	Re-chargeable batteries
Operating Time on Batteries	Approximately 35 hours
EMC	EN 55011A (1999)/ EN 61000-6-2 (1999)
Ex	Eex ia IIC T5 (acc. to ATEX 94/9/EC)
Material in Universal Reader	Anodized aluminium
Protection Class	IP67
Overall Dimensions	90 x 236 x 33 mm (WxHxD)
Weight (nominal)	800 grm

Dimensions



Type	Ton	Size mm						Weight kgs
		A	B	C	D	E	F	
5SPS012	12	92	51	50	213.5	72	185.5	5
5SPS017	17	113	59	58	227.5	84	223	9
5SPS025	25	138	70	71	260	105	271	14
5SPS035	35	160	80	80	286.5	127	313.5	21
5SPS055	55	240	100	101	353	152	431	38
5SPS085	85	287	166	122	411.5	165	539	63
5SPS120	120	334	164	140	467.5	203	618	112

How to order : CODE

Portable load weighing kits PART NO., including : Shackle Loadcell (Choose from table below) Universal Reader, LS - 3200 - UR, Carrying case / Foam, Spare battery, Charger 90 - 260 VAC, 6 meter cable, Manual PLW kit, Calibration certificate

Unit Per Set

CODE	Part No.	Nominal Load Ton	Dimensions L x W x H	Weight kgs
Standard Type				
65 16 01	5SPS012-PLW-202	12	521 x 427 x 217	10
02	5SPS017-PLW-202	17		15
03	5SPS025-PLW-202	25		20
04	5SPS035-PLW-202	35		27
65 16 05	5SPS055-PLW-202	55	625 x 495 x 305	48
06	5SPS085-PLW-202	85	800 x 581 x 479	75
07	5SPS120-PLW-202	120		125
Intrinsically Safe Type (Eex ia IIC T5)				
65 16 11	5SPS012-PLW-212	12	521 x 427 x 217	10
12	5SPS017-PLW-212	17		15
13	5SPS025-PLW-212	25		20
14	5SPS035-PLW-212	35		27
15	5SPS055-PLW-212	55	625 x 495 x 305	48
16	5SPS085-PLW-212	85	800 x 581 x 479	75
17	5SPS120-PLW-212	120		125

Name of Mfr.: ScanSense

(to be continued)

Marine Calibration Kits

The "All-in-one" marine calibration test case will meet any application for temperature-, pressure-, and electrical calibration onboard equip the case according to your needs and budget, and have necessary calibrated test equipment required by IMO/SOLAS ready when needed.
A completely family of the tools for maintenance of the following control instrumentations ; Main and auxiliary engines, Propulsion, Main and auxiliary boilers, Hydraulic plant, Sea water cooling, Refrigeration plant, Fresh water systems, Heads and bathrooms, Ballast and bilge pumps, Cargo holds, and so on.

Test Equipment Components

Certificates	All calibrators and test-instruments are supplied with traceable certificates. The marine test case is approved by DNV Class.
Temperature Calibrators	Select either the low temperature (-40°C below ambient to 150°C) or the high temperature (30°C to 650°C) unit for your vessel.
Pressure Calibrators	Compact, rugged and easy to use. Pressure ranges from vacuum to high pressure (1,000 bar) with different levels of accuracy (0.25% to 0.03% FS) available. Also, intrinsically safe (Ex) models for LNG/LPG vessels is available on request.
Electrical Calibrators and Test Instruments	Digital multimeters, current clamps, insulation testers, infrared (IR) thermometers and signal simulators are among the most common instruments used.
Pressure Pumps, Test Hose and Adapters	Three different models are available to cover the range of vacuum to 1,000 bar. The case is equipped with test hose, connectors and adapters (BSP and NPT) according to the selected pressure range.

How to order : 65 - 16 - 21

Marine calibration kit, Scan Sense, with following information (set);
1) Temperature calibrators
- Low temperature (-40°C to 150°C).
Or:
- High temperature (30°C to 650°C).
2) Pressure calibrators
- Level of accuracy from 0.25% to 0.03% FS.
- Specify accuracy, range and if intrinsically model is required.

Name of Mfr. : ScanSense

Pressure Calibrators

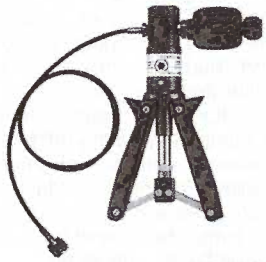
Series PM

Reference pressures of -1 up to 1,000 bar can be generated in a fast and simple way by these pressure calibrators with high accuracy of measurement and compact type of construction. Exact adjustment of the desired pressure is carried out by a precision adjustment valve. The reference pressure is indicated via an analogue precision pressure gauge or a digital LCD.

The instruments under test are connected to the pressure output of the calibrators by a pressure hose and an adapter. Power is supplied by batteries or rechargeable accumulators. The automatic measuring range switch of the PM series grants an optimal resolution with any application. Different measurement units can be selected by pressing a function key.

Pressure Medium : Air

P40.2/P60



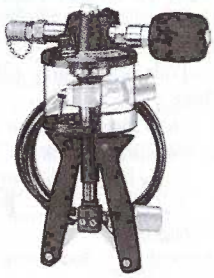
Unit Per Set

CODE	65 16 31	65 16 32
Model	P 40.2	P 60
SIKA Code	EPPM0400BL0000	EPPM0600BL0000
Pressure Range	Vacuum -0.95 bar Pressure 40 bar	Vacuum -0.95 bar Pressure 60 bar
Pressure Connection - References - Device Under Test	1/4 BSP 1/4 BSP with quick-coupling and pressure hose (1 mtr)	
Adapter Set	1/8 BSP, 1/4 BSP, 3/8 BSP, 1/2 BSP, NPT 1/8, NPT 1/4, NPT 1/2, M12 x 1.5, M20 x 1.5 and 1/8 BSP male, 1/4 BSP male	
Set of Seals	Flat seals (FEP) and O-rings	
Dimensions: - Pump with Pressure Hose - Pump with Accessories in Case	Approx. 240 x 170 x 50 mm Approx. 450 x 370 x 110 mm	
Weight: - Pump with Pressure Hose - Pump with Accessories in Case	Approx 1.1 kgs Approx 4.2 kgs	

Name of Mfr.: SIKA

Pressure Medium: Pure Water or Hydraulic Oil

P700.3/P1000.2



Unit Per Set

CODE	65 16 33	65 16 34
Model	P 700.3	P 1000.2
SIKA Code	EPPM7000BL0003	EPPM1K0BL0000
Pressure Range	with distilled water 0 - 700 bar with hydraulic fluid 0 - 700 bar	with distilled water 0 - 1,000 bar with hydraulic fluid 0 - 1,000 bar
Pressure Connection - References - Device Under Test	G 1/4 G 1/4 with quick-coupling and pressure hose (1 mtr)	
Adapter Set	G 1/8, G 1/4, G 3/8, G 1/2, NPT 1/8, NPT 1/4, NPT 1/2, M12 x 1.5, M20 x 1.5 and G 1/8 male, G 1/4 male	
Set of Seals	PA seals and O-rings	
Dimensions: - Pump with Pressure Hose - Pump with Accessories in Case	Approx. 255 x 225 x 85 mm Approx. 450 x 370 x 125 mm	
Weight: - Pump with Pressure Hose - Pump with Accessories in Case	Approx 1.8 kgs Approx 4.8 kgs	

Name of Mfr.: SIKA

Reference Gauges

for Pressure Calibrator Series PM

All hand-held pressure pumps and reference gauges can be combined for different measuring ranges, resolutions and accuracy classes, as outlined below.

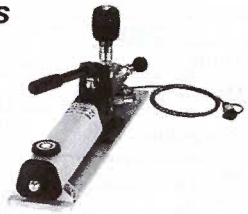
	Reference E2 (0.5% FS / Range: 0 – 1,000 bar)	Reference D2 (0.1% FS / Range: 0 – 1,000 bar)
P 40.2	PM 40.2 E2 (40 bar) 0.5% FS	PM 40.2 D2 (40 bar) 0.1% FS
P 60	PM 60 E2 (60 bar) 0.5% FS	PM 60 D2 (60 bar) 0.1% FS
P 700.3	PM 700.3 E2 (400 bar) 0.5% FS (700 bar) 0.5% FS	PM 700.3 D2 (400 bar) 0.1% FS (700 bar) 0.1% FS
P 1000.2	PM 1000.2 E2 (1,000 bar) 0.5% FS	PM 1000.2 D2 (1,000 bar) 0.1% FS

Unit Per Pc.

CODE	Type	Measuring Range	Resolutions	SIKA Code
65 16 35	E2 (40)	1 to 40 bar	0.01 bar	EME8REF-E2-0040
42	E2 (60)	1 to 60 bar	0.01 bar	EME8REF-E2-0060
36	E2 (400)	0 to 400 bar	0.1 bar	EME8REF-E2-0400
43	E2 (700)	0 to 700 bar	0.1 bar	EME8REF-E2-0700
44	E2 (1000)	0 to 1,000 bar	0.1 bar	EME8REF-E2-1000
65 16 37	D2 (40)	1 to 40 bar	0.01 bar	EME8REF-D2-0040
38	D2 (60)	1 to 60 bar	0.01 bar	EME8REF-D2-0060
39	D2 (400)	0 to 400 bar	0.1 bar	EME8REF-D2-0400
40	D2 (700)	0 to 700 bar	0.2 bar	EME8REF-D2-0700
41	D2 (1000)	0 to 1,000 bar	0.2 bar	EME8REF-D2-1000

Name of Mfr.: SIKA

Table Top Test Pumps



The latest generation of comparison test pumps combines precision - also with high pressures - and high manufacturing quality. Hydraulic fluid is used as the test medium.

Although it is compactly built, it provides a big nylon tank with a usable tank volume of 327 cm³. In combination with a delivery volume of 0.9 cm³ per piston stroke, it provides the opportunity of testing multiple test samples in parallel. They are installed directly on the delivered pressure hose or via a separate distributor block therefore saving time and making your test tasks very efficient. The integrated check valve within the pressure vessel very quickly leads to stable pressure states. The integrated safety valve protects from overloading.

Unit Per Pc.

CODE	65 16 45
Type	P 700T
Pressure Range	With hydraulic fluid : 0 – 700 bar
OEM version	
Dimensions Weight	500 x 110 x 160 mm 5.6 kgs
Connections	
Reference	G 1/4
Test sample	G 1/4 with quick coupling and pressure hose 1 mtr
Full version	
Adapter kit	Stainless steel
Gasket kit	PA seals and O rings
Dimensions Weight	575 x 470 x 230 mm 10.2 kgs

Name of Mfr. : SIKA

Cabin Thermometers

For measuring temperature in a range of -30°C to +50°C. The overall length of the thermometer is 250 mm and it is graduated in 10° increments.

65 17 01	Cabin thermometer -30° to 50°C 250 mm	Pc.

Maximum–Minimum Thermometers

U-shaped thermometer tube. Magnifying lens tubes have special metal indices for registering the highest and lowest readings. These are reset by a small magnet. Temperature range -20°C to +50°C and approx. 350 mm in overall length.

65 17 06	Thermometer, maximum - minimum, U-shape with magnet -20° to + 50°C	Set

Seawater Thermometers

Copper Cased

Alcohol thermometer with a copper protection case and a ring for the line attachment and seawater sampler. The temperature range is -20°C to 50°C. The overall length of the thermometer is 300 mm.

65 17 10	Thermometer, seawater, copper cased -20° to + 50°C	Pc.

Thermometers for Refrigerator Use

Metal Cased with Ring

S.S. Backing with Magnet

A wide variety of types are available. The most common types are listed below.

Unit Per Pc.

CODE	65 17 15	65 17 16	65 17 17
Type	Metal Cased with Ring	S.Steel Backing with Magnet	Wooden Plate Backing
Range	-20° to 50°C	-30° to 50°C	-30° to 50°C
Graduation	1°C	1°C	1°C

Meat Thermometers

Dial bimetallic thermometer for measuring the internal temperature of meat or fish.

Range -70°C to +50°C graduated in 2°C intervals. Dial size 65 mmø. Stem 8 mmø x 230 mm pointed end waterproof.

65 17 20	Meat thermometer, dial, -70° to + 50°C	Pc.

Meat Thermometers

Digital Type

Compact and can be easily used with one hand to measure the internal temperature of fruits, vegetables, beef, processed foods, and various kinds of frozen of cooked food products. Useful in checking the condition of perishable cargo. This unit is easy to carry along when doing several samplings in refrigerated storage holds.

Specifications

Measuring Range	-50°C - +199.9°C
Increments	0.1°C
Accuracy	+/- (0.5% of rdg. +0.5°C)
Display Screen	LED screen
Sampling Time	About 3 times/second
Power Source	4 x LR6 (AM-3) alkali batteries / continuous use for 60 hrs.
Size	374 (H) x 50 (W) x 36 (D) mm
Weight	260 grm including batteries

65 17 22	Meat thermometer, digital, -50° to 199.9°C	Pc.

Test Thermometers

in Brass Case

Standard, laboratory grade, round white glass thermometer backed in enamel and filled with mercury or alcohol. The thermometer length is 300 mm or 450 mm and they are furnished in a chromed brass case.

Unit Per Set

CODE	Range	Length
65 17 23 24	Centigrade 0 - 500°C	300 mm 450 mm
65 17 25	Centigrade 0 - 100°C	300 mm
65 17 26	Fahrenheit 32 - 212°F	300 mm

Spare Glass Thermometers

Spare glass thermometers for the above brass cased test thermometers.

Unit Per Pc.

CODE	Range	Length
65 17 27	Centigrade 0 - 100°C	300 mm
65 17 28	Fahrenheit 32 - 212°F	300 mm
65 17 29 30	Centigrade 0 - 500°C	300 mm 450 mm

Pocket Test Thermometers

Graduation -20°C to +50°C, 150 mm in length. Furnished in a carrying case with a pocket clip. Thermometer is securely attached to the cap by screws.

65 17 32	Thermometer, test, pocket type, -20° to + 50°C, 150 mm	Pc.

Pocket Bimetal Dial Thermometers

Ideal for spot checking by inspectors in various industries. Furnished with a hard rubber carrying case with a pocket dip attached. The dial is made of stainless steel with a diameter of 25 mm. Furnished in a 3.8 mm diameter, 125 mm long hard rubber case.

Unit Per Pc.

CODE	65 17 35	65 17 36	65 17 37	65 17 38
Range	-30° to 50°C	0° to 100°C	0° to 150°C	0° to 200°C
Graduation	1°C	2°C	2°C	5°C

Tank Thermometers

in Brass Case with Sampler

Glass made thermometer scale with brass case. Range is -10°C to +100°C and 14° to 212°F. Provided with a sampler at the lower end of the brass casing which will keep the liquid preserved for the most accurate reading. Overall length 265 mm.

65 17 42	Tank thermometer in brass case with sampler -10° to + 100°C, 265 mm	Pc.

Digital Thermometers

A handy, economical, compact thermometer which consistently provides high precision and accuracy regardless of environmental conditions. Designed to work effectively without much power and will work continuously.

An assortment of temperature probes are available to accommodate different applications. Most commonly used to monitor bearings, pumps, electrical motors and other heat generating machinery.

Unit Per Pc.

CODE	65 17 53
Model	TMDT2
Measuring Range	-200 to 1,350°C
Resolution	0.1°C (-100° ...1,000°) 1°C (≦ -100°, ≧1,000°)
Accuracy	0.5°C / 0.9°F
Battery	9V alkaline IEC 6LR61 (AM-3)
Size	165 x 75 x 22 mm
Weight	200 grm
Name of Mfr	SKF

Thermosensors

for Digital Thermometer

Various types of thermosensors designed for use with the above mentioned thermometers are listed below with their respective specifications.

*** For TMDT2 (65 17 53)**

Unit Per Pc.

CODE	Measurement	Application	Temp. Range
65 17 71	Standard Surface	For hard surfaces such as bearings, engine blocks, etc.	900°C
65 17 72	Magnetic Surface	For hard, magnetic surface.	240°C
65 17 73	Insulated Surface	For hard surfaces where electrical wiring might cause short circuiting.	200°C
65 17 74	Right Angle Surface	For hard surface in heavy duty applications.	450°C
65 17 75	Gas and Liquid	For liquids such as oils, acids, etc. 3 mm shank.	1,100°C
65 17 76	Gas and Liquid	Same as above, but 1.5 mm shank.	900°C
65 17 77	Pipe Clamp	For pipes, cables, etc.	200°C
65 17 78	High Temp. Wire	Thin, light weight, very fast response, ceramic insulation	1,350°C
65 17 79	Rotating	For moving or rotating, smooth surfaces/ roller bearings	200°C
65 17 80	Nonferrous Foundry	Holder incl. dip-element for molten, non-ferrous metals.	1,260°C

Infrared Thermometers

Handheld type non-contact thermometer of the range -50 to 500°C by the most efficient thermometry technology, especially where contact thermometry is impractical. The twin laser beam helps to exactly pinpoint the diameter of the field of view and performs accurate temperature measurement in °C or °F with fast response in 0.8 second.

Mode and setting ;

* Emissivity adjustment :
Press MODE key to enter ε (Emissivity) adjustment mode and adjust emissivity with ▲/▼keys. (0.10~1.00, 0.01 increment)

* Peak hold : Maximum or minimum of in-measurement temperature is displayed respectively in MAX, MIN mode.

Unit Per Pc.

CODE	65 17 91	65 17 92
Model	TA410N	TA410S
Temperature Range	-50 ~ 500°C (Display range)	
Display Resolution	1°C (0.0 to 199.9°C : 0.1°C)	
Response Time	Approx. 0.8 sec. or less	
Measuring Wave Length	8 - 14μm	
Alarm Setting Range	-50 ~ 505°C	
Sighting Method	Twin laser beam	LED spot
Power Source	LR-03 (SUM-4) battery x 4 pcs	
Size & Weight	L170 x W40 x H36 mm, 140 grm	

Name of Mfr. : ICHINEN TASCO Co., Ltd.

Coating Tapes and Sprays
for Infrared Thermometer Measurement

Most objects have an emissivity of 0.85 ~ 0.95 which is adequate for infrared thermometry, while emissivity of highly polished metal surface is poor. For the measurement of such glossy objects, it is recommended to make a thin film (coating) with black tape or spray to obtain better measurement results.

CODE	Description	Size	Thermal Resistance	Emissivity	Unit
65 17 93	Black tape, TA410-8T	W25 mm x L10 mtr	250°C	0.95	Rol
94	Black tape, TA410-8TB	W50 mm x L10 mtr			Rol
65 17 95	Black spray, TA410KS	300 ml	500°C	0.94	Tin

Measuring Devices
for Temperature

The handy and reliable instruments used for measurement and recording of temperature. Very flexible and suitable for both simple measurements and special applications. High performance sensors with electronic linearization of the characteristic provide high accuracy during signal recognition and processing. Matching sensors are available for extensive measurement jobs. Please specify type of sensors matching to your required measurement jobs when ordering.

65 18 11

65 18 12 / 65 18 13

Unit Per Pc.

CODE	65 18 11	65 18 12
Model	MH 175 (up to 200°C)	MH 3750 (up to 850°C)
Measurement Range / Resolution	-70.0 ~ 199.9°C / 0.1°C	-199.99 ~ 199.99°C / 0.01°C, 200.0 ~ 850.0°C / 0.1°C
Measurement Input (Mini-DIN socket)	1 x Pt 1000 / 2 wire	1 x Pt 100 / 4 wire
Accuracy	±0.1% of rdg. ±1 digit	±0.015% FS ±1 digit
Dimensions	140 x 70 x 30 mm	140 x 70 x 30 mm
Weight	160 grm	160 grm

Name of Mfr. : SIKA

Unit Per Pc.

CODE	65 18 13
Model	MH 3250 (up to 1,750°C)
Measurement Range / Resolution	Type K : -199.9 – 999.9°C / 0.1°C or -220 – 1,370°C / 1°C Type J : -120.0 – 199.9°C / 0.1°C or -200 – 1,100°C / 1°C Type N : -199.9 – 999.9°C / 0.1°C or -200 – 1,300°C / 1°C Type S : 0.0 – 999.9°C / 0.1°C or -50 – 1,750°C / 1°C Type T : -120.0 – 400.0°C / 0.1°C or -200 – 400°C / 1°C
Measurement Input (Mini-DIN socket)	2 x Type K, J, N, S, T
Accuracy	Type K : ±0.08% of rdg.±0.1% FS ±1 digit Type J : ±0.20% of rdg.±0.1% FS ±1 digit Type N : ±0.20% of rdg.±0.1% FS ±1 digit Type S : ±0.10% of rdg.±0.1% FS ±1 digit Type T : ±0.20% of rdg.±0.1% FS ±1 digit
Dimensions	140 x 70 x 30 mm
Weight	160 grm

Name of Mfr. : SIKA

Temperature Sensors for Measuring Device

Fig. 1

Fig. 4

Fig. 2

Fig. 5

Fig. 3

Fig. 6

Pt 1000 Measurement Sensor for MH 175

Range : -70 ~ 200°C, L=100 mm, D=3 mm

Unit Per Pc.

CODE	Type of Sensor		Figure
65 18 15	Standard	GTF 175	1
16	Spike	GES 175	2
17	Surface (Head = 4 mm)	GOF 175	3
18	Air/gas (Head = 6 mm)	GLF 175	6

Pt 1000 Measurement Sensor for MH 3750

Range : -50 ~ 400°C, L=150 mm, D=3 mm

Unit Per Pc.

CODE	Type of Sensor		Figure
65 18 21	Standard	GTF 401	1
22	Spike	GES 401	2
23	Surface (Head = 4 mm)	GOF 401	3
24	Air/gas (Head = 6 mm)	GLF 401	6

(to be continued)

NiCr-Ni Measurement Sensor for MH 3250

Unit Per Pc.

CODE	Type of Sensor		Fig.	Range	Size mm L	Size mm D
65 18 26	Standard	GTF 900	1	-65 ~ 1,000°C	130	3
27	Spike	GES 900	2	-65 ~ 1,000°C	130	3
28	Inconel	GTF 1200/300	1	-65 ~ 1,150°C	300	3
29	Fast response	GTF 400	1	-65 ~ 550°C	130	1.5
30	Surface	GOF 130 CU	4	-65 ~ 500°C	130	3
65 18 31	Surface	GOF 130	5	-65 ~ 900°C	130	8
32	Air/Gas	GLF 130	6	-65 ~ 600°C	130	3

Remark : 65 18 30 Head = 4 mm, 65 18 32 Head = 6 mm

Industrial Thermometers

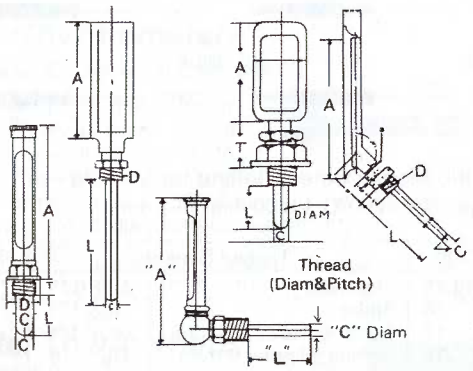
in Metal Protection with Thread Connection Case

A wide variety of industrial precision liquid-glass thermometers with rugged protective cases are available in different types, shapes, threads, sizes, etc. Please refer to the illustrations below and the "Guide of how to order" when ordering.

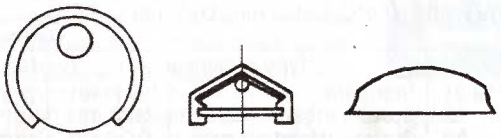
Straight Type | Back 90° Angle Type | Back 135° Angle Type

How to Measure Sizes

A : Case Length
D : Connecting Thread, Diam & Pitch
C : Stem Diam
L : Stem Length



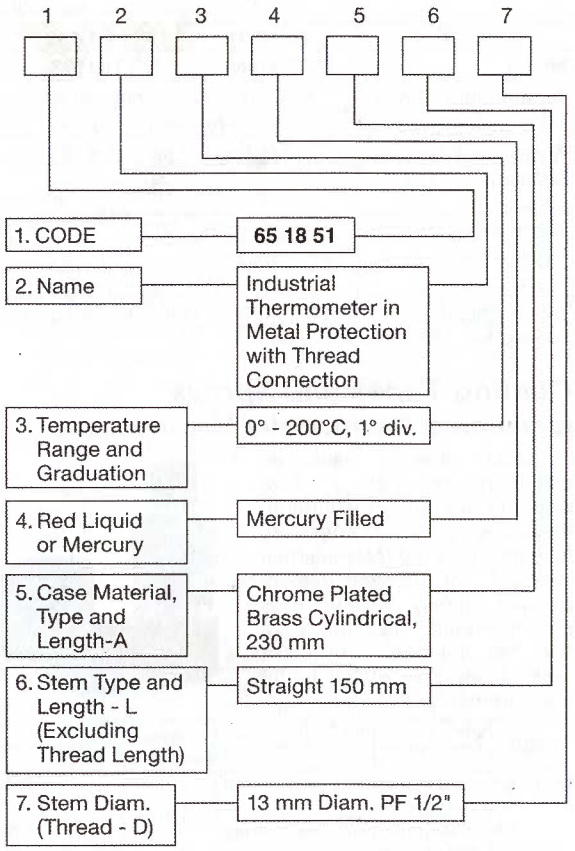
Section of Casing



Cylindrical | Triangle | Square

Guide of How to order

When ordering, please fill the following column.



Electronic Digital Thermometers

SolarTemp Marine Type 850 with Mounting Plate

The microprocessor controlled industrial thermometer works with a Pt-1000 sensor. Fully electronically, and without the need for auxiliary power, the SolarTemp guarantee high precision with long-term stability at detailed registration of measuring values for the full range of the projected lifetime. The measurement elements are free of wear by doing away mechanical components.

Possible measuring ranges reach from 0°C up to 650°C, with optimal adaptation for any measuring range. The SolarTemp has as it's energy source a photovoltaic cell (illumination level starting from 50 lx).

With the SolarTemp it was possible for the first time to realize rational local displays or distance thermometers with an electronic thermometer, which combines consistent measurement accuracy and complete maintenance freedom for the entire life time of the product.

Unit Per Pc.

CODE	**65 18 61**	**65 18 62**	**65 18 63**
Type	Standard version	Transmitter version	
Range	0 to 650°C	4 to 20 mA ≙0 to 600°C	4 to 20 mA ≙0 to 300°C

(to be continued)

Unit Per Pc.

CODE	65 18 61	65 18 62	65 18 63
SIKA Code	85065P54	85065P53360	85065P53330
Ambient Temperature	-20 to 60°C (case)		
Case	170 x 150 mm, steel case blue powered-coated, aluminium mounting plate		
Power Supply	Solar cell		
Light Density	Min. 50 lux		
Digital Display	4 digit, 7 segment display, 25.4 mm high		
Type of Protection	IP65		
Type Approval Certificate	Germanischer Lloyd, Det Norske Veritas, American Bureau of Shipping, Lloyd's Register of Shipping, Nippon Kaiji Kyokai, Bureau Veritas, and Korean Register of Shipping		

Name of Mfr.: SIKA

Temperature Sensors
for SolarTemp Marine Type 850

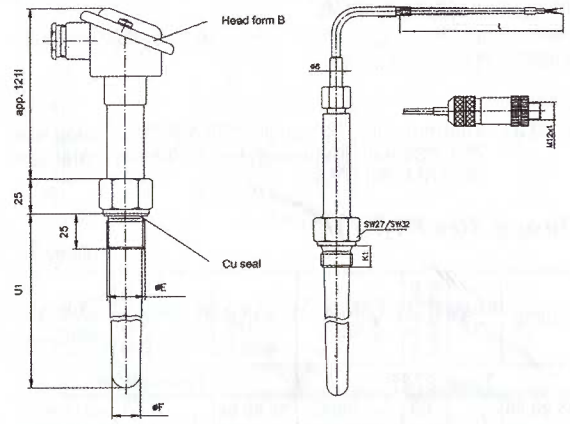


Fig. A Fig. B

Type		SIKA Order Code
Resistance Thermometer	W	
Diameter	14/17 mm conical (Fig.B) (U1=100 mm or 150 mm)	14
	17/23 mm conical (Fig.A) (U1=100 mm or 150 mm)	17
	20/23 mm conical (Fig.A) (U1=200 mm)	20
Material	Stainless steel 1.4571	3
Sensor Element	2 x Pt1000 (only for Transmitter version)	P53
	1 x Pt1000	P54
Immersion Tube Length U1	100 mm	100
	150 mm	150
	200 mm	200
Measuring Insert	Demountable	2
Electrical Connection	Plug M 12 x 1 (Fig.B)	3
	Head form B (Fig.A)	B
Cable	Teflon FEP shielded (only plug M 12x1) (Fig.B)	8
	Without cable (only head B) (Fig. A)	0
Process Connection	G1/2	2
	G3/4	3
	Thread M 33 x 2	F
Cable Length (only Fig. B)	2 mtr	03
	3 mtr	05
	5 mtr	09

65 18 65	Temperature sensor for Electric Digital Thermometer SolarTemp Marine Type 850 with SIKA Order Code	Pc.

Name of Mfr. SIKA

Transmitter and Sensor Cables

Sensor Cable (Connection sensor to indicator)

Unit Per Lgh.

CODE	Length	SIKA Code	CODE	Length	SIKA Code
65 18 66	3 mtr	XPV108	65 18 68	10 mtr	XPV110
67	5 mtr	XPV109	69	15 mtr	XPV158

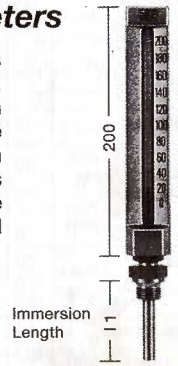
Transmitter Cable (Connection indicator to remote control)

Unit Per Lgh.

CODE	Length	SIKA Code	CODE	Length	SIKA Code
65 18 71	10 mtr	XPV150	65 18 72	15 mtr	XPV167

SIKA Industrial Thermometers

A wide variety of SIKA thermometers are available. The most widely carried, standard types are listed below with their respective specifications. The thermometer casings are finished in anodized gold colour. Standard models have the graduated readings listed on the right hand side and the surface is coated for protection from outside elements.



Straight Thermometers
Type 271B, 291B, 174B

Threaded sockets with a solid hexagonal nut. Adjustable to any desired viewing position and locked by brass nut, spanner size 22 mm. Thermometers with a measuring range from -60°C to +250°C have a blue fluid indicator and thermometers with ranges above 250°C work with mercury indicators.

Immersion Tubes, pockets

Standard: brass for temperatures up to 250°C, for temperatures above 250°C steel.

Type	Casing Size (L x W) mm	Thread	Immersion (Stem) Tube Diam. mm
271 B	200 x 36	PT (R) 1/2" (or 3/4")	10
291 B	150 x 36		
174 B	110 x 30		

When ordering, specify thread size as well as type, range and immersion stem length, or SIKA's catalogue number. As to thread sizes of the socket the most common PT (R) 1/2" is applied to the following coded items.

How to order : CODE

Thermometer, straight, SIKA, TYPE, RANGE, IMMERSION LENGTH, CATALOGUE NO

Example ;

65 19 01 Thermometer, straight, SIKA 271B, casing size 200 x 36 mm, -30 to 50°C, immersion length 63 mm, catalogue No.2712-351106321

Thread Size PT(R) 1/2"

Unit Per Pc.

CODE	Range (°C)	Immersion length mm	SIKA 2712...	CODE	Range (°C)	Immersion length mm	SIKA 2912...
Type-271B				**Type-291B**			
65 19 25	-60 - +40	63	-641106321	**65 19 65**	-60 - +40	63	-641106321
26		100	-641110021	**66**		100	-641110021
27		160	-641116021	**67**		160	-641116021
65 19 01	-30 - +50	63	-351106321	**65 19 41**	-30 - +50	63	-351106321
02		100	-351110021	**42**		100	-351110021
03		160	-351116021	**43**		160	-351116021
65 19 28	0 - 60	63	-061106321	**65 19 68**	0 - 60	63	-061106321
29		100	-061110021	**69**		100	-061110021
30		160	-061116021	**70**		160	-061116021
65 19 04	0 - 100	63	-101106321	**65 19 44**	0 - 100	63	-101106321
05		100	-101110021	**45**		100	-101110021
06		160	-101116021	**46**		160	-101116021
65 19 31	0 - 120	63	-121106321	**65 19 71**	0 - 120	63	-121106321
32		100	-121110021	**72**		100	-121110021
33		160	-121116021	**73**		160	-121116021
65 19 07	0 - 160	63	-161106321	**65 19 47**	0 - 160	63	-161106321
08		100	-161110021	**48**		100	-161110021
09		160	-161116021	**49**		160	-161116021
65 19 10	0 - 200	63	-201106321	**65 19 50**	0 - 200	63	-201106321
11		100	-201110021	**51**		100	-201110021
12		160	-201116021	**52**		160	-201116021
65 19 34	0 - 250	63	-251106321	**65 19 74**	0 - 250	63	-251106321
35		100	-251110021	**75**		100	-251110021
36		160	-251116021	**76**		160	-251116021
65 19 13	0 - 300	63	-301206321	**65 19 53**	0 - 300	63	-301206321
14		100	-301210021	**54**		100	-301210021
15		160	-301216021	**55**		160	-301216021
65 19 16	0 - 400	63	-401206322	**65 19 56**	0 - 400	63	-401206322
17		100	-401210022	**57**		100	-401210022
18		160	-401216022	**58**		160	-401216022
65 19 19	0 - 500	63	-501206322	**65 19 59**	0 - 500	63	-501206322
20		100	-501210022	**60**		100	-501210022
21		160	-501216022	**61**		160	-501216022
65 19 22	0 - 600	63	-601206322	**65 19 62**	0 - 600	63	-601206322
23		100	-601210022	**63**		100	-601210022
24		160	-601216022	**64**		160	-601216022

Legal notice :
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Unit Per Pc.

CODE	Range (°C)	Immersion length mm	SIKA 1742...	CODE	Range (°C)	Immersion length mm	SIKA 1742...
Type-174B							
65 21 01	-30 - +50	30	-351103021	**65 21 11**	0 - 120	30	-121103021
02		40	-351104021	**12**		40	-121104021
03		63	-351106321	**13**		63	-121106321
04		100	-351110021	**14**		100	-121110021
05		160	-351116021	**15**		160	-121116021
65 21 06	0 - 60	30	-061103021	**65 21 16**	0 - 160	30	-161103021
07		40	-061104021	**17**		40	-161104021
08		63	-061106321	**18**		63	-161106321
09		100	-061110021	**19**		100	-161110021
10		160	-061116021	**20**		160	-161116021
65 19 81	0 - 100	30	-101103021	**65 19 86**	0 - 200	30	-201103021
82		40	-101104021	**87**		40	-201104021
83		63	-101106321	**88**		63	-201106321
84		100	-101110021	**89**		100	-201110021
85		160	-101116021	**90**		160	-201116021

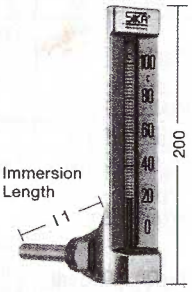
(to be continued)

Note: Besides the above coded items
B) Long immersion of 250 mm and 400 mm are available.
C) PT (R) 3/4" thread of the sockets are also available.

90° Angle Thermometers

Type 272B, 292B, 175B

Back-90° angle type thermometers with same specifications as the above specified straight thermometers.



Type	Casing Size (L x W) mm	Thread	Immersion (Stem) Tube Diam. mm
272 B	200 x 36	PT (R) 1/2" (or 3/4")	10
292 B	150 x 36		
175 B	110 x 30		

How to order : CODE

Thermometer, 90° angle, SIKA, TYPE, RANGE, IMMERSION LENGTH, CATALOGUE NO

Example ;

65 20 01 Thermometer, 90° angle, SIKA 272B, casing size 200 x 36 mm, immersion length 63 mm, catalogue No.2722-351106321

Thread Size PT(R) 1/2"

Unit Per Pc.

CODE	Range (°C)	Immersion length mm	SIKA 2722...	CODE	Range (°C)	Immersion length mm	SIKA 2922...
Type-272B				**Type-292B**			
65 20 25	-60 - +40	63	-641106321	**65 20 65**	-60 - +40	63	-641106321
26		100	-641110021	**66**		100	-641110021
27		160	-641116021	**67**		160	-641116021
65 20 01	-30 - +50	63	-351106321	**65 20 41**	-30 - +50	63	-351106321
02		100	-351110021	**42**		100	-351110021
03		160	-351116021	**43**		160	-351116021
65 20 28	0 - 60	63	-061106321	**65 20 68**	0 - 60	63	-061106321
29		100	-061110021	**69**		100	-061110021
30		160	-061116021	**70**		160	-061116021
65 20 04	0 - 100	63	-101106321	**65 20 44**	0 - 100	63	-101106321
05		100	-101110021	**45**		100	-101110021
06		160	-101116021	**46**		160	-101116021
65 20 31	0 - 120	63	-121106321	**65 20 71**	0 - 120	63	-121106321
32		100	-121110021	**72**		100	-121110021
33		160	-121116021	**73**		160	-121116021
65 20 07	0 - 160	63	-161106321	**65 20 47**	0 - 160	63	-161106321
08		100	-161110021	**48**		100	-161110021
09		160	-161116021	**49**		160	-161116021
65 20 10	0 - 200	63	-201106321	**65 20 50**	0 - 200	63	-201106321
11		100	-201110021	**51**		100	-201110021
12		160	-201116021	**52**		160	-201116021
65 20 34	0 - 250	63	-251106321	**65 20 74**	0 - 250	63	-251106321
35		100	-251110021	**75**		100	-251110021
36		160	-251116021	**76**		160	-251116021
65 20 13	0 - 300	63	-301206321	**65 20 53**	0 - 300	63	-301206321
14		100	-301210021	**54**		100	-301210021
15		160	-301216021	**55**		160	-301216021
65 20 16	0 - 400	63	-401206322	**65 20 56**	0 - 400	63	-401206322
17		100	-401210022	**57**		100	-401210022
18		160	-401216022	**58**		160	-401216022

(to be continued)

65 20 19	0 - 500	63	-501206322	**65 20 59**	0 - 500	63	-501206322
20		100	-501210022	**60**		100	-501210022
21		160	-501216022	**61**		160	-501216022
65 20 22	0 - 600	63	-601206322	**65 20 62**	0 - 600	63	-601206322
23		100	-601210022	**63**		100	-601210022
24		160	-601216022	**64**		160	-601216022

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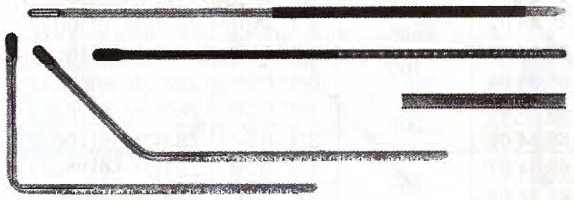
Unit Per Pc.

CODE	Range (°C)	Immersion length mm	SIKA 1752...	CODE	Range (°C)	Immersion length mm	SIKA 1752...
Type-175B							
65 21 31	-30 - +50	30	-351103021	**65 21 41**	0 - 120	30	-121103021
32		40	-351104021	**42**		40	-121104021
33		63	-351106321	**43**		63	-121106321
34		100	-351110021	**44**		100	-121110021
35		160	-351116021	**45**		160	-121116021
65 21 36	0 - 60	30	-061103021	**65 21 46**	0 - 160	30	-161103021
37		40	-061104021	**47**		40	-161104021
38		63	-061106321	**48**		63	-161106321
39		100	-061110021	**49**		100	-161110021
40		160	-061116021	**50**		160	-161116021
65 20 81	0 - 100	30	-101103021	**65 20 86**	0 - 200	30	-201103021
82		40	-101104021	**87**		40	-201104021
83		63	-101106321	**88**		63	-201106321
84		100	-101110021	**89**		100	-201110021
85		160	-101116021	**90**		160	-201116021

Note: Same notes as above specified straight types.

Spare Glass Inserts (Capillaries)
for Sika Thermometers



How to order : CODE

Glass insert, SIKA, STRAIGHT or ANGLE, TYPE of THERMOMETER, RANGE, IMMERSION LENGTH, CATALOGUE NO.

Example

65 22 01 Glass insert, SIKA, straight, for type 271B, range -30 - + 50°C, immersion length 63 mm, catalogue No.2712-3511063

Unit Per Pc.

For Straight				For Angle 90°			
CODE	Range (°C)	Immersion length mm	SIKA 2712...	CODE	Range (°C)	Immersion length mm	SIKA 2722...
For Type-271B				**For Type-272B**			
65 22 25	-60 - +40	63	-6411063	**65 23 25**	-60 - +40	63	-6411063
26		100	-6411100	**26**		100	-6411100
27		160	-6411160	**27**		160	-6411160

(to be continued)

65 22 01	-30 - +50	63	-3511063	**65 23 01**	-30 - +50	63	-3511063
02		100	-3511100	**02**		100	-3511100
03		160	-3511160	**03**		160	-3511160
65 22 28	0 - 60	63	-0611063	**65 23 28**	0 - 60	63	-0611063
29		100	-0611100	**29**		100	-0611100
30		160	-0611160	**30**		160	-0611160
65 22 04	0 - 100	63	-1011063	**65 23 04**	0 - 100	63	-1011063
05		100	-1011100	**05**		100	-1011100
06		160	-1011160	**06**		160	-1011160
65 22 31	0 - 120	63	-1211063	**65 23 31**	0 - 120	63	-1211063
32		100	-1211100	**32**		100	-1211100
33		160	-1211160	**33**		160	-1211160
65 22 07	0 - 160	63	-1611063	**65 23 07**	0 - 160	63	-1611063
08		100	-1611100	**08**		100	-1611100
09		160	-1611160	**09**		160	-1611160
65 22 10	0 - 200	63	-2011063	**65 23 10**	0 - 200	63	-2011063
11		100	-2011100	**11**		100	-2011100
12		160	-2011160	**12**		160	-2011160
65 22 13	0 - 300	63	-3012063	**65 23 13**	0 - 300	63	-3012063
14		100	-3012100	**14**		100	-3012100
15		160	-3012160	**15**		160	-3012160
65 22 16	0 - 400	63	-4012063	**65 23 16**	0 - 400	63	-4012063
17		100	-4012100	**17**		100	-4012100
18		160	-4012160	**18**		160	-4012160
65 22 19	0 - 500	63	-5012063	**65 23 19**	0 - 500	63	-5012063
20		100	-5012100	**20**		100	-5012100
21		160	-5012160	**21**		160	-5012160
65 22 22	0 - 600	63	-6012063	**65 23 22**	0 - 600	63	-6012063
23		100	-6012100	**23**		100	-6012100
24		160	-6012160	**24**		160	-6012160

Legal notice :
According to regulation no. 847/2012 of European Union, thermometers with mercury filling are only bound for export outside the EU. Placing them on the market inside the EU after April 10th, 2014 is prohibited. Concerned are industrial thermometers and glass inserts with display ranges 0...300°C and higher, only. In this case, we are recommending the use of our dial or digital thermometers.

For Straight				For Angle 90°			
CODE	Range (°C)	Immersion length mm	SIKA 2912...	CODE	Range (°C)	Immersion length mm	SIKA 2922...
For Type-291B				**For Type-292B**			
65 22 65	-60 - +40	63	-6411063	**65 23 65**	-60 - +40	63	-6411063
66		100	-6411100	**66**		100	-6411100
67		160	-6411160	**67**		160	-6411160
65 22 41	-30 - +50	63	-3511063	**65 23 41**	-30 - +50	63	-3511063
42		100	-3511100	**42**		100	-3511100
43		160	-3511160	**43**		160	-3511160
65 22 68	0 - 60	63	-0611063	**65 23 68**	0 - 60	63	-0611063
69		100	-0611100	**69**		100	-0611100
70		160	-0611160	**70**		160	-0611160
65 22 44	0 - 100	63	-1011063	**65 23 44**	0 - 100	63	-1011063
45		100	-1011100	**45**		100	-1011100
46		160	-1011160	**46**		160	-1011160
65 22 71	0 - 120	63	-1211063	**65 23 71**	0 - 120	63	-1211063
72		100	-1211100	**72**		100	-1211100
73		160	-1211160	**73**		160	-1211160
65 22 47	0 - 160	63	-1611063	**65 23 47**	0 - 160	63	-1611063
48		100	-1611100	**48**		100	-1611100
49		160	-1611160	**49**		160	-1611160
65 22 50	0 - 200	63	-2011063	**65 23 50**	0 - 200	63	-2011063
51		100	-2011100	**51**		100	-2011100
52		160	-2011160	**52**		160	-2011160
65 22 53	0 - 300	63	-3012063	**65 23 53**	0 - 300	63	-3012063
54		100	-3012100	**54**		100	-3012100
55		160	-3012160	**55**		160	-3012160
65 22 56	0 - 400	63	-4012063	**65 23 56**	0 - 400	63	-4012063
57		100	-4012100	**57**		100	-4012100
58		160	-4012160	**58**		160	-4012160

(to be continued)

Unit Per Pc.

For Straight				For Angle 90°			
CODE	Range (°C)	Immersion length mm	SIKA 2912...	CODE	Range (°C)	Immersion length mm	SIKA 2922...
For Type-291B				**For Type-292B**			
65 22 59	0 - 500	63	-5012063	**65 23 59**	0 - 500	63	-5012063
60		100	-5012100	**60**		100	-5012100
61		160	-5012160	**61**		160	-5012160
65 22 62	0 - 600	63	-6012063	**65 23 62**	0 - 600	63	-6012063
63		100	-6012100	**63**		100	-6012100
64		160	-6012160	**64**		160	-6012160

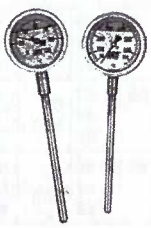
Legal notice :
According to regulation no. 847/2012 of European Union, thermometers with mercury filling are only bound for export outside the EU. Placing them on the market inside the EU after April 10th, 2014 is prohibited. Concerned are industrial thermometers and glass inserts with display ranges 0...300°C and higher, only. In this case, we are recommending the use of our dial or digital thermometers.

For Straight				For Angle 90°			
CODE	Range (°C)	Immersion length mm	SIKA 1742...	CODE	Range (°C)	Immersion length mm	SIKA 1752...
For Type-174B				**For Type-175B**			
65 22 34	-30 - +50	30	-3511030	**65 24 11**	-30 - +50	30	-3511030
35		40	-3511040	**12**		40	-3511040
36		63	-3511063	**13**		63	-3511063
37		100	-3511100	**14**		100	-3511100
38		160	-3511160	**15**		160	-3511160
65 22 91	0 - 60	30	-0611030	**65 24 16**	0 - 60	30	-0611030
92		40	-0611040	**17**		40	-0611040
93		63	-0611063	**18**		63	-0611063
94		100	-0611100	**19**		100	-0611100
95		160	-0611160	**20**		160	-0611160
65 22 81	0 - 100	30	-1011030	**65 23 81**	0 - 100	30	-1011030
82		40	-1011040	**82**		40	-1011040
83		63	-1011063	**83**		63	-1011063
84		100	-1011100	**84**		100	-1011100
85		160	-1011160	**85**		160	-1011160
65 24 01	0 - 120	30	-1211030	**65 24 21**	0 - 120	30	-1211030
02		40	-1211040	**22**		40	-1211040
03		63	-1211063	**23**		63	-1211063
04		100	-1211100	**24**		100	-1211100
05		160	-1211160	**25**		160	-1211160
65 24 06	0 - 160	30	-1611030	**65 24 26**	0 - 160	30	-1611030
07		40	-1611040	**27**		40	-1611040
08		63	-1611063	**28**		63	-1611063
09		100	-1611100	**29**		100	-1611100
10		160	-1611160	**30**		160	-1611160
65 22 86	0 - 200	30	-2011030	**65 23 86**	0 - 200	30	-2011030
87		40	-2011040	**87**		40	-2011040
88		63	-2011063	**88**		63	-2011063
89		100	-2011100	**89**		100	-2011100
90		160	-2011160	**90**		160	-2011160

Note: 1) Up to 200°C, blue filling inserts are coded.
2) When ordering, inserts for 135° angle thermometer catalogue number has to be changed as follows:
From 271 to 273
From 291 to 293
From 174 to 176

Exhaust Gas Thermometers

Direct Mounting

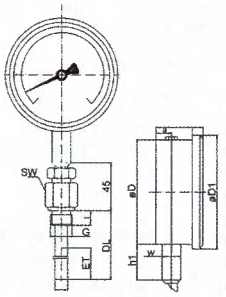


The exhaust gas thermometer which eliminates the difficulty to read the exhaust temperature caused by engine vibration. This thermometer can be mounted directly on the exhaust duct and contains a shock absorbing liquid of high viscosity, which eliminates wear of the internal moving parts made sensitive by vibration. At the same time, lubrication of moving parts is taken care by the liquid, thus obviating corrosion.

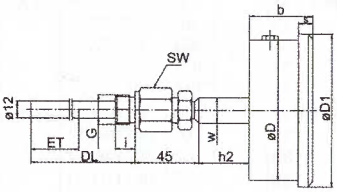
Approved by German Lloyd Certificate No.12 026-98 HH

Technical Data

Casing	Dia. 80 or 100 mm stainless steel 1.4301
Range	+50 +650°C
System	Nitrogen filled system
Immersion tube	Heat resistant steel
Accuracy	Class 1 according to EN 13 190



Bottom Connection



Rear Connection

Dimensions according to drawing (mm)

NG	a	b	D	D1	h1	h2	s	W
80	15	45	79	86	34	36	10	18
100	15	45	99	108	34	36	10	18

Unit Per Pc.

CODE	Mounting Length DL in mm	Thread Size	SIKA Code
Casing Dia 80 mm, Bottom Connection			
65 34 01	100	1/2" BSP	Z8312M56110022
65 34 02		3/4" BSP	Z8312M56110032
65 34 03	160	1/2" BSP	Z8312M56116022
65 34 04		3/4" BSP	Z8312M56116032
65 34 05	200	1/2" BSP	Z8312M56120022
65 34 06		3/4" BSP	Z8312M56120032
65 34 07	250	1/2" BSP	Z8312M56125022
65 34 08		3/4" BSP	Z8312M56125032
65 34 09	300	1/2" BSP	Z8312M56130022
65 34 10		3/4" BSP	Z8312M56130032
65 34 11	400	1/2" BSP	Z8312M56140022
65 34 12		3/4" BSP	Z8312M56140032
Casing Dia 80 mm, Rear Connection			
65 34 15	100	1/2" BSP	Z8372M56110022
65 34 16		3/4" BSP	Z8372M56110032
65 34 17	160	1/2" BSP	Z8372M56116022
65 34 18		3/4" BSP	Z8372M56116032
65 34 19	200	1/2" BSP	Z8372M56120022
65 34 20		3/4" BSP	Z8372M56120032
65 34 21	250	1/2" BSP	Z8372M56125022
65 34 22		3/4" BSP	Z8372M56125032
65 34 23	300	1/2" BSP	Z8372M56130022
65 34 24		3/4" BSP	Z8372M56130032
65 34 25	400	1/2" BSP	Z8372M56140022
65 34 26		3/4" BSP	Z8372M56140032

(to be continued)

Casing Dia 100 mm, Bottom Connection			
65 34 31	100	1/2" BSP	Z1312M56110022
65 34 32		3/4" BSP	Z1312M56110032
65 34 33	160	1/2" BSP	Z1312M56116022
65 34 34		3/4" BSP	Z1312M56116032
65 34 35	200	1/2" BSP	Z1312M56120022
65 34 36		3/4" BSP	Z1312M56120032
65 34 37	250	1/2" BSP	Z1312M56125022
65 34 38		3/4" BSP	Z1312M56125032
65 34 39	300	1/2" BSP	Z1312M56130022
65 34 40		3/4" BSP	Z1312M56130032
65 34 41	400	1/2" BSP	Z1312M56140022
65 34 42		3/4" BSP	Z1312M56140032
Casing Dia 100 mm, Rear Connection			
65 34 45	100	1/2" BSP	Z1372M56110022
65 34 46		3/4" BSP	Z1372M56110032
65 34 47	160	1/2" BSP	Z1372M56116022
65 34 48		3/4" BSP	Z1372M56116032
65 34 49	200	1/2" BSP	Z1372M56120022
65 34 50		3/4" BSP	Z1372M56120032
65 34 51	250	1/2" BSP	Z1372M56125022
65 34 52		3/4" BSP	Z1372M56125032
65 34 53	300	1/2" BSP	Z1372M56130022
65 34 54		3/4" BSP	Z1372M56130032
65 34 55	400	1/2" BSP	Z1372M56140022
65 34 56		3/4" BSP	Z1372M56140032

Name of Mfr. : SIKA

Low Temperature Dial Thermometers

Local reading - Type 301 - 302 for measuring ranges -200...100 °C

For monitoring temperature critical cooling applications and are suitable for the use on liquid gas transport ships. Protection of the measuring system by a vibration absorbing case filling, and stable, durable housing design made of stainless steel.

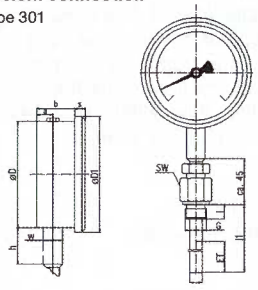
Typical Applications

- Gas transport for LNG, CNG, LPG, etc.
- Cooling ships and other cooling vehicles

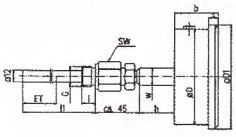
Technical Data

Display Range	-200...100 °C / -150...100 °C -50...10 °C / -100...50 °C
Nominal Size, Material	63, 80 or 100 mm, stainless steel 1.4301
Dial	Silver coloured, black markings
System	Nitrogen filled system
Immersion Tube	Stainless steel
Standard Immersion Tube Lengths (l1)	100, 135, 160, 200, 250, 300, 400 mm
Thread Connection	Adjustable compression fitting
Thread Size	G1/2, G3/4
Accuracy (EN 13190)	Class 1.0

Bottom connection
Type 301



Central back connection
Type 302



Dimensions according to drawing (mm)

CODE	Type	a	b	D	D1	h	s	W
65 34 60	301	12	39	62	67	60	8	12
61	302	12	39	62	67	34	8	18

How to order : CODE

Dial thermometer, low temperature, type 301 or 302, NOMINAL SIZE, SCALE RANGE, IMMERSION TUBE LENGTH L1, CONNECTION TYPE, CONNECTION THREAD, CONNECTION THREAD MATERIAL, IMMERSION TUBE DIAMETER

Type		SIKA Order Code						
Bottom connection	301							
Central back connection	302							
Nominal Size								
63 mm		A2						
80 mm		B2						
100 mm		C2						
Scale Range								
-200....100 °C			F2					
-200..... 50 °C			A2					
-150....100 °C			E4					
-50....100 °C			F1					
-100.....50 °C			95					
Immersion Tube Length l1	Nominal Length L (= L1 + 45 mm)							
100 mm	145 mm			100				
135 mm	180 mm			135				
160 mm	205 mm			160				
200 mm	245 mm			200				
250 mm	295 mm			250				
300 mm	345 mm			300				
400 mm	445 mm			400				
Connection Type								
Connection type A, plain immersion tube					0			
Connection type Ak, adjustable compression fitting					9			
Connection Thread								
Without - plain immersion tube, type A						0		
G1/2						2		
G3/4						3		
1/2 NPT						B		
3/4 NPT						C		
M20 x 1.5						7		
Connection Thread Material								
Without - plain immersion tube, type A							0	
Steel							2	
Immersion Tube Diameter								
10 mm (for NS 63 and NS 80 mm only)								3
12 mm								4
13 mm								6

Name of Mfr. : SIKA

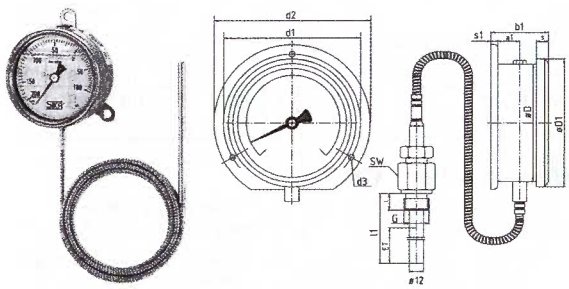
Remote reading - Type 320 for measuring ranges -200...100 °C

For monitoring temperature critical cooling applications, and suitable for the use in various cooling applications.

Remote reading low temperature dial thermometers

were specifically developed for measuring points which are not directly accessible. The capillary of these measuring devices is protected by a stainless steel spiral tube and therefore always adapted to the demanding operating conditions on the high seas. Protection of the measuring system by a vibration absorbing case filling, and stable, durable housing design made of stainless steel.

Typical Applications
- Gas transport for LNG, CNG, LPG, etc.
- Cooling ships and other cooling vehicles.



with Rear Mounting Flange

Technical Data

Display Range	-200...100 °C / -150...100 °C -50...10 °C / -100...50 °C
Nominal Size, Material	63, or 100 mm, stainless steel 1.4301
Dial	Silver coloured, black markings
System	Nitrogen filled system
Immersion Tube	Stainless steel
Standard Immersion Tube Lengths (l1)	100, 135, 160, 200, 250, 300, 400 mm
Thread Connection	Adjustable compression fitting
Thread Size	G1/2, G3/4
Accuracy (EN 13190)	Class 1.0, Limits of error acc. DIN EN 13190

Dimensions mm

NG	a1	b1	D	D1	d1	d2	d3	s	s1
80	18	48	79	86	95	110	4.8	8	5
100	18.5	49	99	106	116	132	4.8	10	6

How to order : 65-34-62

Dial thermometer, low temperature, type 320, NOMINAL SIZE, SCALE RANGE, IMMERSION TUBE LENGTH L1, CONNECTION TYPE, CONNECTION THREAD, IMMERSION TUBE DIAMETER, CAPILLARY LENGTH, CAPILLARY MATERIAL PROTECTION

Type	SIKA Order Code
With rear mounting flange	320
Nominal Size	
80 mm	B2
100 mm	C2
Scale Range	
-200....100 °C	F2
-200..... 50 °C	A2
-150....100 °C	E4
-50..... 10 °C	F1
-100..... 50 °C	95

(to be continued)

Immersion Tube Length l1	Nominal Length L (= L1 + 45 mm)	
100 mm	145 mm	100
135 mm	180 mm	135
160 mm	205 mm	160
200 mm	245 mm	200
250 mm	295 mm	250
300 mm	345 mm	300
400 mm	445 mm	400

Connection Type	
Connection type A, plain immersion tube	1
Connection type Ak, adjustable compression fitting	9

Connection Thread	
Without - plain immersion tube	0
G1/2	2
G3/4	3
1/2 NPT	B
3/4 NPT	C
M20 x 1.5	7

Immersion Tube Diameter	
ø12 mm	2

Capillary Length	
1 mtr	1
3 mtr	3
5 mtr	5

Capillary Material Protection	
Stainless steel, stainless steel spiral protection	C

Name of Mfr. : SIKA

Exhaust Gas Thermometers

Remote Reading

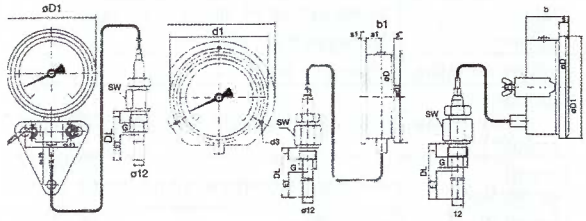
Based on the same system as the direct mounting exhaust thermometers. The case is filled with a shock absorbing liquid of high viscosity. 3 types of case configuration are available; wall bracket, rear flange or U-clamp for panel mounting.

Approved by German Lloyd Certificate No.12 027-98 HH.

When ordering, please specify the capillary length according to the customers needs, in addition to 6 digit IMPA code number.

Technical Data

Casing	Dia. 80 or 100 mm stainless steel 1.4301
Range	+50 +650°C
System	Nitrogen filled system
Capillary Tube	Stainless steel, spiral protection
Immersion Tube	Heat resistant steel
Accuracy	Class 1 according to EN 13 190



Type 311 with wall bracket

Type 321 with rear flange for panel mounting

Type 331 U-Clamp panel mounting

Dimensions according to drawing (mm)

NG	a1	b1	D	D1	d1	d2	d3	s	s1
80	18	48	79	86	95	110	4.8	10	6
100	18.5	49	99	108	116	132	4.8	10	6

Unit Per Pc.

CODE	Mounting Length DL in mm	Thread Size	SIKA Code
Casing Dia 80 mm for Wall Bracket			
65 35 01	135	1/2" BSP	Z311B256135922XX
65 35 02		3/4" BSP	Z311B256135932XX
65 35 03	160	1/2" BSP	Z311B256160922XX
65 35 04		3/4" BSP	Z311B256160932XX
65 35 05	200	1/2" BSP	Z311B256200922XX
65 35 06		3/4" BSP	Z311B256200932XX
65 35 07	250	1/2" BSP	Z311B256250922XX
65 35 08		3/4" BSP	Z311B256250932XX
65 35 09	300	1/2" BSP	Z311B256300922XX
65 35 10		3/4" BSP	Z311B256300932XX
65 35 11	400	1/2" BSP	Z311B256400922XX
65 35 12		3/4" BSP	Z311B256400932XX
Casing Dia 80 mm with Rear Flange for Panel Mounting			
65 35 15	135	1/2" BSP	Z321B256135922XX
65 35 16		3/4" BSP	Z321B256135932XX
65 35 17	160	1/2" BSP	Z321B256160922XX
65 35 18		3/4" BSP	Z321B256160932XX
65 35 19	200	1/2" BSP	Z321B256200922XX
65 35 20		3/4" BSP	Z321B256200932XX
65 35 21	250	1/2" BSP	Z321B256250922XX
65 35 22		3/4" BSP	Z321B256250932XX
65 35 23	300	1/2" BSP	Z321B256300922XX
65 35 24		3/4" BSP	Z321B256300932XX
65 35 25	400	1/2" BSP	Z321B256400922XX
65 35 26		3/4" BSP	Z321B256400932XX
Casing Dia 80 mm for U-clamp for Panel Mounting			
65 35 31	135	1/2" BSP	Z331B256135922XX
65 35 32		3/4" BSP	Z331B256135932XX
65 35 33	160	1/2" BSP	Z331B256160922XX
65 35 34		3/4" BSP	Z331B256160932XX
65 35 35	200	1/2" BSP	Z331B256200922XX
65 35 36		3/4" BSP	Z331B256200932XX
65 35 37	250	1/2" BSP	Z331B256250922XX
65 35 38		3/4" BSP	Z331B256250932XX
65 35 39	300	1/2" BSP	Z331B256300922XX
65 35 40		3/4" BSP	Z331B256300932XX
65 35 41	400	1/2" BSP	Z331B256400922XX
65 35 42		3/4" BSP	Z331B256400932XX
Casing Dia 100 mm for Wall Bracket			
65 35 51	135	1/2" BSP	Z311C256135922XX
65 35 52		3/4" BSP	Z311C256135932XX
65 35 53	160	1/2" BSP	Z311C256160922XX
65 35 54		3/4" BSP	Z311C256160932XX
65 35 55	200	1/2" BSP	Z311C256200922XX
65 35 56		3/4" BSP	Z311C256200932XX
65 35 57	250	1/2" BSP	Z311C256250922XX
65 35 58		3/4" BSP	Z311C256250932XX
65 35 59	300	1/2" BSP	Z311C256300922XX
65 35 60		3/4" BSP	Z311C256300932XX
65 35 61	400	1/2" BSP	Z311C256400922XX
65 35 62		3/4" BSP	Z311C256400932XX
Casing Dia 100 mm with Rear Flange for Panel Mounting			
65 35 65	135	1/2" BSP	Z321C256135922XX
65 35 66		3/4" BSP	Z321C256135932XX
65 35 67	160	1/2" BSP	Z321C256160922XX
65 35 68		3/4" BSP	Z321C256160932XX
65 35 69	200	1/2" BSP	Z321C256200922XX
65 35 70		3/4" BSP	Z321C256200932XX
65 35 71	250	1/2" BSP	Z321C256250922XX
65 35 72		3/4" BSP	Z321C256250932XX
65 35 73	300	1/2" BSP	Z321C256300922XX
65 35 74		3/4" BSP	Z321C256300932XX
65 35 75	400	1/2" BSP	Z321C256400922XX
65 35 76		3/4" BSP	Z321C256400932XX
Casing Dia 100 mm for U-clamp for Panel Mounting			
65 35 81	135	1/2" BSP	Z331C256135922XX
65 35 82		3/4" BSP	Z331C256135932XX
65 35 83	160	1/2" BSP	Z331C256160922XX
65 35 84		3/4" BSP	Z331C256160932XX
65 35 85	200	1/2" BSP	Z331C256200922XX
65 35 86		3/4" BSP	Z331C256200932XX
65 35 87	250	1/2" BSP	Z331C256250922XX
65 35 88		3/4" BSP	Z331C256250932XX
65 35 89	300	1/2" BSP	Z331C256300922XX
65 35 90		3/4" BSP	Z331C256300932XX
65 35 91	400	1/2" BSP	Z331C256400922XX
65 35 92		3/4" BSP	Z331C256400932XX

Remark : Please replace XX at the last part of SIKA code number with the ordering code according to the capillary length the customers needs when ordering.

(to be continued)

Diesel Engine Dial Thermometers

with Integrated Temperature Sensor KombiTemp K8312

An ideal solution for combined temperature measurement of exhaust gas on large diesel engines. The dial thermometer displays the temperature locally whereas the integrated sensor provides the basis for the corresponding electrical signal to be transmitted to the engine control room.

Measuring in the same measuring point saves cost and ensures matching temperature values both at the local display as well as in the vessel's electronic system.

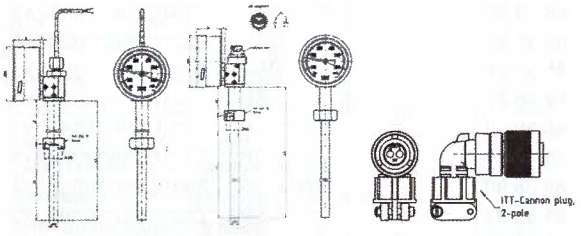
Two different versions for common diesel engine types: version 1 for 4-stroke engines and version two for 2-stroke engines.

Performance features :

- Two in one measuring point temperature measurement.
- Matching indicator values of dial thermometer and temperature sensor.
- With thermocouple type K.

7TH 65

Technical Data	
Case	Bayonet ring case, st. steel 1.4301
Nominal Size	80 mm
Case Filling	Silicone oil
Dial	White coloured, black markings
Display Range	50...650 °C
System/ Accuracy	Gas-filled dial thermometer acc. 1,0, DIN EN 13190, Thermocouple type K (NiCr-Ni), class 2.0
Electrical Connection	Cable output with 9 m cable length (version 1) 2 pole MIL connector, without cable (version 2)
Degree of Protection	Dial thermometer IP65 Electrical sensor IP56
Connection Position	Bottom connection
Immersion Tube Length/Material	l1 = 115 x Ø 13 mm (version 1), st. steel 1.4571 l1 = 220 x Ø 13 mm (version 2), st. steel 1.4571
Connection Thread/Material	Union Nut, G 3/4, brass



Type K8312 Version 1 | Type K8312 Version 2 | 90° Angle Military Plug

Dimensions mm

	b	c	øD	L_1	L_2	L_3
Version 1	40	7.5	82	115	165	274
Version 2	40	7.5	82	220	51.5	265

65 35 93	Thermometer, dial, diesel engine with temperature sensor, Kombitemp K8312, version 1	Pc.
94	Thermometer, dial, diesel engine with temperature sensor, Kombitemp K8312, version 2	Pc.
95	Plug, military, 90° angle for Kombitemp K8312, version 2	Pc.

Name of Mfr. SIKA

Temperature Calibrators

Exact temperature measurement and monitoring are "musts" in applications crucial to operational safety of machinery and industrial installations. In 2002, this was applied to all ships by the Safety of Life at Sea (SOLAS), Chapter IX and the ISM (the International Safety Management) Code as mandatory regulation. Regular inspection of the temperature sensors used in these applications is essential for economic and technical safety reasons and is already prescribed as obligatory in many sectors.

This calibrator contains an electrically controlled metal block with a bore for the insertion of the test piece. Adaptor sleeves are used for test pieces with smaller diameter. The block is mounted in a heat insulated housing.

The complete electronic is located in the front of the calibrator. The required temperature is easily set on the digital controller. The current temperature will automatically be adjusted to the set value. The current temperature and set temperature are constantly shown on the 2-line, 4-digit, 7-segment LED display.

Unit Per Set

CODE	**65 25 07**	**65 25 08**	**65 25 09**
Model	TP 17 165M	TP 17 650M	
SIKA Code	EP17160M281503	EP17650M281502	EP17650M281500
Temperature Range	-35°C up to 165°C	Ambient temp. up to 650°C	
Block Temperature Control	Digital PID controller, automatic fine adjustment with softstart for fan		
Accuracy	±1°C	±1°C	
Block Temperature Display	4-digit, 2-line, 7-segment LED, 7 mm high, red and green		
Display Range	-50°C up to 165.0°C	0.0°C up to 650.0°C	
Resolution	1°C		
Test Piece Fixture			
Block Material	Aluminium	Brass	
Block Bore	ø28 mm	ø28 mm	
Block Depth	150 mm		
Adapter Sleeves	Inside diameter between 1.5 mm and 25 mm in steps of 0.5 mm		
General Data			
Power Supply	100 to 240 VAC, 50/60 Hz	115 VAC, ±10%, 50/60 Hz	230 VAC, ±10%, 50/60 Hz
Power Consumption	Approx. 375 W	Approx. 1,000 W	
Dimensions L x W x H	210 x 380 +50 x 300 mm	150 x 330 + 70 x 270 mm	
Weight	10 kgs	7.5 kgs	
Options			
Accessories	Aluminium transport case	Aluminium transport case, Nylon service case	
Certificate	DAkkS-certificates, SIKA certificate		
Engineering Unit	Display of temperature in °F		

Name of Mfr.: SIKA

Series TP 17 200

Unit Per Set

CODE	**65 25 14**
Model	TP 17 200
SIKA Code	EP172000281503

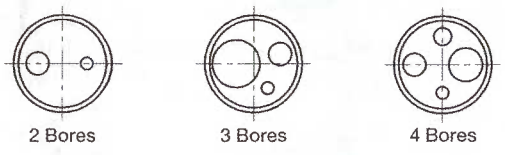
(to be continued)

Control Sensor	Internal
Dry Block	
Temperature Range	-55°C up to 200°C
Accuracy	±0.4°C
Stability	±0.1°C
Measurement Zone	110 – 150 mm
Block Dimensions	
Diameter	ø28 mm
Depth	150 mm
Display Unit	
Display	2-line, 4-digit display, Red / Green, unit °C / °F
Display range	-60°C - 200°C
Resolution	0.1°C
General Data	
Dimensions W x H x D	210 x 380 + 50 x 300 mm
Weight	Approx. 12.5 kgs
Power Supply	100 to 240 VAC, 50/60 Hz
Power Consumption	Approx. 555W

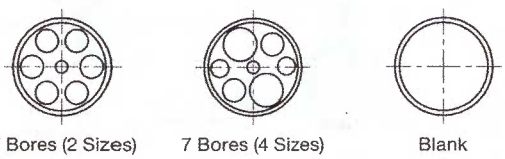
Name of Mfr.: SIKA

Adapter Sleeves for Temperature Calibrator

Designed for use with SIKA dry block calibrators. The sleeves are configured with various diameter bores to accomodate industry standard temperature sensors. Outside diameter of adapter sleeve is 28 mm.



2 Bores | 3 Bores | 4 Bores



7 Bores (2 Sizes) | 7 Bores (4 Sizes) | Blank

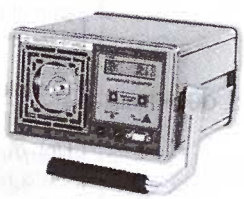
Unit Per Pc.

CODE	No. of Bore	Bore Size
65 25 15	2	1 x 3.5 mm, 1 x 6.5 mm
65 25 18	3	1 x 3.5 mm, 1 x 6.5 mm, 1 x 13.5 mm
65 25 19	4	1 x 3.5 mm, 1 x 5.0 mm, 1 x 6.5 mm, 1 x 9.5 mm
65 25 28	7 (2 sizes)	1 x 3.5 mm , 6 x 6.5 mm
65 25 29	7 (4 sizes)	1 x 3.5 mm, 2 x 5.0 mm, 2 x 6.5 mm, 2 x 9.5 mm
65 25 30	Blank	-

Name of Mfr. : SIKA

Temperature Calibrators

Supplied in a robust carrying case with low weight and compact design make the calibrators ideal for "on site" calibration. The calibrators will fulfill requirements in connection with quality assurance program as well as requirements from classification societies.



* Temperature Calibration

The metal block principle excludes the use of oil or other liquids. Interchangeable insertion tubes with various diameters ensure thermal contact to the sensor being tested.

Simply place the sensor to be calibrated in the calibrator. Set the temperature. From the dual line display both true and set temperature can be read. When stabilisation occurs simply read the true temperature from the calibrator and recalibrate the sensor or system accordingly.

Unit Per Set

CODE	**65 25 11**
Model	TC600M
Temperature Range	50 to 600°C
Resolution	0.1°C
Accuracy	0.5°C
Stability	0.05°C
Heating Time	18 min.
Well Depth	155 mm
Well Dia.	1"
Thermostat Test	Yes
Power Supply	115/220 volt
Weight	7.3 kgs
Name of Mfr.	ScanSense

Temperature Calibrators TC15M/TC65M

Designed to maintain high accuracy and stability under the most severe conditions, and will fulfill requirements in connection with quality assurance programs as well as requirements from classification societies.

True Calibration - no simulation. The calibrator generates true temperature reference.

Calibration standard - each calibrator is calibrated against precision equipment, which is traceable to national standards, and calibration certificates are supplied with each unit.

Portable - low weight and compact design make the calibrators ideal for "on site" calibration.

TC15M

TC65M

Unit Per Set

CODE	**65 25 12**	**65 25 13**
Model	TC15M	TC65M
Temperature Range	-40 to 150°C	30 to 650°C
Resolution (display)	0.1°C	
Accuracy	±0.3°C	±0.5°C
Stability	±0.05°C	±0.1°C
Heating Time to Max.	50 min.	14 min.
Cooling Time to Min.	20 min.	40 min.
Thermostat Test	Yes	
USB	Yes	
Well Depth	110 mm	155 mm
Well Diameter	19 mm	26 mm

(to be continued)

Unit Per Set

CODE	65 25 12	65 25 13
Power Supply	90 – 240VAC, 60/50 Hz	230VAC, 50 Hz Or 110VAC, 60 Hz
Power Consumption	180 Watt	1,600 Watt
Dimension	117 x 300 x 245 mm	
Weight	5.5 kgs	

Name of Mfr.: Scan Sense

Portable Infrared Temperature Calibrators

Used for calibrating long distance infrared thermometer, which are designed with light weight as handhold and small calibrators.

It is easily certify IR pyrometers to 600°C with large 2.25" (57 mm) blackbody target. Resistance thermometer detectors reference well for high precision whether you're using in-line or handheld infrared pyrometers. For even higher precision, a contact calibration well is located directly behind the blackbody surface. Using an optional digital RTD (Resistance Temperature Detector) thermometer and calibrated secondary probe, accuracies of ±0.1°C can be achieved.

Unit Per Set

CODE	65 25 38
Model	DR600P
Temperature Range	50°C to 600°C / 122°F to 1,112°F
Resolution	0.1°C / °F
Accuracy	±0.5°C @ 100°C / ±1.0°F @ 212°F ±1.8°C @ 600°C / ±3.6°F @ 1,112°F
Stability	±0.1°C @ 100°C / ±0.2°F @ 212°F ±0.3°C @ 600°C / ±0.6°F @ 1,112°F
Heating Time	Max. 40 min.
Cooling Time	Max. 45 min. to 100°C
Well Dia.	2.25"/57 mm
Power Supply	230V AC (±10%), 1.5 A; or 110V AC, 3A
Weight	2.7 kgs

Name of Mfr. : Clip-on

High Temperature Calibrators
Model WY1200

Ideal for steel, glass, metallurgical industries, cement plants, refineries, fertilizer plants, thermal power stations, marine & offshore etc. It is stable with high temperature source up to 1,200°C for calibration of multiple sensors at high temperature.

Calibration software "485" shall be supplied by optional request.

Unit Per Set

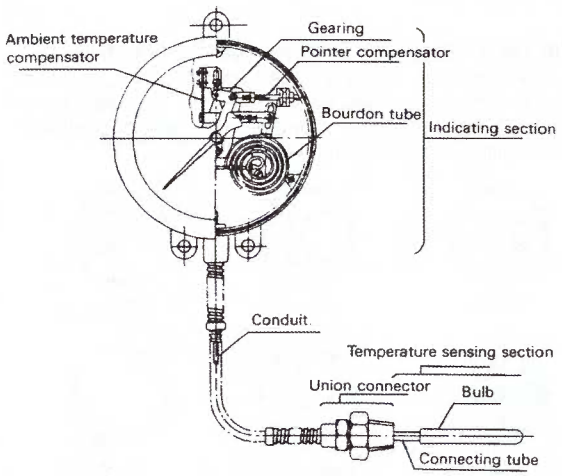
CODE	65 25 39
Model	WY1200
Temperature Range	300°C to 1,200°C
Resolution	1.0°C
Accuracy	800°C : 2°C
Stability	±0.2°C/15 min.
Block Temperature Control	Digital PID controller, Auto-tune
Well Depth x Diameter	150 mm x 29 mm
Power Supply	90 to 240 VAC, 50/60 Hz
Power Consumption	1,200 W
Dimension	180 x 300 x 370 mm
Weight	9.5 kgs

Name of Mfr. : Clip-on

Mercury Actuated Dial Thermometers

Mercury actuated dial thermometers measure the temperature of an object regardless of the exterior temperature of environment. There are two types: a remote reading type and a rigid stem type. These temperatures are compensated for ambient temperature. The section from the bulb to the Bourdon tube of the thermometer is filled with mercury that is under pressure. Any temperature change around the bulb will cause the Bourdon tube to move thereby creating a change in the indicator needle.

These thermometers are sturdily constructed to precision specifications and thoroughly inspected before packing. Resistant to shocks and vibrations.

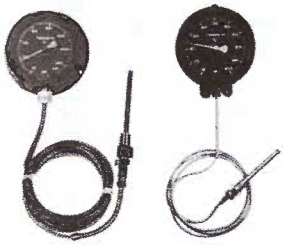


General Specifications

1. Type	Wall (surface) mounting type	
	Flush mounting type available for both "round flange" and "square flange"	
	Straight stem type	
	Electric contact feature, also available with microswitch if requested.	
2. Materials	Case & cover	Cast aluminium
	Flexible tube	Stainless steel (SUS304)
	Union connector	C3602 or SUS304
	Capillary	Copper plated iron
	Angle Stem	SUS304 or FCMB
	Stem	SUS304 or SUS316
	Flange	SUS304
3. Outer Finish	Scale plate	Anti corrosive painted in black
	Flexible tube	Stainless steel available for vinyl cover on tube, if requested.
	Union cone and flange	Stainless steel
	Stem	Stainless steel finish

(to be continued)

1. Dial Thermometer for remote reading



Standard Specifications

Optional Temperature Range	-50°C - +500°C	
Dial Outside Diameter	100 mm	150 mm
Capillary Length with Spiral Standard Option	 3 meters Up to 30 meters	
Bulb Thread & Size	PT(PF) 1/2, 3/4	

When ordering above, please specify
1. Temperature range.
2. Dial diameter.
3. Length of capillary with spiral.
4. Bulb thread and size.
5. Bulb length.

65 25 16 (Example)	Remote reading dial thermometer, dial diam 100 mm. 150°C, 2 meters, 100 mm bulb PT 1/2	Pc.

2. Dial Thermometer of stem type for ship's engine use

Straight Vertical Connection

Straight Horizontal Connection

Standard Specifications

Connection Type	Straight vertical connection	Straight horizontal connection
Measuring Range	Optional temperature ranges within 50 ~ 650°C & °F	
Dial Diameter	100 mm	
Stem Length " Diam.	300 mm 12 mm	
Connection	PT(PS) 1/2, 3/4	
Use	Fits directly into the diesel engine exhaust pipe	

When ordering above, please specify
1. Temperature range.
2. Connection type.
3. Measuring range.
4. Dial diameter.
5. Stem length and diameter.
6. Connection type size thread.

65 25 17 (Example)	Stem type dial thermometer, 650°C vertical connection dial diam. 100 mm stem 300 mm x 12 mm PT 3/4 connection	Pc.

Temperature Sensors

For measuring the temperature difference between two points by pairs of dissimilar metal wires, and used in many appliances like indicators and controllers. There are various types of sensors for different applications. Please refer some temperature sensors as listed for major applications for your guidance.

Temperature Sensors
for Exhaust Gas Temperature Measurement

Technical features
- Very high vibration resistance.
- One-piece protection tube.
- Available with optional instrument transformer.
- Customer-specific fitting lengths and fixing thread on request.

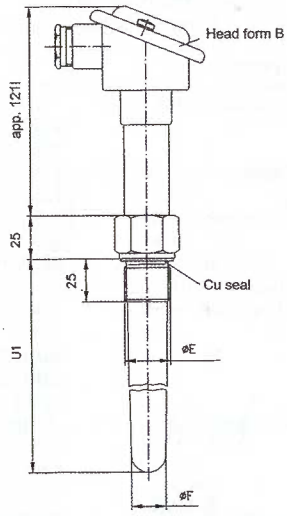
Specification

Accuracy Class	:	Resistance thermometer class B Thermocouple class 1
Measuring insert is demountable		
Diameter (acc. immersion tube length)		
	:	14/17 mm conical up to 150 mm
	:	17/23 mm conical up to 150 mm 20/23 mm conical from 200 mm
Degree of Protection	:	IP 54
Max. Temperature	:	Depending on immersion tube material
Process Connection	:	Fix connecting thread
Electric Connection	:	Head form B made of aluminium die casting, silver finish, max. temperature : 200°C
Approvals	:	DNV GL type approval

How to order :

65 - 25 - 22

Temperature sensor for exhaust gas temperature measurement, with SIKA order code (as indicated in the table below)



Type		SIKA Order Code
Resistance thermometer	W	
Thermocouple	T	
Diameter 14/17 mm conical (U1=up to 150 mm)		14
17/23 mm conical (U1= up to 150 mm)		17
20/23 mm conical (U1=200 mm up to 300 mm)		20
Material Stainless steel 1.4571. (max. 450°C)		3
Steel 1.7335 (max. 600°C)		5

(to be continued)

Type		SIKA Order Code
Sensor Element		
1 x Pt 100 3-wire / class B		P31
1 x Pt1000 2-wire / class B		P12
1 x Fe-CuNi (Type J)		1TJ
2 x Fe-CuNi (Type J)		2TJ
1 x NiCr-Ni (Type K)		1TK
2 x NiCr-Ni (Type K)		2TK
Resistance thermometer/class A		AXX
Immersion Tube Length	100 mm	100
	120 mm	120
	150 mm	150
	200 mm	200
	250 mm	250
	300 mm	300
Measuring Insert	Interchangeable	2
Electric Connection	Head form B with ceramic socket	BO
	Head form B with transmitter	BT
Process Connection	G1/2 A (ø14/17 mm)	2T6
	G3/4	3T6
	M27 x 2	HT6
	M33 x 2	FT6

Name of Mfr.: SIKA

Cable Sensors

for Exhaust Gas Temperature Measurement

Technical features

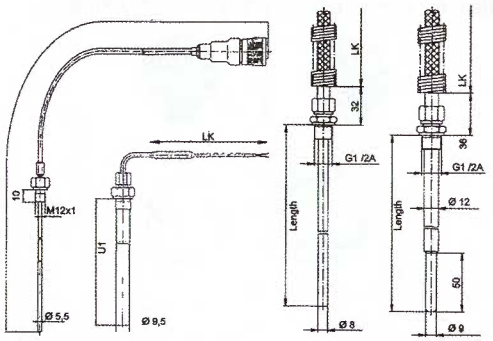
- Reliable electrical connection thanks to robust Cannon connector system (T55).
- High vibration resistance (T55/T95/TWE).
- Optional protection tube available (T55/T95).
- Customer-specific fitting lengths and fixing thread on request (T55/T95/TWE).
- Exceptionally durable connecting cable (T95/TWE).

Specification

Accuracy Class	: Thermocouple class 2 (T55/T95) Resistance thermometer class B / Thermocouple class 1 (TWE)
Measuring insert is	: Not interchangeable (T55/TWE) Not demountable (T95)
Diameter	: 5.2 mm (T55), 8 mm (TWE), 9.5 mm (T95), 12 mm (TWE)
Degree of Protection	: IP 54 (T55/T95/TWE)
Max. Temperature	: 800°C for thermocouple (T55/TWE) 600°C for thermocouple (T95) 600°C resistance thermometer (TWE)
Process Connection	: Without or with clamp coupling (T55) Without / Clamp coupling (T95) Plain immersion tube / Clamp coupling (TWE)
Electrical Connection	: Mineral insulated cable with Cannon plug (T55) FEP cable, wire-braided / Fibre glass, wire-braided (T95) Compensation pipe, wire-braided (TWE)
Approvals	: DNV GL type approval (TWE)

How to order : 65 - 25 - 27

Cable sensor for exhaust gas temperature measurement, with SIKA order code (as indicated in the table below)



Type		SIKA Order Code
Diameter	5.2 mm	T55
	9.5 mm	T95
	12 mm	TWE
Material		
Stainless steel 1.4571 (T55/T95)		3
Stainless steel 1.4571 (TWE)		C
Sensor Element		
1 x NiCr-Ni (type K) (T55/T95)		1TK
2 x NiCr-Ni (type K) (T55/T95)		2TK
1 x Fe-CuNi (type J) (TWE)		J11
1 x NiCr-Ni (type K) (TWE)		K11
1 x Pt100 3-wire / class B (TWE)		P31
2 x Pt100 3-wire / class B (TWE)		P32
Length	100 mm (TWE)	0100
	150 mm (TWE)	0150
	200 mm (T95)	2000
	200 mm (TWE)	0200
	250 mm (T95)	2500
	250 mm (TWE)	0250
	290 mm (T95)	2900
	1,500 mm(T55)	1500
Electrical Connection		
Mineral insulated cable with Cannon plug (T55)		X0
FEP cable, wire-braided (T95/TWE)		07
Fibre glass, wire-braided (T95/TWE)		08
Process Connection		
Clamp coupling steel, M12x1 (T55)		R
Without (T95/TWE)		0
Adjustable union nut M18 x 1.5 (T95)		1
Clamp coupling steel, galvanized G1/4 (TWE)		I
Clamp coupling steel, galvanized G1/2 (TWE)		K
Clamp coupling steel, galvanized M27 x 2 (TWE)		H
Cable Length LK		
without cable (T55)		
1.0 mtr (TWE)		01
1.5 mtr (T95)		02
2.5 mtr (T95)		04
5.0 mtr (T95)		09

Name of Mfr.: SIKA

Temperature Sensors

for Cooling Water Temperature Measurement

Technical features

- Very high vibration resistance (WMJ/W12).
- Simple alignment of the connection head (WMJ).
- One-piece protection tube (WMJ/W12).
- Available with optional instrument transformer (WMJ/W12).
- Customer-specific fitting lengths and fixing thread on request (WMJ/W12).

Specification	
Sensor element	: Resistance thermometer class A and B (WMJ/W12)
Measuring insert l	: Interchangeable (WMJ/W12)
Diameter	: 8 mm (WMJ), 12 mm, 14 mm (W12)
Degree of Protection	: IP 54 (WMJ/W12)
Max. Temperature	: 200°C resistance thermometer (WMJ/W12)
Process connection	: Fix connecting thread (WMJ/W12)
Electric connection	: Head form B made of aluminium diecasting, silver finish, temperature 125°C (WMJ) Head form B made of aluminium diecasting, silver finish, temperature 200°C (W12)
Approvals	: DNV GL type approval, ABS, BV, LRS, RINA and Class NK (WMJ)

How to order :
65 - 25 - 23

Temperature sensor for cooling water temperature measurement, with SIKA order code (as indicated in the table below)

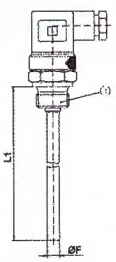


Fig. A

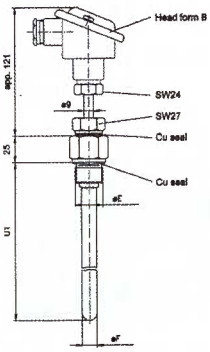


Fig. B

Type	SIKA Order Code							
Resistance thermometer (WMJ)	W							
(W12)	W							
Diameter 8 mm (WMJ)		08						
12 mm (W12)		12						
14 mm (W12)		14						
Material								
Stainless steel 1.4571 (WMJ/W12)		3						
Sensor Element								
1 x Pt100 3-wire / class B (WMJ/W12)			P31					
2 x Pt100 2-wire / class B (WMJ)			P22					
2 x Pt100 3-wire / class B (W12)			P32					
1 x Pt100 4-wire / class B (W12)			P41					
1 x Pt1000 2-wire / class B (WMJ)			P12					
2 x Pt1000 2-wire / class B (WMJ)			P24					
Resistance thermometer / class A (WMJ/W12)			AXX					
Immersion Tube Length	50 mm (WMJ)			050				
	80 mm (WMJ/W12)			080				
	100 mm (WMJ/W12)			100				
	120 mm (W12)			120				
	150 mm (WMJ/W12)			150				
	200 mm (W12)			200				
	250 mm (W12)			250				
Measuring Insert	Interchangeable (WMJ/W12)				2			
Electric Connection								
Head form J with ceramic socket (WMJ)						J0		
Head form J with transmitter (without approvals) (WMJ)						JT		
Head form B with ceramic socket (W12)						BO		
Head form B with transmitter (W12)						BT		
Process Connection	G1/2 A (WMJ)						2	
	G1/4 A (WMJ)						L	
	G3/4 A (WMJ)						3	
Process Connection E	G1/2 A (W12)						2T2	
	G3/4 A (W12)						3T2	
	M27 x 2 (W12)						HT2	
	M33 x 2 (W12)						FT2	

Name of Mfr.: SIKA

Manual Temperature Monitors of Bulk Cargo

Cargo Temp Roller

A manual mobile temperature monitoring device of bulk cargo. Easy to handle, cable with depth indication, large integrated LC display and comes in a sturdy plastic suitcase.

As a basic principle, all goods falling under the IMDG Code, chapter 2.4 class 4.2, should be temperature monitored, in order to detect the incipient self-heating process in time. Many products are self-heating and/or self-igniting as bulk cargo. This autonomous process may lead to the cargo destroying itself, if measures to counteract are not taken in time.

Unit Per Set

CODE	**65 25 20**
SIKA Code	ETCTP000350004
Measurement Input	Pt1000 / 2-wire
Cable Length	35 mtr
Cable Design	Temperature proofed, braided FEP cable, with 6 marks every 5 meters for depth indication, Tension = 50 N
Measuring Probe	Length = 100 mm, ø = 20 mm, weight = 200 grm
Measuring Input	Pt1000 / 2-wire
Measuring Range	-40.0 to 150.0°C
Resolution	0.1°C
Accuracy	±0.5% FS ±1 digit
Display	3 1/2 digit LCD, 18 mm high
Measuring Rate	3 sec.
Power Supply	Maintenance-free battery
Battery Life Time	Approx. 10 years
Degree of Protection	IP40
Housing Size	ø approx. 210 mm, depth 95 mm, handle 45 mm
Weight	2 kgs incl. case
Accessories	Portable ABS-plastic case with foam inlay case Dimensions 394 x 294 x 106 mm

Name of Mfr.: SIKA

Marine Approved Advanced Temperature Calibrators

JOFRA ATC Series

The ATC series offers a wide temperature calibration range (-90 to 650°C) and improved stability (+ 0.01°C for most models) for marine calibration. It utilizes innovative dual-zone heating technology for precision calibration of sensors. Independent heating control allows the lower zone to ensure optimum heat dissipation throughout the entire calibration zone, while the upper zone compensates for heat loss from the sensor-under-test and the open top. This design also eliminates the need for insulation of the sensors-under-test and allows calibration of liquid-filled and other mechanical sensors.

Major Features:

- 12-month accuracy to ±0.04°C / 0.07°F.
- Temperature range -90° to 650°C / -130° to 1,202°F.
- Stability to ±0.01°C / 0.018°F.
- 14 different models.
- MVI stability circuitry.
- 100% automatic calibration.
- RS232 interface and JOFRACAL calibration software.
- Input for external reference sensor and sensor-under-test.
- Timesaving auto-stepping and temperature switch test functions.
- Interchangeable inserts including multi-hole designs.
- Active dual-zone.

See more details about the models in ATC series in the following table, and order referring to ordering information.

Unit Per Set

CODE	**65 25 31**	**65 25 32**	**65 25 33**	**65 25 34**
Model	ATC-125	ATC-140	ATC-156	ATC-157
Temperature Range	-90 to 125°C (-130 to 257°F)	-20 to 140°C (-4 to 284°F)	-24 to 155°C (-11 to 311°F)	-45 to 155°C (-49 to 311°F)
Stability	±0.03°C/ ±0.054°F	±0.02°C/ ±0.04°F	±0.01°C/±0.018°F	
Time to Stability	10 min.	15 min.	7 min.	6 min.
Power Source	115V (90-127) 230V (180-254)			
Frequency (Non US deliveries)	50 Hz ± 5, 60 Hz ± 5			
Power Consumption	300 VA			
Immersion Depth	185 mm/ 7.3" (Including insulation plug)	180 mm/ 7.1" (Dry-block) 150 mm/ 5.9"(Liquid bath)	160 mm/6.3"	
Wall Diameter	30 mm/ 1.18"	63.8 mm/ 2.51"	30 mm/ 1.18"	20 mm/ 0.79"
Dimensions L x W x H mm	506 x 156 x 449	352 x 156 x 360		
Weight kgs	18.8	12.8	12.2	13.1
Protection Class	IP-10			
Certificate	DNV Marine Approval No.A-10384			

Name of Mfr.: AMETEK Calibration Instruments

Unit Per Set

CODE	**65 25 35**	**65 25 36**	**65 25 37**
Model	ATC-250	ATC-320	ATC-650
Temperature Range	28 to 250°C (82 to 482°F)	33 to 320°C (91 to 608°F)	33 to 650°C (91 to 1,202°F)
Stability	±0.02°C/±0.04°F	±0.01°C/±0.018°F	±0.01°C/±0.018°F (@100°C/212°F)
Time to Stability	15 min.	10 min.	10 min.
Power Source	115 V (90-127) 230 V (180-254)		115 V (100-127) 230 V (200-254)
Frequency (Non US deliveries)	50 Hz ± 5, 60 Hz ± 5		
Power Consumption	1,150 VA		
Immersion Depth	150 mm / 5.9" (dry-block)	150 mm / 5.9"	
Wall Diameter	63.8 mm / 2.51"	30 mm / 1.18"	
Dimensions L x W x H mm	352 x 156 x 360		
Weight kgs	10.8	10.2	12.1
Protection Class	IP-10		
Certificate	DNV Marine Approval No.A-10384		

Name of Mfr.: AMETEK Calibration Instruments

Order Information;

Order Number	Description
	Base Model Number
ATC125	-90 to 125°C (-130 to 257°F)
	Model Version
A	Basic Model (no sensor-under-test or reference probe input)
B	Including sensor-under-test and reference probe input
	Power Supply
115	115 VAC
230	230 VAC
	Main Power Cable Type
A	European, 230V
B	USA/Canada, 115V
C	UK, 240V
D	South Africa, 220V
E	Italy, 220V
F	Australia, 240V
G	Denmark, 230V
H	Switzerland, 220V
I	Israel, 230V
	Insert Type and Size
XXX	1 x Insert is included in the standard delivery
	Calibration Certificate
F	NPL Traceable temperature certificate (Standard for Europe, Asia, Australia and Africa)
G	NIST traceable temperature certificate (Standard for Americas)
H	Accredited certificate (Optional)
	Options
C	Carrying case
R	4 mm 90° angled STS-100 reference probe with accredited certificate in temperature range : -90°C to 125°C / -130°F to 257°F
X	No option used

ATC125 B 230 A M01 F X Sample order number JOFRA ATC-125B with standard accessories, 230V AC, European power cord, multihole insert type M01, and NPL traceable temperature certificate.

Standard Delivery

Items	ATC-125	ATC-140/250	ATC-156/157/320 and 650
ATC dry-block calibrator (user specified)	○	○	○
Mains power cable (user specified)	○	○	○

(to be continued)

(to be continued)

Items	ATC-125	ATC-140/250	ATC-156/157/320 and 650
Traceable certificate - temperature performance	○	○	○
Insert (user specified)	○	○	○
Set of matching insulation plugs	○	-	○*
Set of rubber cones for insulation plug	○	-	-
Tool for insertion tubes	○	○	○
RS232 cable	○	○	○
JOFRACAL calibration software	○	○	○
AMETRIM-ATC software to adjust the ATC series	○	○	○
User manual	○	○	○
Reference manual (English)	○	○	○

Remark: ○ * : 4mm or 1/4 in hole for reference sensor

Marine Temperature Calibrators

JF MTC Series

Probably the most popular marine temperature calibrator in the world! The MTC series facilitates the unique JOFRA MVI system, which ensures full stability, even if the mains supply is ±20 VAC! A true timesaver. Large inserts make these calibrators suitable for even large exhaust sensors, and liquid filled temperature switches. The MTC series features a large easy-to-read backlit display that provides icons and information regarding the status of the MTC and the calibration in progress. The MTC series also features an auto-stepping function, which makes it possible to stay in the control room or on the bridge to monitor the temperature reading while the calibrator, located in the engine room by the sensor, automatically steps through a number of pre-programmed temperatures thus performing a full loop calibration.

Major Features :
- 12-month accuracy to ±0.4°C / 0.7°F.
- Temperature ranges -17 to 650°C / -1 to 1202°F.
- 3 different models.
- RS232 interface and JOFRACAL calibration software.
- Stability indicator.
- Timesaving auto-stepping and switch test functions.
- MVI stability circuitry.
- Interchangeable inserts including multiholes.

See more details about the models in MTC series in the following table, and order referring to ordering information.

Unit Per Set

CODE	65 25 41	65 25 42	65 25 43
Model	MTC-140A	MTC-320A	MTC-650A
Temperature Range	-17 to 140°C (-1 to 284°F)	33 to 320°C (91 to 608°F)	33 to 650°C (91 to 1,202°F)
Stability	±0.05°C/±0.09°F	±0.1°C/±0.18°F	
Time to Stability	5 min.	8 min.	
Power Source	115V (90-127) 230V (180-254)		
Frequency (Non US deliveries)	50 Hz ± 5, 60 Hz ± 5		
Power Consumption	150 VA	1,150 VA	

(to be continued)

Immersion Depth	115 mm/4.5" (insulation included)	110 mm/4.3"
Dimensions L×W×H mm	241 × 139 × 325	
Weight kgs	6.5	5 / 6.4
Protection Class	IP-10	
CE Conformity	EN61326 : 1997/A1 : 1998/corr.(2000) EN61010-1 : 1993/A2 : 1995	
Certificate	DNV Marine Approval No.A-10549	

Name of Mfr.: AMETEK Calibration Instruments

Order Information;

Order Number	Description
	Base Model Number
MTC140A	-17 to 140°C (-1 to 284°F)
MTC320A	50 to 320°C (122 to 608°F)
MTC650A	50 to 650°C (122 to 1,202°F)
	Power Supply (US deliveries 60 Hz only)
115	115V AC
230	230V AC
	Main Power Cable Type
A	European, 230V
B	USA/Canada, 115V
C	UK, 240V
D	South Africa, 220V
E	Italy, 220V
F	Australia, 240V
G	Denmark, 230V
H	Switzerland, 220V
I	Israel, 230V
	Insert Type and Size
XXX	1 x Insert for dry-block configuration
	Calibration Certificate
F	NPL Traceable Calibration Certificate (Standard for Europe, Asia, Australia and Africa)
G	NIST Traceable Temperature Certificate (standard for Americas)
H	DANAK Accredited Calibration Certificate (Optional)
	Options
C	Carrying case

MTC650A 230 A M01 F C Sample order number
JOFRA MTC-650 A with standard accessories, 230V AC, European power cord, multihole type M01, NPL traceable certificate and carrying case.

Standard Delivery for Model MTC-140A/320A and 650A

INSERTION Items

MTC dry-block calibrator (user specified)
Mains power cable (user specified)
Traceable certificate – temperature performance
Insert (user specified)
Tool for insertion tubes
User manual
Test cables (1 x red, 1 x black)
3 pcs. Insulation plugs for : 1/4, 3/8, 1/2 in (6, 10, 13 mm) sensors (MTC-140A only)
RS232 cable
JOFRACAL calibration software

7TH 65

Advanced Signal Calibrators

Model ASC300

The growing amount of various electrical sensors in marine electronics makes instruments like JOFRA ASC300 more and more useful. Quick and easy measurement and simulation make it ideal for maintenance and calibration. The JOFRA ASC300 combines a full numerical keypad with a series of function keys and a graphical user interface, which makes it easy to perform various tasks in a short time. The two channels provide the user with an isolated read-back circuit. The JOFRA ASC300 has full fuseless protection to 240 VAC, which is an important feature as most failures in signal calibrators derive from over-voltage conditions. As the instrument is compatible with JOFRA APM pressure modules, it offers a true multi-function operability.

Major Features :

- Accuracy to ±0.2°C / 0.36°F.
- Simultaneous input and output.
- Input and output: TCs (13 types), RTDs (14 types), 0-20 VDC, 0-24 mA, 5-4,000Ω, 0-10 kHz, and pulse trains.
- Isolated read-back circuit with 24 VDC loop power.
- APM pressure module input for pressure applications.

Unit Per Set

CODE	65 25 45
Model	ASC300
Operating Temperature	-10 to 50°C / 14 to 122°F
Storage Temperature	-20 to 70°C / -4 to 158°F
Power Specifications	4 × AA Batteries*
RS232 Communication Interface	Connector..... Stereo jack Communication rate.. 9,600 band, ASCII Electrical interface. ... ±5 V non isolated
Dimensions mm	235 × 53 × 95
Weight grm	510
Approved and Certificate	CE-EMC .. EN50082-1: 1992 and EN55022: 1994 Class B Safety: CSA C22.2 No.1010.1: 1992 The JOFRA ASC-300 is type approved by Det Norske Veritas. Approval, Certificate No. A-10549
Standard Delivery	JOFRA ASC300 instrument Battery set (4 × AA) Manual Set of test leads Soft carrying case and shoulder strap NIST traceable certificate

Name of Mfr.: AMETEK Calibration Instruments

Ordering Information :

Order No.		Description
		Base Model Number
ASC300		Handheld calibrator
		Certificate
	G	NIST traceable certificate (standard)
	H	Accredited certificate (optional)
ASC300	G	Sample order number JOFRA ASC300 with standard NIST traceable certificate.

FP Temperature Sensors

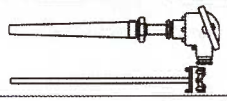
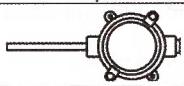
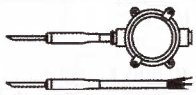
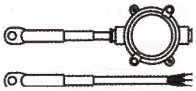
1800 series

Marine sensors type approved for marine applications such as measuring exhaust gases and cooling water in diesel engines as well as product and room temperatures in refrigeration stores. The temperature sensors are specially designed with high resistance against vibration according to IEC 68-2-6. Approved by Lloyds Register of Shipping and Det Norske Veritas.

The 1800 – 1812 series of temperature sensors is typically used within the following fields of applications:

- Marine sector
- Diesel engines for generators
- Generators
- Big ship engines
- Containers
- Refrigeration industry

Unit Per Set

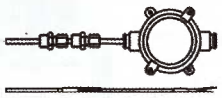
65 25 51	
1801 – Type UST 1 Thermocouple assembly for exhaust gases 	Measurement of exhaust temperature in ships and stationary diesel engines. The operating range is up to 800°C in gaseous media.
65 25 52	
1802 – UST 2 Thermocouple assembly for exhaust gasses with interchangeable insert 	Measurement of exhaust temperature in ships and stationary diesel engines. The operating range is up to 800°C in gaseous media with high flow velocity.
65 25 53	
1803 – Type UST 3 Thermocouple assembly UST 3 for exhaust gasses with interchangeable insert 	Measurement of exhaust temperature in ships and stationary diesel engines. The operating range is up to 800°C in gaseous media with high flow velocity.
65 25 54	
1804 – Type RM 2 Resistance Thermometer, room sensor for ships 	Measurement of temperature in rooms e.g. refrigeration, freeze and cargo stores, specially onboard ships. The operating range is from -40 to 80°C.
65 25 55	
1805 – Type IM Resistance thermometer, insertion sensor 	Measurement of temperature in e.g. meat and fruit during transportation specially onboard ships. The operating range is from -40 to 70°C.
65 25 56	
1806 – Type GM Resistance Thermometer GM, vulcanized with rubber 	Measurement of temperature in cold and wet areas e.g. in cargo rooms, in refrigeration and fishing ships, reservoirs and containers. The operating range is from -40 to 70°C.

(to be continued)

65 25 57

1807 – Type ST

Thermocouple assembly, stern tube

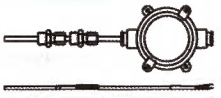


For measurement and surveillance of bearing temperature in stern tubes on ships in order to avoid damages and breakdown of costly equipment. The operating range is up to 800°C.

65 25 58

1808 – Type SM

Resistance Thermometer, stern tube

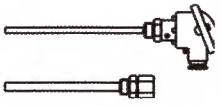


For measurement and surveillance of bearing temperature in stern tubes on ships in order to avoid damages and breakdown of costly equipment. The operating range is up to 400°C.

65 25 59

1809 – Type BFM

Resistance Thermometer, screw-in type with fixed insert. Classified.

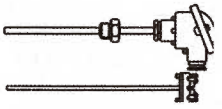


Measurement of temperature in gasses, vapours and fluids in pipes and cooling systems. Threaded connection to the process directly or with separate screw-in pocket. The operating range is up to 250°C, max. 50 bar and flow velocity is up to 25 m/sec (air).

65 25 60

1810 – Type BM

Resistance Thermometer, screw-in type with interchangeable insert



Measurement of temperature in pipes and containers with gaseous and liquids media, such as air, vapour, gasses, water and oil. The operating range is up to 600°C, max. 50 bar and flow velocity is up to 25 m/sec (air).

65 25 61

1812 – HLM

Resistance Thermometer HLM for bearing and surface temperature measurement

For measurement and surveillance of bearing temperature on ship engines and machine constructions. Can be used on surfaces up to 180°C.

Name of mfr. : Ametek Calibration Instruments

Application			
Max. r.p.m.	Up to 350 r.p.m.	Up to 600 r.p.m.	Up to 1,000 r.p.m.
Suitable for	Low speed internal combustion engines, reciprocating steam engines, and air and gas compressors.	Medium speed internal combustion engines, reciprocating steam engines, and air and gas compressors.	Diesel engines, gasoline engines, and other high-speed internal combustion engines.
Nagano Keiki	MM20	MM30	MW30
Baewert GmbH (Max. Pressure Frequency)	50/2 (Outside spring-joint indicator) (300 r.p.m.)	30/2 (Outside spring-joint indicator) (500 r.p.m.)	25-M (Bar spring indicator) (1,000 r.p.m.)
Permissible Pressure	600 bar	600 bar	220 bar
Weight Approx.	1.4 kgs	1.1 kgs	-

How to order : CODE

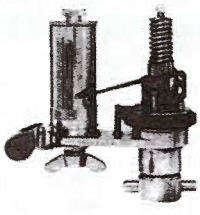
Engine indicator, MAXIMUM NTERMEDIATE SPEED r.p.m., MAXIMUM PRESSURE kgf/cm² .

Unit Per Pc.

CODE	Max. Pressure kgf/cm²	Spindle Scale Marking mm/ kgf/cm²	Piston Size	Piston Diam. mm	Indicator Diagram Max. Height mm	Indicator Diagram Max. Length mm	Drum Diam. mm
Max. Intermediate Speed : 350 r.p.m.							
65 26 01	40	1.2	1/5	9.06	50	90	40
02	50	1.0					
03	60	0.8					
04	70	0.7					
05	80	0.6					
65 26 06	100	0.5	1/10	6.41			
07	120	0.4					
08	140	0.35					
09	160	0.3					
Max. Intermediate Speed : 600 r.p.m.							
65 26 11	40	0.8	1/5	9.06	35	60	30
12	50	0.7					
13	60	0.5					
14	70	0.4					
65 26 15	85	0.35	1/10	6.41			
16	100	0.3					
17	130	0.25					
18	150	0.2					

The above listed items are the most common types, but high speed, high pressure types are also available.

Engine Indicators



The engine indicators are the pressure measuring instruments for reciprocating engines. They record the pressure change in the cylinders of internal combustion engines, reciprocating steam engines and gas or air compressors. The results are used for checking uniform and efficient performance of each cylinder, thus to assess the engine characteristics and to calculate the generated horse-power.

Planimeters

for Engine Indicator

Used to determine the average effective pressure from the indicator diagram of the engine indicator easily and accurately. Also capable of, similarly to ordinary planimeters, measuring the area of intricate plane figures.

Clip the figure to be measured on the plate to move the stylus along the closed figure. The difference between readings on the graduated ring before and after the stylus trip will provide the movement area of the figure in cm².

* Range of the stylus ..... within 65 x 130 mm
* One graduation on the ring .... 1 cm²
* Accurate reading ..... up to 0.1 cm²

65 26 21	Planimeter for engine indicator	Set

Engine Peak Indicators
(Peak Pressure Gauges)

For easy and quick measurement of the maximum peak pressure of engines. Consists of three major components: a check valve, a pressure gauge and an exhaust valve. The maximum peak pressure is directly read on the dial when the indication has settled. There is no need for diagram acquisition, area measurement with a planimeter, or length measurement with a scale. Oil-filled pressure gauges are used as indicators to provide outstanding vibration-resistant and heat-resistant characteristics. The internal pressure is released to zero by opening the exhaust valve after measurement.

Nagao Keiki Model

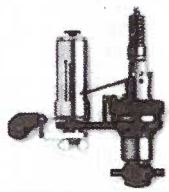
How to order : CODE

Engine peak indicator, TYPE of HANDLE (With or Without), PRESSURE RANGE

Unit Per Pc.

CODE	Pressure Range kgf/cm²	Indicator			
		Minimum Graduation kgf/cm²	Accuracy	Dial Size mm	Material of Bourdon Tube
		With Handle			
65 26 32	0 - 150	5	±1.5%FS	60	SUS-316

Baewert GmbH Model
Model 200/3

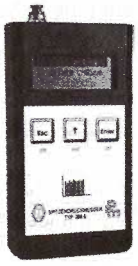


Technical Data

Measuring Range (bars)	20 ... 200	Maintenance-free Intervals (measurement)	1,000
Scale Division (bars)	0.2	Max. Diameter (mm)	38
Measuring in Accuracy (% FSO)	1.0	Length (in zero pos.) (mm)	162
Max. Pressure Frequency (r.p.m.)	2,000	Weight (grm)	660
Limiting Temperature ;		Connecting Thread Fastening (span-mm)	17
Operating Surface (°C)	+ 60		
Connecting Thread (°C)	+250		

65 26 38	Peak pressure gauge, mechanical, type 200/3	Pc.

Electronic Peak Pressure Gauges
Type 300 E



The instrument, suitable for any type of combustion engine, is characterised by a very easy to handle 3-key, menu guided operation. Peak pressure and automatically calculated rotational speed for up to 64 cylinders can be stored into the gauge. The results are shown as column chart and as numerical values. The extended version stores, in addition, date and time of the measurement. All data may be transferred to a PC, for evaluation and archiving.

Technical Data

Measurement Range	0 - 300 bar
Sensitivity	5 - 99 pC/bar
Tolerance	≤ 1% FS
Revolution	30 - 3,000 rpm
Store Capacity	64 cylinder (20 cylinder/engine)
Number of Measured Cycles	5 40
LC-display	120 x 32 pixel
Switch off Automatic	After 5 minutes without any action
Power Supply	Internal NiMH-accumulated 3.6V, Life time without charging 20 hours.
Charge	Input: 220 or 110V, output 7.5V
Input	3 keys foil pad
Size	84 x 133 x 30 mm
Name of Mfr.	Baewert GmbH

Type 300 E with Software
Extended Version

The PC – software enables the output of values as graph or table, thus allowing a quick overview of the actual engine state. Irregularities in the combustion process are easily detected and corrective action can take place immediately. Comparison with archived data allows to detect changes in engine behaviour.

Technical Data

Additional RS 232-interface	Data transmission to PC via serial COM-cable or UBS serial converter (included)

Additional Software for PC

CODE	Description	Unit
65 26 35	Electronic Peak Pressure Gauge Baewert Type 300 E	Set
65 26 36	Electronic Peak Pressure Gauge Baewert Type 300 E with Software	Set

Electronic Indicator Systems
Type HLV 2005 MK

A microprocessor controlled portable instrument for quick and simple recording of combustion pressure cycles in combustion engines. The evaluation of the data is carried out with a PC-system. The data recorded by this indicator are transmitted via serial interface to a PC.

- Graphic display of recorded values for each cylinder.

- Computation of mean indicated pressures.
- Computation of the power of each cylinder, as well as for the whole engine.
- Graphic display of indicator graph (p-V graph).
- Zoom and shift function for detailed display of any portion of the graph.
- Output of any graph to a PC printer.
- Saving of all recorded and engine data on mediums or hard disk.
- Export of data in ACS II format, for further processing on any standard software, e.g. Excel.

Technical Data

Measurement Range	0 – 300 bar (... 2,000 bar ; injection pressure)
AD-converter	12 bit
Accuracy	< 1% FS
Revolution	10 ... 8,000 rpm
Foil Pad	16 keys
Sampling Angle	1°
Storage Capacity for	280 series
Graphic Display	128 x 64 DOT MATRIX
Power Supply	2 internal rechargeable batteries 9V External mains (220V or 110V) 12V
Standard Sensor	Interrupting light barrier TDC sensor Options
Size (W x L x H)	100 x 196 x 40 mm
Weight	700 grm
Name of Mfr.	Baewert GmbH

CODE	Description	Unit
65 26 41	Electronic indicator system Baewert Type HLV 2005-MK	Set

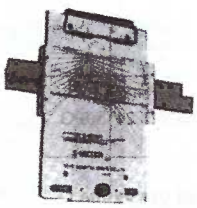
Piezoelectric Pressure Sensors for HLV 2005 MK

Special sensors on request for reliable and precise measurement.

Unit Per Pc.

CODE	**65 26 42**	**65 26 43**	**65 26 44**	**65 26 45**
Type of Sensor	LDE 25	QDE 25/L	QD 200	LDE 30/H
Measurement Range (bar)	250	250	2,000	300
Sensitivity (pC/bar)	42	20 ... 40	2, 5	20 ... 30
Max. Operating Temperature (°C)	350	350	200	500

∑ (Sigma) – Meters



Is a scale with which you can calculate the effective average pressure of the ships main diesel engine with the indicator card easily and accurately. The addition of P1 + P2 .... P10 on the indicator card can be read more quickly and precisely by simply sliding the transparent 3 slides on the indicator card. The size of the scale plate is 130 x 200 mm. This unit is made of plastic and is light, compact, and easy to handle.

65 26 51	Sigma meter, 130 x 200 mm	Pc.

Indicator Paper

Recording paper for use with an engine pressure indicator.

Can be furnished in white or red for the sizes listed below. Provided in pads of 50 sheets.

Unit Per Pad

CODE	Type	Size
65 26 54	M-2L Metalic White	65 x 181 mm
65 26 55	M-2 Metalic White	66 x 146 mm
56	M-2 Red	66 x 146 mm
65 26 57	M-3 Red	55 x 113 mm
58	M-3 Metalic White	55 x 113 mm
65 26 59	W-3 Metalic White	35 x 113 mm

Indicator Cord

With wire center cord for use with an engine pressure indicator.

65 26 60	Indicator cord	Mtr

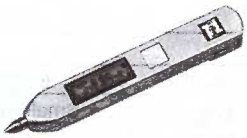
Crankshaft Distortion Dial Gauges

An inside gauge for checking the distortion of webs on crankshafts. With these gauges it is possible to check bearing alignments or deflections of the shaft without having to dismantle the engine.

Usable on diesel engine shafts as well as center crankshafts of engines or compressors. Can also be applied as a strain gauge on engine frames while the engine is in operation. Indicator is graduated in increments of 0.01 mm with a reading of 0 - 50 - 0 one turn equals 1 mm. 6 rods and one extension are included providing a range of sizes from 100 to 500 mm.

65 26 70	Crankshaft distortion dial gauge, in 0.01 mm graduation, 100 to 500 mm	Set

Pen Type Vibration Testers



For fast failure detecting of motor, electric fan, pump, air compressor, machine tools and so on, and for prompt testing of vibration on the workshop machines as well as for quick checking of unbalance and misalignment of bearings and gears. Holding tested value for 40 seconds, and automatic switch off after 40 seconds.

Unit Per Pc.

CODE	**65 26 71**
Model	TA415EB
Velocity Range	0.01 mm/s – 199.9 mm/s (RMS)
Frequency	10Hz ~ 1,000Hz
Accuracy	±5% ±2 digits
Display	3 ^ 1/2 digital LCD
Power Source	LR44 x 2 pcs
Size	150 x 22 x 18 mm
Weight	55 grm

Name of Mfr. : ICHINEN TASCO Co., Ltd.

Inspection Mirrors

Designed for inspection of the rear as well as inaccessible areas of precision machinery. All models have an insulated handle except 65 27 01.

The angle of the mirror head on these units is adjustable.

65 27 01 ... For use in tight and narrow place

65 27 02 ... With plastic handle

65 27 03 ... 2 Extension Shaft

65 27 04... Flexible Tube Shaft

Concave magnifying mirrors (38 mmø, 50 mmø) are available for 65 27 02 – 04 and also plain square mirrors (50 x 100 mm) for 65 27 02 and 03 available upon request.

Unit Per Pc.

CODE	Mirror Size	Type	Overall Length	Weight grm
65 27 01	22 mmø	For use in tight & narrow space	255 mm	45
65 27 02	50 mmø	w/plastic handle	390 mm	93
03		w/extension shaft	220 - 340	180
04		w/flexible shaft	345	155

Inspection Flashlights with Mirror

Inspection mirror complete with a small lamp, suitable for use in narrow interiors and places that are not exposed to light.

65 27 07

65 27 08

Unit Per Set

CODE	**65 27 07**	**65 27 08**
Type	Small Portable	Portable
Overall Length	380 mm	770 mm
Mirror	Plain 22 mmø	Concave 50 mmø Plain 25 x 50 mm
Battery	R6 (UM3) x 2	R14P (UM2) x 3
Lamp	2.5V	3.6V
Weight	148 grm	490 grn
Standard Accessories	Battery Case (Handle) 1 Extension Pipe with Flexible Section 1 Mirror 1 Lamp 3	Battery Case (Handle) 1 Connection Pipe 165 mm 2 Flexible pipe 180 mm 1 Mirror 2 Lamp 2 Carrying Case 1

20 Times Microscope Probe Tubes

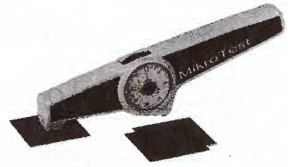
A microscopic probe that magnifies images up to 20 times their original size. Fitted with a light making it suitable for the internal inspection of diesel engine fuel nozzles. The inspection tube is 4.8 mm in diameter, furnished with two spare lamps, 2 pieces of dry batteries R20P (UM-1) and a 45° reflector for side inspection.

Supplied with a carrying case. A 70 mm long table is also available upon request.

Unit Per Set

CODE	Tube Length mm	Tube Diam. mm	Magnification	Battery
65 27 11	80 mm	4.8 mm	20	R20P (UM-1)x2 pcs
12	140 mm	"	"	"

Magnetic Coating Thickness Gauges



Non-destructive thickness measurement of non-magnetic coatings, e.g.: zinc, copper, chrome, cadmium, etc. Also paint enamel, plastic, etc. on iron and steel. The measurement of film thickness depends on the degree of magnetic attraction to a surface. The attraction depends on the distance of a permanent magnet from a steel surface. This distance represents the thickness of a non-magnetic coating. No power supply or calibration necessary.

Ambient temperature: -20°C...100°C, · Dimensions: Gauge 215 mm x 55 mm x 29 mm, · Plastic carrying case 235 mm x 185 mm x 46 mm, · Weight: Case incl. gauge approx. 560 g.

Type	Application
Standard version	
5/6 G	Electroplating and paint coatings on steel**
5/6 F	Paint on steel**
Automatic version	
6 S3	Enamel, plastic, rubber on steel**
6 S5	
6 S10	
6 S20	
6 Ni50	Electroplated nickel on non-ferrous substrates
6 Ni100	
6 Nife50	Electroplated nickel on steel**

** Steel: ST 33 to ST 60

Unit Per Pc.

CODE	Type	Range	Tolerance	Min. Surface	Min. Curvature Radius of the Sample	Min. Base Thickness
65 27 21	5/6 G	0 - 100 µm	±1 µm or 5% of reading	ø20 mm	5 mm convex / 25 mm concave	0.5 mm
65 27 22	5/6 F	0 - 1,000 µm	±5 µm or 5% of reading	ø30 mm	8 mm convex / 25 mm concave	0.5 mm
65 27 23	6 S3	0.2 - 3 mm	±5% of reading	ø30 mm	15 mm convex / 25 mm concave	1.0 mm

(to be continued)

Unit Per Pc.

CODE	Type	Range	Tolerance	Min. Surface	Min. Curvature Radius of the Sample	Min. Base Thickness
65 27 24	6 S5	0.5 - 5 mm	±5% of reading	o50 mm	15 mm convex / 25 mm concave	1.0 mm
65 27 25	6 S10	2.5 - 10 mm	±5% of reading	o50 mm	15 mm convex / 25 mm concave	2.0 mm
65 27 26	6 S20	7.5 - 20 mm	±5% of reading	o100 mm	100 mm convex / 150 mm concave	7.0 mm
65 27 27	6 Ni50	0 - 50 µm	± (1µm + 5% of reading)	o15 mm	5 mm convex / 25 mm concave	-
65 27 28	6 Ni100	0 - 100 µm	± (1µm + 5% of reading)	o15 mm	5 mm convex / 25 mm concave	-
65 27 29	6 NiFe50	0 - 50 µm	± (2µm + 8% of reading)	o20 mm	10 mm convex / 25 mm concave	0.5 mm

Name of Mfr. : Elektro-Physik

Ultrasonic Thickness Indicators

Applicable for measuring the wall thickness and state of corrosion of tanks, pipings, hull plates of ships, and structures. Extremely compact and light weight, simple to measure the thickness by attaching the probe.

Quick display update with last reading retained on the display. Display symbols alert user to poor coupling and low battery conditions. Automatically shut down when not in use for 3 minutes.

General Specifications

Measurable Materials	Steels, cast iron, stainless steel, other metals, glass, hard plastics, ceramics
Measuring Method	Ultrasonic pulse echo method
Display	Liquid crystal device with illumination light button
Power Supply	LR6 (SUM-3) alkaline battery x 1
Test Piece for Calibration	5 mm thick test piece installed on the main frame
Velocity Range	1,000 m/s to 12,000 m/s
Dimensions	W69 x D144 x H29.5 mm
Weight	150 grm (main frame), 50 grm (probe)

Unit Per Pc

CODE	65 27 35	65 27 37		65 27 38
Model	TI-56L	TI-66W		TI-56F
Measuring Range	1.5-250 mm	Probe B: 0.4-15 mm	Probe L: 3.0-250 mm	2-100 mm (for castings) 2-60 mm (for steel)
Minimum pipe size	OD 27.2 mm T:1.5 mm	OD 10.5 mm T:1.5 mm	OD 27.2 mm T: 3.0 mm	OD 34.0 mm T: 3.2 mm
Resolution Accuracy	±0.1 mm (1.5 - 19.9 mm) ±0.5% rdg (20 - 250 mm)	±0.05 mm (0.4 - 99.99 mm) ±0.2% rdg (100-250 mm)		±0.1 mm (2.0 - 9.9 mm) ±1.0% rdg (10 - 100 mm)

(to be continued)

Operating Temperature	-5 - 50°C	-5 - 50°C		0 - 50°C
Probe	5Z10NDT-L 5 MHz OD 13 mm	10Z10NDT-B 10 MHz OD 13 mm	5Z10NDT-L 5 MHz OD 13 mm	2Z15NDT-F3 2 MHz OD: 18 mm

Name of Mfr. : JFE Advantech Co., Ltd.

Cable Break Position Locators

Works by sending a fixed signal between two conductors and measuring the capacity of the returning signals and indicating them on the recombination meter. Suitable for pinpointing broken wires on all types of 2-wire cables and coaxial cables, measuring the length of cable, and checking poor circuits.

Specifications

Measuring Range	1 m - 1,000 m x 1 m x 10 m x 100 m } 3-range change over system
Power Source	R6P (UM-3) x 4 pcs, 6V
Current Consumption	Approx. 15 mA
Dimensions	163 x 100 x 47 mm
Weight	Approx. 300 g

65 27 50	Cable break position locator	Set

Thermal Imagers

Ideal for maintenance engineers and can be used to quickly find faults and identify failing components to save money.

Electrical Safety :
- Identifies overloaded circuits, loose / corroded connections and failing breakers in electrical panels.
- Identifies blown fuses, overloads, phase imbalance, and harmonics problems.
- Identifies hot spots from high resistance connections.

Preventive Maintenance :
- Identifies equipment efficiencies / inefficiencies.
- Application include motors, pumps, boilers, radiators, heaters, chillers and transformers.

Energy Efficiency
- Identifies inefficient heating and cooling transfer.
- Identifies draft sources from missing insulation in rafters / walls / floors.
- Identification of problem areas helps reduce heat gain / loss and carbon footprint.

Features :
- One Navigator Key Operation.
- 16,384 pixels thermal image after interpolation.
- True D/S 30:1 with precise laser indication.
- Bright flashlight with 5 white LEDs.
- Ergonomically designed pistol grip housing with excellent industrial design.
- Quick response time (<300 ms).

Technical Specification

Unit Per Set

CODE	65 27 55
Model :	TG-301

(to be continued)

Unit Per Set

CODE	65 27 55
Temperature Range	Range: -30°C to 650°C (-22°F to 1,202°F)
Accuracy	±1.5°C or ±1.5% of reading ±2.0°C at -10°C to 0°C ±3.0°C at -30°C to -10°C
Optical Resolution	30 : 1 (calculated at 95% energy)
Display Resolution	0.1°C (0.2°F)
Repeatability of Readings	±0.5% of reading or ±0.5°C (1°F), whichever is greater
Operating Temp.& Humidity	Temp: -10°C to 50°C (14°F to 122°F), 10% to 90% RH
Thermal Imaging Detector	IR-EX™ Technology (Integrated IR Array Sensor with CMOS Section)
Imaging Resolution	16,384 pixels (128 x 128 pixels)
Field of View	33° x 33°
Vibration and Shock	IEC 68-2-6 2.5 g, 10 to 200 Hz, IEC 68-2-27, 50 g, 11 ms
EMC	EN 61326-1:2006, EN 61326-2:2006
Operating Altitude	2,000 meters above mean sea level
Battery Life	16 hours with laser and backlight on (3 x AA batteries)
Weight/ Dimension	300 g / 185 x 51 x 100 mm

Name of Mfr. : Atlas Marine Services Pte Ltd

Intrinsically Safe Thermal Imaging Cameras

Draeger UCF® 7000

Valuable tools for orientation when fire, smoke and darkness make navigation difficult. Designed to maintain your orientation to see where you are going as well as for finding persons or hotspots. The camera provides a clear plus when it comes to safety and reliability, ease of use and decision making assistance for demanding firefighting jobs.

One of three additional operating modes is quickly selected just by pressing a button:
- Fire (firefighting)
- Persons (search and rescue)
- ThermalScan (searching for hotspots)

The "snapshot"-function is used to provide a temporary freeze-frame of thermal image, which can then be viewed on the display. This allows personnel to examine and check out even difficult to access areas quickly and safely.

The integrated laser pointer significantly simplifies pointing out the position of hazards – such as hotspots – to other team members and clearly defines the path of attack.

The camera is supplied with USB 2.0 interface by default, which makes it possible to configure the camera (e.g. setting an individual start image) and transfer the thermal image directly to a PC. Recorded images and video sequences used for documentation purposes can also be transferred to a PC.

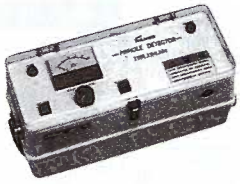
The camera is intrinsically safe (ATEX zone 1) and offers the maximum level of safety and reliability in potentially explosive atmospheres.

Unit Per Set

CODE	65 27 56
Model	UCF 7000 (50 Hz)
Item No.	83 21 125
Dimensions (B x H x T)	125 x 280 x 110 mm
Weight	1.4 kgs incl. battery
Display	
Technology	Liquid crystal display (LCD)
Size (Diagonal)	9 cm
Application Modes	Standard, Fire, Persons, Thermal scan
Housing	
Protection Cover	Rubber material (EPDM)
Carrying Loops	High-temperature resistant material
Housing material	High-temperature resistant plastic
Protection Class	IP 67
Infrared-specifications	
Type of Sensor	a-Si microbolometer array
Resolution	160 x 120 pixel
IR Spectacle	7 to 14 µm
Temperature Sensitivity	Typically 0.035°C (0.063° F)
Picture Frequency	50 Hz
Optics	
Material	Germanium
Focus	From 1 mtr to infinity
Field of View	Horizontal : 47° / Vertical 32° / Diagonal 62°
Operation	
Operation Time (at 23°C) with Battery	Typically 4 hours
Temperature Measurement	Digital temperature display : -40°C.....1,000°C (-40°F.....1,832°F)
Operating Temperature	-40 °C ... 85 °C (-40 °F ... 185 °F) 150 °C (300 °F) for 20 minutes, 260 °C (500 °F) for 10 minutes
Battery technology	Rechargeable li-ion batteries
Battery Display	Precise 4-level battery indicator
Approvals	IEC 60079-0:2007, IEC 60079-11:2006, EN 60079-0:2009, EN 60079-11:2007, ANSI/ISA 12.12.01, CAN/CSA E60079-0, CAN/CSA E60079-11 It is classified as follows: for Europe: I M2 / II 2G, Ex ib I Mb / Ex ib IIC T4 Gb for Australia: Ex ib IIC T4 Gb for the USA and Canada: Class I, Div. 2, Groups A, B, C, D, Class I, Zone 1, Ex ib IIC T4Flame engulfment-test according to EN137:2006 NFPA 1801:2013

Name of Mfr. : Draeger

Pinhole and Holiday Detectors



An instrument for detecting and indicating the locations of pinholes and fractures in non-conductive coatings (paints, linings, films, porcelain, enamel, coal tar, asphalt, etc.) that are applied to a metal surface. Completely transistorized, low frequency electrical pulse generator assures efficient detections with no harm to the coatings. They also permit indirect grounding. Output voltages are variable as desired and readable on built-in meters. Units are housed in portable dust and moisture proof PVC sturdy cases.

(to be continued)

General Specifications	
Principle	Low frequency, high voltage, pulse discharge
Test Voltage	Variable peak voltage with a direct reading meter
Power Source	Built-in NiMH battery(AC100V rechargeable)
Probe	Joint type for 540 - 870 mm, PVC made with brush holder and cord 5 mtr
Accessories	Joint type probe, grounding cable 5 mtr, switching lead cord, power source cord and flat type brush electrode 30 x 300 mm 2 pcs

Unit Per Set

CODE	65 27 63	65 27 67
Model	TRS-250	TRS-70
Output Voltage	5 - 25 kV	1 - 7 kV
Power Source	AC 100V, 50/60Hz, 20VA	
Indication by	Neon lamp and buzzer	
Coating Thickness	Over 1 mm	Less than 1 mm
Dimensions	W370 x D150 x H190 mm	
Weight	5.1 kgs	4.1 kgs

Name of Mfr. : Sanko Electronic Laboratory Co., Ltd.

Portable Ultrasonic Liquid Level Indicators

Designed to inspect the liquid level of Fire Suppression System Cylinders by Ultrasonic Waves. The unique Extension Rod allows the operator to test effectively for multi-bunked Cylinders, reaches 2nd, 3rd and 4th rows deep to make the measurement as quick as possible. The equipment is proven accurate to +/- 1.5 mm and significantly safer and quicker solution when compared to weighing as a means of identifying cylinder content. RINA Classification Society Approved. UL-approved. NATO-approved.

Portalevel™ Max Marine

Portamarine™

Portalevel™ Max Marine

Designed for testing CO_2, FM-200™, NOVEC 1230™, FE-13, FE-25, NAF S III, CEA410, Halons and a range of other extinguishing agents. With a Mini-Marine Extension Rod enabling the sensor to take measurements of the ships 2nd, 3rd, and 4th banked cylinder rows.

Portamarine™

Designed specifically for testing multi-banked CO_2 Cylinder in ships Fire Suppression System. It can be also used on FM200™, NOVEC 1230™, and variety of other clean agent systems. Carrying strap enables hands free operation for quick inspection.

*Available in two variants Extension Rod.

Standard marine Extension Rod – 20 mm – ideal for the vast majority of applications and Standard spacing between cylinders.

Mini-Extension Rod – 12 mm – The compact, lightweight variant at only 14 mm wide, able to work on even the most tightly packaged cylinder system.

Unit Per Set

CODE	65 27 76	65 27 77
Model	Portalevel™ Max Marine	Portamarine™
Sensor	TX/RX sensor 14 mm diameter head, contained within a magnetized sensor applicator, connected by BNC connectors to 1 mtr length co-ax cable	Ultrasonic, single crystal, piezoelectric, transceiver sensor, fitted with hand enclosure and magnetic head
Display	Membrane control operated, LCD back-lit Display measuring 55 x 28 mm	LCD Numeric Digital and LED display
Power Source	1 x PP3 9V Batteries, approx. 10 hr battery life.	4 x A4 1.5V Batteries, approx. 10 hr battery life.
Dimension	160 x 82 x 30 mm	158 x 98 x 45.5 mm
Weight	300 grm	420 grm

Name of Mfr: Coltraco Ultrasonics Limited UK.

Portable Ultrasonic Watertight Integrity Test Indicators

Designed for inspecting almost any watertight, gas-tight or weather-tight seal for areas of weak seal compression or leak sites, by using ultrasonic technology. Primarily for testing the seal integrity of watertight compartment doors, hatch covers, and multiple cable transit areas, and also for hatches, storage tanks, bulkheads and other watertight compartments. Pin-point accuracy to 0.06 mm with a tolerance of +/-0.02 mm, quicker, cleaner and more efficient watertight integrity testing, ideal to replace high pressure hoses testing or chalk testing. It comes complete in a protective carrying case including receiver, standard generator, extension rod "Wand", headphones, and operating instructions. RINA Society approved. NATO-approved.

Technical Specifications		
Product	Portascanner™ Receiver	Portascanner™ Generator
Output	1 watt(max), audible signal with visual 4 digit LCD display and bar graph	0.1 watt/100 dB, unidirectional
Exposure	Waterproof IP65	
Power	1 x PV PP3 Batteries with low battery indication, approx. 10 hr battery life.	2 x 9V Batteries, approx. 10 hr battery life.
Battery Life	10 hours continuous use minimum	
Dimension	215 x 85 x 35 mm	150 x 90 x 50 mm
Weight	420 grm	430 grm

65 27 78	Ultrasonic Watertight Integrity Test Indicator Portascanner	Set

Name of Mfr: Coltraco Ultrasonics Limited, UK.

Portable Tank Condition Detecting Systems

A measuring unit to note all important tank conditions for compliance with SOLAS and MARPOL regulations.

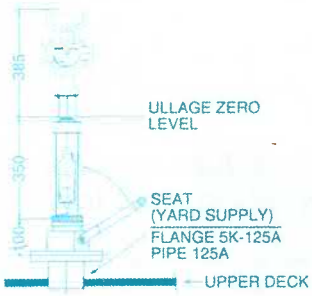
This device will measure tank conditions such as the cargo level, the oil – water interface level, the temperature, and a dry check to determine the level of water at the tank bottom.

The gauge is explosion proof and portable weighing only 4.3 kgs. It has a measuring range of 0 – 30/35 mtr for ullage and a 0 – 100°C temperature range. It is powered with a 2.4 V rechargeable battery and can be provided with optional gas and oil sampling units.

Equipped with a vapor seal valve necessary for compliance with USCG regulations for Marine Vapor Control. Allows you to take samples from tanks that are closed and pressurized.

Accessories included :
- Carrying bag
- Sink weight
- Dry check adaptor
- D.C. charger

Optional equipment :
- Digital thermometer
- Gas sampling unit
- Oil sampling unit



65 27 81	Portable tank condition detecting system	Set

Viscosity Meters

Suitable for one-point viscosity measurement of oil, fat, paint, medicine, etc. Due to handy and high durability compact mechanism, it requires only 10 seconds for measurement. The instrument can measure a wide range of viscosity by changing rotors. When ordering, please specify kinds of fluid to be measured, atmospheric temperature, flow characteristics (Newtonian or Non-Newtonian), etc.

Specifications

Measuring Range	50 - 2,000 mPa•s(cP) (Standard rotors) 10 - 200,000 mPa•s(cP) (Optional rotors)
Accuracy	±4%
Rotor rpm	20 rpm
Power Source	R14P (UM-2) battery x 4 pcs
Weight	1.3 kgs
Accessories	1 pc Rotor No.1, 50 - 500 mPa•s (cP) 1 pc Rotor No.2, 200 - 2,000 mPa•s (cP)

CODE	Descriptions	Unit
65 28 01	Viscosity meter with standard rotor No.1 & 2 for measuring range 50 - 2,000 mPa•s(cP)	Set
65 28 03	Rotor No.0, 10 - 100 mPa•s (cP)	Pc.
04	" No.1, 50 - 500 mPa•s (cP)	"
05	" No.2, 200 - 2,000 mPa•s (cP)	"
06	" No.3, 1,000 - 10,000 mPa•s (cP)	"
07	" No.4, 5,000 - 50,000 mPa•s (cP)	"
08	" No.5, 20,000 - 200,000 mPa•s (cP)	"

(to be continued)

Titra-Lube TBN Test Kits

A unique system for determining the base number in both petroleum based and synthetic based oil. The kit brings accurate and reliable total base number analysis, and requires no calibration or instrumentation and uses no dangerous solvents or chemicals. TBN (Total Base Number) is the measure of reserve alkalinity (base) added to lubricating oils to protect the engine from the corrosive effects of acids formed during the combustion of fuels containing sulfur.

The kit comes with a preset fixed volume disposable sampling syringe that is used to take the oil sample for testing, and the test provides a colorimetric determination of TBN between 0 and 20 mg KOH per gram of sample, showing the TBN number of the side of the burette. The kit comes in 20 tests (individually packaged) per carton.

65 28 21	Titra-Lube TBN test kit, individually packaged, 20 packags/carton	C/T

Name of Mfr: Dexsil Corporation

Lube Oil Test Kits
for 5 Different Tests

Specifically designed for conducting advanced test analyses of lubricating oil condition directly on-site. The portable test devices offer easy, quick and accurate measurements of five important oil parameters: water-in-oil content, base number, oil viscosity comparison, salt water and soot contamination. Regular assessment of these parameters gives direct and comprehensive information to ship operators, engineers and users about any occurring changes in the oil condition. Trend monitoring with the LUBE OIL CHECK 5 might help to reduce maintenance expenses as well as to prolong the operating time of the engine system components.

Specifications

	Water-in-Oil	BN	Viscosity Comparison	Salt Water Test	Spot Test (Soot Contamination)
Measuring range	0 - 1.0 vol. % H_2O	0 - 100 BN	max. lube oil	go / no go	all lube oils
Measuring time	up to 20 min. (maximum total reaction time)		about 3 min.	about 10 min.	about 1 min.
Accuracy	+/- 3 %	+/-1 BN			

Items included in the test kit: TWIN Check test unit; WA-SOL® - water-in-oil reagent composition kit (WA-SOL® Basic and WA-SOL® Activator); ALCA Solution for BN test; VISCOSITY COMPARATOR with 2 syringes of 5 ml; Solution W, indicator pads and other accessories for salt water determination; Spot Test paper A4 and glass rod; cleaning spray Test Kit Cleaner, 4 syringes 10 ml, plastic beaker and safety gloves (set of 5 pairs)

65 28 22	Lube Oil Test Kit, for 5 Different Tests, LUBE OIL CHECK 5	Set

Name of Mfr.: Martechnic GmbH

Marine Portable Water Test Kits

From the issue of MLC2006, every ship has been required to examine and record the quality of drinking water. Check items are mainly referred to the guideline by WHO, specific directions for items and the frequency of the examination are depends upon discretion of each nation administration.

Marine portable water test kit contains everything needed to monitor the drinking water onboard in compliance to WHO guidelines, ILO 178 (2009), MLC (Maritime Labour Convention, 2006) and IHR (International Health Regulations, 2005) requirements.

Application ; One sample should be directly from the tank and one sample at the furthest point of the distribution system. The tank sample gives information about the quality of the water supply on board, while the bridge sample gives information about the quality of the water for the consumer. It is recommended that Microbial Load be monitored at representative taps. Records of readings must be documented, and should be maintained for 12 months and should be available.

Test Kit Contents;

Test	Range	Comments
pH	6.8 – 8.4	Ideal pH depends on the materials used. A pH above 8.0 does not allow effective water disinfection with chlorine and should be assessed further.
Free chlorine (DPD 1)	0.01 – 5.00 mg/l	For effective disinfection, there should be a residual concentration of free Chlorine of at least 0.5 mg/l.
Total chlorine (DPD 1 & 3)	0.01 – 5.00 mg/l	Complemental / confirmational to free Chlorine.
Cyanuric acid	2 – 200 mg/l	Cyanuric Acid protects Chlorine from the sun. No traces should be detected.
HPC (at 20 °C) HPC (at 37°C)	Growth of colonies	Heterotrophic Plate Count. No abnormal deviations should be observed. Do not consume water in case of rapid growth of the colonies on any side of the test pad.
Total coliforms	Growth of colonies	No abnormal deviations should be observed. Do not consume water in case of rapid growth of the salmon / red colonies on the test pad.
Entero-bacteria	Growth of colonies	No abnormal deviations should be observed. Do not consume water in case of rapid growth of the colonies on any side of the test pad.
E. coil	Growth of colonies	Escherichia coli, should be 0 cfu / 100 ml. Do not consume water if blue / violet colonies are formed on the test pad.
Refill pack	As above	Includes all chemical & microbial load monitoring reagents
Items included in the kit	Instrument, Carrying case, Instructions, 4 Crushing rods, Test tube brush, 4 Photometer tubes, and all tests mentioned in this table.	

Note: Instructions are based on literature and are meant only as a guide since circumstances and Flag Administration Requirements vary. They are not intended to interfere with the judgment of the vessel's responsible personnel.

65 28 25	Test kit, water, marine portable	Set

Karl Fischer Moisture Titrators

Up to 4 titrators , Automatic potentiometric titrator (AT-710B) or Coulometric (MKC-710B) or additional Volumetric (MKV-710B) Karl Fischer moisture titrator can be connected and simultaneous measurement is possible.

Titrant Information is stored in an IC chip in the burette unit (Smart burette). The main control unit and a titrator are separately located by wireless (Bluetooth(R)). Large color TFT-LCD with a touch panel (8.4-inch). Two different user levels and permissions. Measurement results are converted to PDF and can be stored in a USB flash drive. When using a patented scan mode (ADP-611) automatically determines the optimal evaporation temperature. End point detection by compensating liquid resistance is adopted. Can resume titration automatically after interruption. Automatic solvent change unit is included.

For Volumetric Moisture Titration
MKV-710M

For Coulometric Titration
MKC-710M

For Volumetric Moisture Titration

Unit Per Set

CODE	65 28 31
Model	MKV-710M
Product configuration	MCU-710M+MKV-710+IDP-100+ Automatic Solvent Change unit
Measuring Range	Water content: 0.1 – 500 mgH_2O (depends on KF reagent factor) Concentration: 10 ppm – 100%H_2O
Burette Precision	Capacity: 10 mL burette Discharge precision: ±0.015 mL Reproductibility: ±0.005 mL
EP Detection Method	By polarized potential level detected with a twin platinum electrode
EP Sense Method	Detection of potential level maintained during preset end time. End time range : 1 to 99 sec

(to be continued)

(to be continued)

Unit Per Set

CODE	65 28 31
Titration Form	Normal titration / Back titration (Option additional burette required)
Required Solvent	30 to 100 mL (in S-type titration vessel)
Display	8.4-inch colour LCD 800 x 600 dots Language: English/ Japanese / Mandarin Chinese / Korean / Russian / Spanish / German / French Simultaneous 4-channel display (Can also display Automatic Potentiometric Titrator simultaneously)
Calculation	Concentration of water content , statistics data processing (mean , SD and RSD) and automatic averaging of blank value and factor value
Data Storage	500 samples
Power Source	AC100 to 240 V +/- 10% 50/60 Hz
Dimensions	Touch panel controller : 225(W) x 190(D) x 42(H) mm Titration unit : 141(W) x 292(D) x 367(H) mm (not incl. tubing) Stirrer : 107(W) x 206(D) x 322(H) mm (not incl. Solvent Change unit) Solvent Change Unit : 240(W) x 140(D) x 400(H) mm (not incl. tubing) Printer : 106(W) x 180(D) x 88(H) mm
Weight	Touch panel controller : Approx. 1.5 kgs Titration unit : Approx. 4.0 kgs Stirrer : Approx. 2.0 kgs Solvent Change Unit : Aprox. 0.6 kgs Printer : Aprox. 0.4 kgs
Conformity Standard	CE marking EMC : EN61326-1 LVD : EN61010-1 RE Directive Burette unit EBU FCC Part15 SubpartC FCC ID : 2ABSVEBU01

Name of Mfr. : Kyoto Electronics Manufacturing Co., Ltd.

For Coulometric Titration

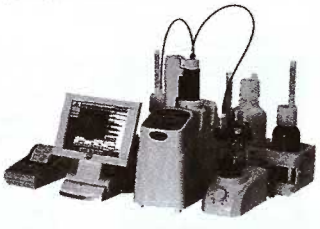
Reduction of power consumption by 30% compared with the conventional product. With a unique mechanism, the ceramic diaphragm of the optional titration cell unit can be replaced. Manual solvent change unit is included.

Unit Per Set

CODE	65 28 33
Model	MKC-710M
Product configuration	MCU-710M+MKC-710+IDP-100+ Automatic Solvent Change unit
Measuring Range	Water content / Bromine index : 10 ug to 300 mg (depends on reagent)
Measurement cell	2-Component or 1-Component
Precision	Relative standard deviation : less than 0.3% (n=10) *Per KEM standard measurement conditions and standard liquids
Control method	Constant current pulse time control
EP Detection Method	Alternate current polarization method with a twin platinum electrode
EP Sense Method	Selective drift stability or limit measurement time
Required Solvent	2-Component cell : Anolyte 100 mL, Catholyte 5 mL 1-Component cell : Anolyte 150 mL
Display	8.4-inch colour LCD 800 x 600 dots Language: English/ Japanese / Mandarin Chinese / Korean / Russian / Spanish / German / French Simultaneous 4-channel display (Can also display Automatic Potentiometric Titrator simultaneously)
Calculation	Concentration of water content , statistics data processing (mean, SD and RSD) and automatic averaging of blank value and factor value
Data Storage	500 samples
Power Source	AC100 to 240 V +/- 10% 50/60 Hz
Dimensions	Touch-on panel controller : 225(W) x 190(D) x 42(H) mm Titration unit : 141(W) x 292(D) x 244(H) mm Stirrer : 107(W) x 206(D) x 340(H) mm (not incl. Solvent Change unit) Solvent Change Unit : 240(W) x 140(D) x 405(H) mm (not incl. tubing) Printer : 106(W) x 180(D) x 88(H) mm
Weight	Touch-on panel controller : Approx. 1.5 kgs Titration unit : Approx. 3.0 kgs Stirrer : Approx. 2.0 kgs Solvent Change Unit : Aprox. 0.6 kgs Printer : Aprox. 0.4 kgs
Conformity Standard	CE marking EMC : EN61326-1 LVD : EN61010-1

Name of Mfr. : Kyoto Electronics Manufacturing Co., Ltd.

Hybrid Moisture Titrators



MKH-700

Equipped such as high-speed & high-precision measurement by "Hybrid titration method" which uses both "Volumetric titration method" and "Coulometric titration method", and "Electrolytic Factor Measurement System" which does not require pure water for factor determination.

"Hybrid titration method" automatically switches between the parallel measurement by "Volumetric titration method" and "Coulometric titration method" by monitoring moisture content in titration cell with high-speed & high-precision measurement, therefore can measure without adjusting the sample amount.

With just pressing one button, the "Electrolytic Factor Measurement System" automatically performs the factor determination of Karl Fischer reagent, and save the time & work without using pure water.

To make the inner burette and diaphragm separate, although after measuring such as petroleum samples, it is easy to clean the diaphragm inner burette.

It is possible to select one method from "Volumetric titration method", "Coulometric titration method", and "Hybrid titration method".

It is possible to store the measurement result, method and manage the data as an electronic record.

Application

Standards	Number	Details
ASTM	D1533	Standard test method for water in insulating liquids by coulometric Karl Fischer titration

(to be continued)

(to be continued)

ASTM	D1744	Standard test method for determination of water in liquid petroleum products by Karl Fischer reagent
	D4928	Standard test method for water In crude oils by coulometric Karl Fischer titration
	D6304	Standard test method for determination of water in petroleum products, lubricating oils, and additives by coulometric Karl Fischer titration
	E203	Test method for water using volumetric Karl Fischer titration
ISO	760	Determination of water – Karl Fischer method (General method)

Unit Per Set

CODE	**65 28 34**
Model	MKH-700
Coulometric Titration	
Measuring Range	Water content : 10 µg - 300 mg H_2O
Precision	RSD : less than 0.3% (n=10) Display resolution : 0.1 µg
Volumetric Titration	
Measuring Range	Water content : 100 µg - 500 mg H_2O (depends on KF reagent factor) Concentration : 1 ppm - 100% H_2O
Burette Precision	Volume : 10 mL Resolution : 1/20,000 Discharge precision : ±0.015 mL Repeatability : ±0.005 mL
Hybrid Titration	
Measuring Range	Water content : 10 µg - 500 mg H_2O
Precision	RSD : less than 0.3% (n=10) (Karl Fischer reagent factor 3 mg/mL) Display resolution : 0.1 µg
Factor Measurement of Reagent by Electrolysis	
Measuring Range	KF reagent : Reagent factor from 1 to 5 (With the provisions of dose volume)
Precision	RSD : less than 1.0% (n=3) (Dose volume 0.5 mL, Reagent factor 3 mg/mL)
Number of Methods	Coulometric/ Volumetric Hybrid : Up to 50
	Factor measurement : 1
Data Storage	On-board memory : 300 data
	External memory : Memory card (Compact Flash), USB flash
GLP Conformance	Yes
External I/O (Measuring Unit)	RS-232C : 1ch (for Multiple sample changer/ Evaporator)
	K-NET : 1ch (for Main control unit)
External I/O (Main Control Unit)	COM1/COM2 : 2ch (for dot matrix printer, electronic balance, PC)
	CF card : 1ch (Compact Flash)
	USB : 1ch (USB flash)
	K-NET : 2ch (Measuring unit)
Main Control Unit	8-inch LCD (163.2 x 122.4 mm)
	256 colors 800 x 600 dots
Language	English / Japanese

(to be continued)

Power Supply	Measuring unit : DC24V 5A (Main unit) AC100-240V ±10% 50-60Hz 2A (Comes with AC Adapter)
	Main control unit : DC12V 3A (Main unit) AC100-240V ±10% 50-60Hz (Comes with AC Adapter)
Dimensions	Measuring unit : 141 (W) x 296 (D) x 367 (H) mm (not incl. tubing)
	Main control unit : 230 (W) x 285 (D) x 255 (H) mm
	Stirrer/Cell : 110 (W) x 230 (D) x 350 (H) mm
	Dispenser : 240 (W) x 170 (D) x 110 (H) mm (not incl. tubing)
Weight	Measuring unit : Approx. 4.5 kgs
	Main control unit : Approx. 2.0 kgs
	Stirrer/Cell : Approx. 1.4 kgs
	Dispenser : Approx. 0.6 kgs
CE Marking	Conforming to EN61326, EN61010-1 RoHS compliant

Name of Mfr. : Kyoto Electronics Manufacturing Co., Ltd.

Sound Level Meters

Light weight and handheld type meter for noise level with 3.5 digits on a liquid crystal display and MAX hold function. As provided with Over and Under scale indication, the meter will determine if noise is over or under the maximum or minimum scale range. Conforms with JIS C-1502 and IEC Standard Pub. 60651 Type Ⅱ.

Specifications

Model	1067
Dynamic Range	30-70, 60-100, 80-120 dB, Changeable by 3 steps and 40 dB width.
Measurable Range	30-120 dB
Frequency Range	20-8,000 Hz
Weighting Network	A, and C
Microphone	1/2 inch electret condenser microphone
Detection Method	True r.m.s.
Display	3.5 digits LCD, 0.1 dB resolution
Auxiliary Displaying	*Over scale ; "OVER" mark is displayed when the measurement value gets upper than maximum scale range by 4 dB. *Under scale ; " - " mark is displayed when the measurement value gets lower than minimum scale range by 4 dB. * Battery voltage ; "BATT" is displayed when the voltage of the batteries droops down less than 2 volts.
Power Supply	R-6P (UM-3) battery x 2 pcs
Dimensions	W72 x H240 x T24 mm

(to be continued)

Specifications	
Model	1067
Weight	210 grm
Accessories	* 1 pc Windscreen for microphone * 1 pc Hand strap * 1 pc Screwdriver (for calibration) * 2 pcs Batteries * 1 pc Carring case

Name of Mfr. : SOTEC Ltd

65 29 01	Sound level meter, model 1067	Set

Emissions Analysers
for marine applications

RASI 901-MK

The RASI901-MK Portable Emissions Analyser Marine Kit provides a reliable and accurate measurements for O_2, CO, CO_2, True NOx ($NO + NO_2$), Low SO_2, and CxHy hydrocarbons to help ships achieve and confirm compliance with MARPOL Annex VI and the NOx Technical Code.

The KIT is equipped with:
- O_2, Low CO, Low NO, Low NO_2, SO_2 electrochemical sensors.
- Special NDIR bench for CO_2 % and CH_4 ppm.
- Heated sampling line to provide accurate NO_2 and SO_2 readings.

65 29 02	Analyser, emission, portable, RASI 901-MK for marine application	Set

Name of Mfr. : Atlas Marine Services Pte Ltd.

Conversion Table (kgf - N)

kgf → N		N → kgf		kgf → N		N → kgf	
1	9.8066	1	0.1020	51	500.1	51	5.2006
2	19.613	2	0.2039	52	510.0	52	5.3025
3	29.420	3	0.3059	53	519.8	53	5.4045
4	39.227	4	0.4079	54	529.6	54	5.5065
5	49.033	5	0.5099	55	539.4	55	5.6084
6	58.840	6	0.6118	56	549.2	56	5.7104
7	68.647	7	0.7138	57	559.0	57	5.8124
8	78.453	8	0.8158	58	568.8	58	5.9144
9	88.260	9	0.9177	59	578.6	59	6.0163
10	98.066	10	1.0197	60	588.4	60	6.1183
11	107.87	11	1.1217	61	598.2	61	6.2203
12	117.68	12	1.2237	62	608.0	62	6.3222
13	127.49	13	1.3256	63	617.8	63	6.4242
14	137.29	14	1.4276	64	627.6	64	6.5262
15	147.10	15	1.5296	65	637.4	65	6.6282
16	156.91	16	1.6315	66	647.2	66	6.7301
17	166.71	17	1.7335	67	657.1	67	6.8321
18	176.52	18	1.8355	68	666.9	68	6.9341
19	186.33	19	1.9375	69	676.7	69	7.0360
20	196.13	20	2.0394	70	686.5	70	7.1380
21	205.94	21	2.1414	71	696.3	71	7.2400
22	215.75	22	2.2434	72	706.1	72	7.3420
23	225.55	23	2.3453	73	715.9	73	7.4439
24	235.36	24	2.4473	74	725.7	74	7.5459
25	245.17	25	2.5493	75	735.5	75	7.6479
26	254.97	26	2.6513	76	745.3	76	7.7498
27	264.78	27	2.7532	77	755.1	77	7.8518
28	274.59	28	2.8552	78	764.9	78	7.9538
29	284.39	29	2.9572	79	774.7	79	8.0558
30	294.20	30	3.0591	80	784.5	80	8.1577
31	304.01	31	3.1611	81	794.3	81	8.2597
32	313.81	32	3.2631	82	804.2	82	8.3617
33	323.62	33	3.3651	83	814.0	83	8.4636
34	333.43	34	3.4670	84	823.8	84	8.5656
35	343.23	35	3.5690	85	833.6	85	8.6676
36	353.04	36	3.6710	86	843.4	86	8.7696
37	362.85	37	3.7729	87	853.2	87	8.8715
38	372.65	38	3.8749	88	863.0	88	8.9735
39	382.46	39	3.9769	89	872.8	89	9.0755
40	392.27	40	4.0789	90	882.6	90	9.1774
41	402.07	41	4.1808	91	892.4	91	9.2794
42	411.88	42	4.2828	92	902.2	92	9.3814
43	421.69	43	4.3848	93	912.0	93	9.4834
44	431.49	44	4.4868	94	921.8	94	9.5853
45	441.30	45	4.5887	95	931.6	95	9.6873
46	451.11	46	4.6907	96	941.4	96	9.7893
47	460.91	47	4.7927	97	951.3	97	9.8912
48	470.72	48	4.8946	98	961.1	98	9.9932
49	480.53	49	4.9966	99	970.9	99	10.095
50	490.33	50	5.0986	100	980.7	100	10.197

67

METAL SHEETS, BARS, ETC.

<table>
<tr>
<td>Steel Materials

P. 67-1 ~ 7</td>
<td>Stainless Steel Materials

P. 67-7 ~ 9</td>
</tr>
<tr>
<td>Copper Materials

P. 67-9 ~ 10</td>
<td>Brass/Bronze Materials

P. 67-10 ~ 12</td>
</tr>
<tr>
<td>Aluminium Materials

P. 67-12 ~ 13</td>
<td>Lead/Zinc Materials

P. 67-13 ~ 17</td>
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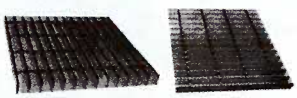
<td>Gratings
 
P. 67-17 ~ 19</td>
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 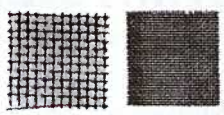
P. 67-19</td>
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Steel Rounds – Cold Finished

For bolts, nuts, screws, and shaftings. Supplied in the following standard lengths.

Europe : 3 M U. S. : 12-20 ft.
Japan : 4 M Singapore : 4 M

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel round, cold finished, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Diam mm	Kgs Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet - up to 5/8"(16 mm) 20 feet - over 5/8" (U.S.A.)
5	0.154	67 01 01	67 01 43	67 02 96
6	0.222	02	44	97
7	0.302	03	45	98
8	0.395	04	46	99
9	0.395	05	47	67 03 00
10	0.617	67 01 06	67 01 48	67 03 37
11	0.746	07	49	38
12	0.888	08	50	39
13	1.04	09	69	40
14	1.21	10	70	41
15	1.39	67 01 11	67 01 71	67 03 42
16	1.58	12	72	43
17	1.78	13	73	44
18	2.00	14	74	45
19	2.23	15	75	46
20	2.47	67 01 16	67 01 76	67 03 47
22	2.98	17	77	48
23	3.26	18	78	49
24	3.55	19	79	50
25	3.85	20	80	75
26	4.17	67 01 21	67 01 81	67 03 76
28	4.83	22	82	77
30	5.55	23	83	78
32	6.31	24	84	67 08 30
34	7.13	25	85	31
36	7.99	67 01 26	67 01 86	67 08 32
38	8.90	27	87	33
40	9.87	28	88	34
42	10.9	29	89	35
45	12.5	30	90	36
48	14.2	67 01 31	67 01 91	67 08 37
50	15.4	32	92	38
55	18.7	33	93	39
60	22.2	34	94	40
65	26.0	35	95	41
70	30.2	67 01 36	67 01 96	67 08 42
75	34.7	37	97	43
80	39.5	38	98	44
85	44.5	39	99	45
90	49.9	40	67 02 00	46
95	55.6	67 01 41	67 02 17	67 08 47
100	61.7	42	18	48

Steel Squares – Cold Finished

For bolts, nuts, screws, and shaftings. Sizes larger than those listed below are available upon request. Supplied in the following standard lengths :

Europe : 3 M Japan : 4 M
U.S : 12 ft. Singapore : 12 ft.

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel square, cold finished, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.

AF mm	Kgs Per Mtr	4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
6	0.238	67 01 51	67 02 19	67 08 49
7	0.385	52	20	50
8	0.502	53	21	61
9	0.636	54	22	62
10	0.785	55	23	63
12	1.13	67 01 56	67 02 24	67 08 64
14	1.54	57	25	65
16	2.01	58	26	66
17	2.27	59	27	67
19	2.83	67 01 60	67 02 28	67 08 68
20	3.14	61	29	69
22	3.80	62	30	70
25	4.91	63	31	71
28	6.15	64	32	72
30	7.07	67 01 65	67 02 33	67 08 73
32	8.04	66	34	74
36	10.2	67	35	75
40	12.6	68	36	76

* AF denotes Across Flat.

Steel Hexagons – Cold Finished

Used for free cutting bolts, nuts, screws, and shaftings. Sizes larger than those listed below are available upon request. Supplied in the following standard lengths :

Europe : 3 M
U.S. : 12 ft.
Japan : 4 M
Singapore : 12 ft.

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel hexagon, cold finished, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.

AF mm	Kgs Per Mtr	4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
6	0.245	67 02 01	67 02 37	67 08 77
7	0.333	02	38	78
8	0.435	03	39	79
9	0.551	04	40	80
10	0.680	05	41	89
12	0.979	67 02 06	67 02 42	67 08 90
14	1.33	07	43	91
17	1.96	08	44	92
19	2.45	09	45	93
21	3.00	10	46	94
22	3.29	67 02 11	67 02 47	67 08 95
25	4.25	12	48	96
28	5.33	13	49	97
32	6.96	14	50	98
35	8.33	15	67	99
38	9.82	67 02 16	67 02 68	67 09 00

Steel Rounds – Hot Rolled

Larger sizes than those listed below are also available upon request. Supplied in the following standard lengths :

Europe : 6 M
U.S. : 20 ft.
Japan : 5.5 M and Random
Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel round, hot rolled, DIAM mm x TOTAL LENGTH mtr

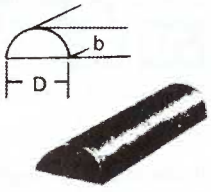
Unit Per Lgh.

Diam mm	Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 feet (U.S.A.)
6	0.222	**67 02 51**	**67 02 69**	**67 09 26**
7	0.302	**52**	**70**	**27**
9	0.499	**53**	**71**	**28**
12	0.888	**54**	**72**	**29**
13	1.04	**55**	**73**	**30**
16	1.58	**67 02 56**	**67 02 74**	**67 09 31**
19	2.23	**57**	**75**	**32**
22	2.98	**58**	**76**	**33**
25	3.85	**59**	**77**	**34**
28	4.83	**60**	**78**	**35**
32	6.31	**67 02 61**	**67 02 79**	**67 09 36**
36	7.99	**62**	**80**	**37**
38	8.90	**63**	**89**	**38**
44	11.9	**64**	**90**	**39**
48	14.2	**65**	**91**	**40**
50	15.4	**67 02 66**	**67 02 92**	**67 09 41**

Steel Half Rounds – Hot Rolled

Usually supplied in the following standard lengths:

Europe : 5.5 M
Japan : 5.5 M
Singapore : 6 M



If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel half round, hot rolled, SIZE (b) x (D) mm x TOTAL LENGTH mtr

Unit Per Lgh.

Size mm b	Size mm D	Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)
30	60	11.1	**67 02 85**	**67 02 93**
25	50	7.71	**87**	**94**
37.5	57	17.3	**88**	**95**

Steel Squares – Hot Rolled

Supplied in the following standard lengths. Sizes larger than those listed below are available upon request.

Europe : 6 M
U.S. : 20 ft.
Japan : 5.5 M
Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel square, hot rolled, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.

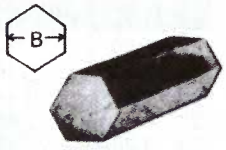
AF mm	Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 feet (U.S.A.)
6	0.283	**67 03 01**	**67 03 19**	**67 09 42**
7	0.385	**02**	**20**	**43**
8	0.502	**03**	**21**	**44**
9	0.636	**04**	**22**	**45**
10	0.785	**05**	**23**	**46**
12	1.13	**67 03 06**	**67 03 24**	**67 09 47**
14	1.54	**07**	**25**	**48**
16	2.01	**08**	**26**	**49**
17	2.27	**09**	**27**	**50**
19	2.83	**10**	**28**	**76**
20	3.14	**67 03 11**	**67 03 29**	**67 09 77**
22	3.80	**12**	**30**	**78**
25	4.91	**13**	**31**	**79**
28	6.15	**14**	**32**	**80**
30	7.06	**15**	**33**	**81**
32	8.04	**67 03 16**	**67 03 34**	**67 09 82**
36	10.2	**17**	**35**	**83**
40	12.6	**18**	**36**	**84**

* AF denotes Across Flat.

Steel Hexagons – Hot Rolled

Supplied in the following standard lengths.

Europe : 3 M
U.S. : N/A
Japan : 5.5 M and Random
Singapore : 12 ft.



If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel hexagon, hot rolled, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.

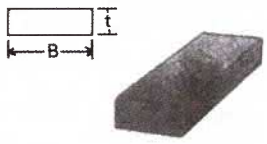
AF mm	Kgs Per Mtr	5.5 mtr (Japan)	3 mtr (Europe)	12 feet (Singapore)
6	0.245	**67 03 51**	**67 03 79**	**67 09 85**
7	0.333	**52**	**80**	**86**
8	0.435	**53**	**81**	**87**
9	0.551	**54**	**82**	**88**
10	0.680	**55**	**83**	**89**
12	0.979	**67 03 56**	**67 03 84**	**67 09 90**
14	1.33	**57**	**85**	**91**
17	1.96	**58**	**86**	**92**
19	2.45	**59**	**87**	**93**
21	3.00	**60**	**88**	**94**
23	3.60	**67 03 61**	**67 03 89**	**67 09 95**
26	4.60	**62**	**90**	**96**
29	5.72	**63**	**91**	**97**
32	6.96	**64**	**92**	**98**
35	8.33	**65**	**93**	**99**
38	9.82	**67 03 66**	**67 03 94**	**67 13 01**
41	11.4	**67**	**95**	**02**
46	14.4	**68**	**96**	**03**
50	17.0	**69**	**97**	**04**
54	19.8	**70**	**98**	**05**
58	22.9	**67 03 71**	**67 03 99**	**67 13 06**
63	27.0	**72**	**67 04 00**	**07**
67	30.5	**73**	**88**	**08**
71	34.3	**74**	**89**	**09**

* AF denotes Across Flat.

Steel Flats – Hot Rolled

Sizes larger than those listed below are available upon request. Supplied in the following standard lengths :

Europe : 6 M
U.S. : 20 ft.
Japan : 5.5 M
Singapore : 6 M



If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Flat, hot rolled, THICKNESS x WIDTH mm x TOTAL LENGTH mtr

Unit Per Lgh.

Size mm Thick	Width	Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
3 mm (1/8)	13	0.306	67 04 01	67 04 90	67 13 10
	16	0.377	02	98	11
	19	0.447	03	99	12
	22	0.518	91	67 05 00	13
	25	0.589	04	12	14
	32	0.754	05	25	15
	38	0.895	06	27	16
	50	1.180	07	29	17
	65	1.530	92	30	18
4.5 mm (3/16)	22	0.777	67 04 93	67 05 45	67 13 19
	25	0.880	08	46	20
	32	1.130	09	47	21
	38	1.340	10	48	22
	44	1.550	11	49	23
	50	1.770	12	50	24
	65	2.300	94	51	25
	75	2.650	95	52	26
	90	3.180	96	53	27
	100	3.530	97	54	28
6 mm (1/4)	13	0.612	67 05 01	67 05 55	67 13 29
	16	0.754	02	56	30
	19	0.895	03	57	31
	22	1.04	04	58	32
	25	1.16	67 04 13	59	33
	32	1.51	14	60	34
	38	1.79	15	61	35
	44	2.07	16	62	36
	50	2.36	17	63	37
	65	3.06	18	64	38
	75	3.53	19	65	39
	90	4.24	20	66	40
	100	4.71	21	67	41
	125	5.89	67 05 05	68	42
	150	7.06	06	69	43
	175	8.24	07	70	44
	180	8.48	08	86	45
	200	9.42	09	87	46
	250	11.8	10	88	47
	300	14.1	11	89	48
9 mm (3/8)	16	1.13	67 05 13	67 05 90	67 13 49
	22	1.55	14	91	50
	25	1.77	67 04 22	92	51
	32	2.26	23	93	52
	38	2.68	24	94	53
	44	3.11	25	95	54
	50	3.53	26	96	55
	65	4.59	27	97	56
	75	5.30	28	98	57
	90	6.36	29	99	58
	100	7.06	30	67 06 00	59
	125	8.83	31	28	60
9 mm (3/8)	150	10.6	67 05 15	67 06 29	67 13 61
	165	11.7	16	30	62
	175	12.4	17	31	63
	180	12.7	18	32	64
	190	13.4	19	33	65
	200	14.1	20	34	66
	240	17.0	21	35	67
	250	17.7	22	36	68
	290	20.5	23	37	69
	300	21.2	24	38	70
12 mm (1/2)	25	2.36	67 04 32	67 06 39	67 13 71
	32	3.01	33	40	72
	38	3.58	34	41	73
	44	4.14	35	42	74
	50	4.71	36	43	75
	65	6.12	37	44	76
	75	7.06	38	45	77
	90	8.48	39	46	78
	100	9.42	40	47	79
	125	11.8	41	48	80
	150	14.1	42	49	81
	200	18.8	43	50	82
	250	23.6	44	61	83
	300	28.3	45	62	84
16 mm (5/8)	25	3.14	67 05 26	67 06 63	67 13 85
	32	4.02	67 04 46	64	86
	38	4.77	47	65	87
	50	6.28	48	66	88
	65	8.16	49	67	89
	75	9.42	50	68	90
	90	11.3	51	69	91
	100	12.6	52	70	92
	125	15.7	53	71	93
	150	18.8	54	72	94
	180	22.6	55	73	95
	200	25.1	56	74	96
	230	28.9	57	75	97
	250	31.4	58	76	98
	280	35.2	59	77	99
	300	37.7	60	78	67 14 00
19 mm (3/4)	32	4.77	67 05 28	67 06 79	67 14 35
	38	5.67	67 04 61	80	36
	50	7.46	62	81	37
	65	9.69	63	82	38
	75	11.2	64	83	39
	90	13.4	65	84	40
	100	14.9	66	85	41
	125	18.6	67	86	42
	150	22.4	68	87	43
	180	26.8	69	88	44
	200	29.8	70	89	45
	250	37.3	72	90	46
	300	44.7	74	91	47
22 mm (7/8)	50	8.46	67 04 75	67 06 92	67 14 48
	65	11.2	76	93	49
	75	13.0	77	94	50
	90	15.5	78	95	85
	100	17.3	79	96	86
	125	21.6	80	97	87
	150	25.9	81	98	88
	180	31.1	82	99	89
	200	34.5	83	67 07 00	90
	250	43.2	85	26	91
	300	51.8	87	27	92

(to be continued)

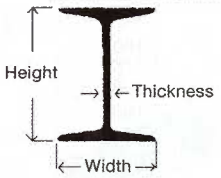
Steel I Beams – Hot Rolled

Supplied in the following standard lengths:

Europe : 6 M
Japan : 5.5 M
U.S. : 20 ft.
Singapore : 6 M

7TH 67

If you require a length other than the standard mentioned, please specify when ordering.



How to order : CODE

Steel I beam, hot rolled, HEIGHT x WIDTH x THICKNESS mm x TOTAL LENGTH mtr

Unit Per Lgh.

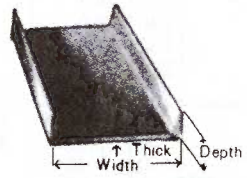
Size mm			Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Height	Width	Thick				
75	75	5	11.9	**67 05 31**	**67 07 28**	**67 14 93**
100	75	5	12.9	**32**	**29**	**94**
125	75	5.5	16.1	**33**	**30**	**95**
150	75	5.5	17.1	**34**	**31**	**96**
150	125	8.5	36.2	**35**	**32**	**97**
180	100	6	23.6	**67 05 36**	**67 07 33**	**67 14 98**
200	100	7	26.0	**37**	**34**	**99**
200	150	9	50.4	**38**	**35**	**67 15 00**
250	125	7.5	38.3	**39**	**36**	**21**
250	125	10	55.5	**40**	**37**	**22**
300	150	8	48.3	**67 05 41**	**67 07 38**	**67 15 23**
300	150	10	65.5	**42**	**39**	**24**
300	150	11.5	76.8	**43**	**40**	**25**
350	150	9	58.5	**44**	**62**	**26**

Steel Channels – Hot Rolled

Supplied in the following standard lengths.

Europe : 6 M
U.S. : 20 ft.
Japan : 5.5M
Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.



How to order : CODE

Steel channel, hot rolled , WIDTH x DEPTH x THICKNESS mm x TOTAL LENGTH mtr

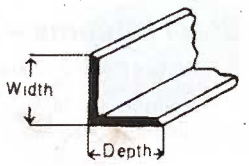
Unit Per Lgh.

Size mm			Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Width	Depth	Thick				
75	40	5	6.92	**67 05 71**	**67 07 63**	**67 15 27**
100	50	5	9.36	**72**	**64**	**28**
125	65	6	13.4	**73**	**65**	**29**
150	70	6	15.8	**74**	**66**	**30**
150	75	6.5	18.6	**75**	**67**	**51**
150	75	9	24.0	**67 05 76**	**67 07 68**	**67 15 52**
180	75	7	21.4	**77**	**69**	**53**
200	80	7.5	24.6	**80**	**70**	**54**
200	90	8	30.3	**81**	**71**	**55**
250	90	9	34.6	**85**	**72**	**56**

Steel Equal Angles – Hot Rolled

Supplied in the following standard lengths.

Europe : 6 M
U.S. : 20 ft.
Japan : 5.5 M and random
Singapore : 6 M



If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel equal angle, hot rolled, WIDTH x DEPTH x THICKNESS mm x TOTAL LENGTH mtr

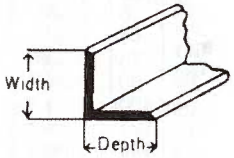
Unit Per Lgh.

Size mm			Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Width	Depth	Thick				
20	20	3	0.885	**67 06 01**	**67 07 73**	**67 15 57**
25	25	3	1.12	**02**	**74**	**58**
30	30	3	1.36	**03**	**75**	**59**
30	30	5	2.16	**04**	**76**	**60**
40	40	3	1.83	**05**	**77**	**61**
40	40	5	2.95	**67 06 06**	**67 07 78**	**67 15 62**
50	50	4	3.06	**07**	**79**	**63**
50	50	6	4.43	**08**	**80**	**64**
65	65	6	5.91	**09**	**90**	**65**
65	65	8	7.66	**10**	**91**	**66**
75	75	6	6.85	**67 06 11**	**67 07 92**	**67 15 67**
75	75	9	9.96	**12**	**93**	**68**
75	75	12	13.0	**13**	**94**	**69**
90	90	7	9.59	**14**	**95**	**70**
90	90	10	13.3	**15**	**96**	**71**
90	90	13	17.0	**67 06 16**	**67 07 97**	**67 15 72**
100	100	7	10.7	**17**	**98**	**73**
100	100	10	14.9	**18**	**99**	**74**
100	100	13	19.1	**19**	**67 08 00**	**75**
130	130	9	17.9	**20**	**08**	**76**
130	130	12	23.4	**67 06 21**	**67 08 09**	**67 15 77**
130	130	15	28.8	**22**	**10**	**78**
150	150	12	27.3	**23**	**11**	**79**
150	150	15	33.6	**24**	**12**	**80**
150	150	19	41.9	**25**	**13**	**81**
200	200	15	45.3	**67 06 26**	**67 08 14**	**67 15 82**
200	200	20	59.7	**27**	**15**	**83**

Steel Unequal Angles – Hot Rolled

Supplied in the following standard lengths.

Europe : 6 M
U.S. : 20 ft.
Japan : 5.5 M and random
Singapore : 6 M



If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Steel unequal angle, hot rolled, WIDTH x DEPTH x THICKNESS mm x TOTAL LENGTH mtr

Unit Per Lgh.

Size mm			Kgs Per Mtr	5.5 mtr (Japan)	6 mtr (Europe & Singapore)	20 ft (U.S.A.)
Width	Depth	Thick				
65	50	5	4.36	**67 06 51**	**67 08 23**	**67 15 84**
75	50	6	5.67	**53**	**24**	**85**
75	65	6	6.38	**55**	**25**	**86**
90	75	6	7.56	**56**	**26**	**87**
90	75	9	11.0	**57**	**27**	**88**
100	75	7	9.32	**67 06 59**	**67 08 28**	**67 15 89**
100	75	10	13.0	**60**	**29**	**90**

Steel Plates – Hot Rolled

Ungalvanized or galvanized plates are available in the following sheet sizes:
914 × 1,829 mm (3 ft. x 6 ft.) or 1,219 × 2,438 mm (4 ft. x 8 ft.).

If you require a sheet size other than the ones listed above, please specify the dimensions you require in your order.

Ungalvanized

How to order : CODE

Steel plate, hot rolled, ungalvanized, THICKNESS x WIDTH x LENGTH mm, NUMBER of SHEETS required

Unit Per Sht.

Ungalvanized

914 x 1,829 mm (3' x 6')			1,219 x 2,438 mm (4' x 8')		
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 07 01	0.6	7.8	**67 07 41**	1.6	37.3
02	0.8	10.5	**42**	2.0	46.7
03	1.0	13.1	**43**	2.3	53.7
04	1.2	15.8	**44**	3.2	74.7
05	1.6	21.0	**45**	4.5	105
67 07 06	2.0	26.3	**67 07 46**	5.0	140
07	2.3	30.2	**47**	8.0	187
08	3.2	42.0	**48**	9.0	210
09	4.5	59.1	**49**	10	233
10	6.0	78.8	**50**	11	257
67 07 11	8.0	105	**67 07 51**	12	280
12	9.0	118	**52**	16	373
13	10	131	**53**	19	443
14	11	144	**54**	22	513
15	12	158	**55**	25	583
67 07 16	16	210	**67 07 56**	28	653
17	19	249	**57**	32	747
18	22	289	**58**	36	840
19	25	328	**59**	40	933
20	28	368	**60**	45	1,050
67 07 21	32	420	**67 07 61**	50	1,167
22	36	473			
23	40	525			
24	45	591			
25	50	656			

Galvanized

914 x 1,829 mm (3' x 6')

How to order : CODE

Steel plate, hot rolled, galvanized,THICKNESS mm, 914 x 1,829 mm (3 ft. x 6 ft.), NUMBER of SHEETS required

Unit Per Sht.

CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 07 81	0.27	4.18	**67 07 86**	0.8	11.1
82	0.3	4.57	**87**	1.0	13.8
83	0.4	5.89	**88**	1.2	16.4
84	0.5	7.20	**89**	1.6	21.6
85	0.6	8.51			

Steel Checker Plates – Hot Rolled

For the construction or repair of floor plates, iron ladder steps, etc. Standard sheet size: 914 x 1,829 mm (3 ft. x 6 ft.) or 1,219 x 2,438 mm (4 ft. x 8 ft.).

If you require a different size sheet, please specify the dimensions you require in your order.

How to order : CODE

Steel checker plate, hot rolled, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

914 x 1,829 mm (3' x 6')			1,219 x 2,438 mm (4' x 8')		
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 08 01	3.2	44.8	**67 08 16**	3.2	79.6
02	4.5	61.8	**17**	4.5	110
03	6	81.5	**18**	6	145
04	8	108	**19**	8	192
05	9	121	**20**	9	215
67 08 06	10	134	**67 08 21**	10	238
07	12	167	**22**	12	285

Tinned Plates

Standard sheet size : 508 x 711.2 mm (20" x 28").

If you require a different size sheet, please indicate the dimensions of the sheet you require in your order.

How to order : CODE

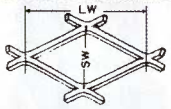
Tinned plate, 508 x 711.2 mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

CODE	Thickness mm	Gram Per Sht	CODE	Thickness mm	Gram Per Sht
67 08 51	0.214	607	**67 08 56**	0.285	810
52	0.229	648	**57**	0.294	834
53	0.243	688	**58**	0.306	867
54	0.257	729	**59**	0.320	907
55	0.271	770	**60**	0.357	1,012

Steel Bleaching Plates

(Diamond Expanded Metal)



Standard size: 914 × 1,829 mm (3 ft. × 6 ft.) or 1,219 × 2,438 mm (4 ft. × 8 ft.).

Made of rolled steel for use as a general structural material. When ordering, please specify the size of the mesh you require (as shown in the illustration as above) as well as the thickness of the mesh wire and the length and width of the sheet required for use.

How to order : CODE

Steel bleaching plate, WIDTH x LENGTH mm, MESH (SW x LW) mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

914 x 1,829 mm (3' x 6')				1,219 x 2,438 mm (4' x 8')			
CODE	Mesh mm		Thickness mm	CODE	Mesh mm		Thickness mm
	SW	LW			SW	LW	
67 08 81	25	61	3.2	**67 08 86**	25	61	3.2
82	34	135	4.5	**87**	34	135	4.5
83	34	135	6.0	**88**	34	135	6.0

Carbon Tool Steel Rounds

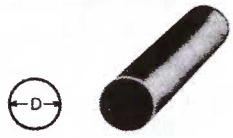
Water hardened carbon tool steel, SK3 (content ratio of carbon, 1 - 1.1 %), for taps, dies, chisels, etc.

SK5 type (content ratio of carbon, 0.8 - 0.9 %) tool steel is for stamping plates for letters and figures or as saw blades. Annealed and processed for the easiest machinability.

Supplied in the following standard lengths:

Europe : 3 M
Japan : 5.5 M
U.S. : 12 ft.
Singapore : 6 M

If you require a length other than the standard mentioned, please specify when ordering.



How to order : CODE

Tool steel, carbon, round, SK3 or SK5, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

SK-3 For Tap-Dies-Chisel etc		5.5 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
Diam mm	Kgs Per Mtr				
10	0.62	**67 09 01**	**67 15 91**	**67 16 60**	**67 17 10**
11	0.75	**02**	**92**	**61**	**11**
12	0.89	**03**	**93**	**62**	**12**
13	1.04	**04**	**94**	**63**	**13**
14	1.21	**05**	**95**	**64**	**14**
15	1.39	**67 09 06**	**67 15 96**	**67 16 65**	**67 17 15**
16	1.58	**07**	**97**	**66**	**16**
17	1.78	**08**	**98**	**67**	**17**
18	2.00	**09**	**99**	**68**	**18**
19	2.23	**10**	**67 16 00**	**69**	**19**
20	2.47	**67 09 11**	**67 16 20**	**67 16 70**	**67 17 20**
21	2.72	**12**	**21**	**71**	**21**
22	2.98	**13**	**22**	**72**	**22**
23	3.26	**14**	**23**	**73**	**23**
24	3.55	**15**	**24**	**74**	**24**
25	3.85	**67 09 16**	**67 16 25**	**67 16 75**	**67 17 25**
26	4.17	**17**	**26**	**76**	**26**
27	4.49	**18**	**27**	**77**	**27**
28	4.83	**19**	**28**	**78**	**28**
30	5.55	**20**	**29**	**79**	**29**
32	6.31	**67 09 21**	**67 16 30**	**67 16 80**	**67 17 30**
34	7.13	**22**	**31**	**81**	**31**
36	7.99	**23**	**32**	**82**	**32**
38	8.90	**24**	**33**	**83**	**33**
40	9.87	**25**	**34**	**84**	**34**

Unit Per Lgh.

SK-5 For Stamp Letter-Figure-Saw		5.5 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
Diam mm	Kgs Per Mtr				
10	0.62	**67 09 51**	**67 16 35**	**67 16 85**	**67 17 35**
11	0.75	**52**	**36**	**86**	**36**
12	0.89	**53**	**37**	**87**	**37**
13	1.04	**54**	**38**	**88**	**38**
14	1.21	**55**	**39**	**89**	**39**
15	1.39	**67 09 56**	**67 16 40**	**67 16 90**	**67 17 40**
16	1.58	**57**	**41**	**91**	**41**
17	1.78	**58**	**42**	**92**	**42**
18	2.00	**59**	**43**	**93**	**43**
19	2.23	**60**	**44**	**94**	**44**
20	2.47	**67 09 61**	**67 16 45**	**67 16 95**	**67 17 45**
21	2.72	**62**	**46**	**96**	**46**
22	2.98	**63**	**47**	**97**	**47**
23	3.26	**64**	**48**	**98**	**48**
24	3.55	**65**	**49**	**99**	**49**
25	3.85	**67 09 66**	**67 16 50**	**67 17 00**	**67 17 50**
26	4.17	**67**	**51**	**01**	**51**
27	4.49	**68**	**52**	**02**	**52**
28	4.83	**69**	**53**	**03**	**53**
30	5.55	**70**	**54**	**04**	**54**
32	6.31	**67 09 71**	**67 16 55**	**67 17 05**	**67 17 55**
34	7.13	**72**	**56**	**06**	**56**
36	7.99	**73**	**57**	**07**	**57**
38	8.90	**74**	**58**	**08**	**58**
40	9.87	**75**	**59**	**09**	**59**

(to be continued)

Steel Piano Wire

(Music Wire)

How to order : CODE

Steel piano wire, DIAM mm x TOTAL LENGTH mtr

Unit Per Mtr.

CODE	Diam. mm	Kgs Per 1,000 m	CODE	Diam. mm	Kgs Per 1,000 m
67 10 01	0.08	0.0394	**67 10 20**	0.70	3.018
02	0.09	0.0499	**21**	0.80	3.943
03	0.10	0.0615	**22**	0.90	4.986
04	0.12	0.0884	**23**	1.0	6.158
05	0.14	0.121	**24**	1.2	8.867
67 10 06	0.16	0.158	**67 10 25**	1.4	12.07
07	0.18	0.199	**26**	1.6	15.77
08	0.20	0.246	**27**	1.8	19.95
09	0.23	0.325	**28**	2.0	24.63
10	0.26	0.416	**29**	2.3	32.58
67 10 11	0.29	0.518	**67 10 30**	2.6	41.62
12	0.32	0.630	**31**	2.9	51.78
13	0.35	0.754	**32**	3.2	63.05
14	0.40	0.980	**33**	3.5	75.43
15	0.45	1.247	**34**	4.0	98.52
67 10 16	0.50	1.537	**67 10 35**	4.5	124.66
17	0.55	1.863	**36**	5.0	153.94
18	0.60	2.219	**37**	5.5	186.27
19	0.65	2.603	**38**	6.0	221.64

Iron Wire

Galvanized or ungalvanized wire is available.

How to order : CODE

Iron wire, GALVANIZED or UNGALVANIZED, DIAM mm TOTAL LENGTH mtr

Unit Per Kgs.

Galvanized Wire		Kgs Per 1,000 m	Ungalvanized Wire	
CODE	Diam. mm		CODE	Diam. mm
67 11 01	0.23	0.326	**67 11 51**	0.23
02	0.26	0.417	**52**	0.26
03	0.29	0.518	**53**	0.29
04	0.32	0.631	**54**	0.32
05	0.35	0.755	**55**	0.35
67 11 06	0.40	0.987	**67 11 56**	0.40
07	0.45	1.25	**57**	0.45
08	0.50	1.54	**58**	0.50
09	0.55	1.87	**59**	0.55
10	0.60	2.22	**60**	0.60
67 11 11	0.65	2.60	**67 11 61**	0.65
12	0.70	3.02	**62**	0.70
13	0.80	3.95	**63**	0.80
14	0.90	4.99	**64**	0.90
15	1.0	6.17	**65**	1.0

(to be continued)

Unit Per Kgs.

Galvanized Wire		Kgs Per 1,000 m	Ungalvanized Wire	
CODE	Diam. mm		CODE	Diam. mm
67 11 16	1.2	8.88	**67 11 66**	1.2
17	1.4	12.1	**67**	1.4
18	1.6	15.8	**68**	1.6
19	1.8	20.0	**69**	1.8
20	2.0	24.7	**70**	2.0
67 11 21	2.3	32.6	**67 11 71**	2.3
22	2.6	41.7	**72**	2.6
23	2.9	51.8	**73**	2.9
24	3.2	63.1	**74**	3.2
25	3.5	75.5	**75**	3.5
67 11 26	4.0	98.7	**67 11 76**	4.0
27	4.5	125	**77**	4.5
28	5.0	154	**78**	5.0
29	5.5	187	**79**	5.5
30	6.0	222	**80**	6.0
67 11 31	6.5	260	**67 11 81**	6.5

Razor Wire

A concertina configured galvanized steel wire used for outer boundary fencing on ship's deck to defend ships from the vandals, like pirates. The razor wire prevent any intruders from penetrating by piercing or gripping them. Two patterns of loop are available ; Single Loop or Crossed Loop, and also standard diameter are available from 400 mm to 900 mm. Standard coil length when extended is 15 mtr, and they can be lengthen by connecting clips.

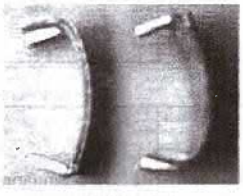
Single Loop

Crossed Loop

Unit Per Mtr.

CODE	Diameter	Standard Extended Length	CODE	Diameter	Standard Extended Length
Single Loop			**Crossed Loop**		
67 12 01	400 mm		**67 12 11**	400 mm	
02	500 "		**12**	500 "	
03	600 "	15 mtr	**13**	600 "	15 mtr
04	700 "		**14**	700 "	
05	800 "		**15**	800 "	
67 12 06	900 "	15 mtr	**67 12 16**	900 "	15 mtr

Connecting Clips and Ties for Razor Wire



Single Clip

Connecting Tie

CODE	Unit	CODE	Unit
Connecting Clip		**Connecting Tie**	
67 12 18	Per Piece	**67 12 20**	Per Piece
19	100's / Packet	**21**	100's / Packet

Stainless Steel Razor Wire

Unit Per Mtr.

CODE	Circle Diam.	CODE	Circle Diam.
67 12 25	900 mm	**67 12 26**	1,000 mm

Remark : Standard length is 15 mtr per coil

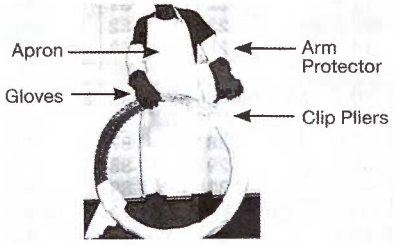
Flat Wrap Razor Wire

A flat wrap razor wire is suitable for installations where a neat appearance is required. Due to its flat construction, it does not overhanging into neighboring property and will therefore not harm innocent bystanders. The flat wrap razor wire can be used to upgrade any existing fence or wall, by adding directly to a wire mesh fence, or adding it on top of a brick or pre-cast wall to instantly upgrade your security.

Unit Per Lgh.

CODE	Diam.	Length
67 12 31	500 mm	10 mtr
32	700 "	

Tools for Razor Wire Installation



19 01 41	Gloves for razor wire installation	Pr.
43	Arm Protector for razor wire installation	Pr.
45	Apron for installation razor wire	Pc.
61 17 65	Razor wire clip pliers	Pr.

Barbed Wire

A galvanized wire with sharp edges to protect your property from invaders by fencing around.

67 12 41	Barbed wire, 250 mtr (App.28 kgs)	Roll

Stainless Steel Rounds

Hot Rolled

SUS 430 - AISI (ASTM) 430 ... 18 Chrome
SUS 304 - AISI (ASTM) 304 ... 18 Chrome & 8 Nickel

Supplied in the following standard lengths. If you require a length other than the standard mentioned, please specify when ordering.

Europe : 3 M
U.S. : 12 ft.
Japan : 4 M
Singapore : 6 M

How to order : CODE

Stainless steel round, SUS 430 or SUS 304, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

SUS 430 18 Chrome		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
Diam mm	Kgs Per Mtr				
9	0.5	67 14 01	67 17 60	67 17 94	67 18 47
10	0.62	02	61	95	48
12	0.89	03	62	96	49
13	1.04	04	63	97	50
14	1.21	05	64	98	68
15	1.39	67 14 06	67 17 65	67 17 99	67 18 69
16	1.58	07	66	67 18 00	70
19	2.23	08	67	20	71
20	2.47	09	68	21	72
22	2.98	10	69	22	73
24	3.55	67 14 11	67 17 70	67 18 23	67 18 74
25	3.85	12	71	24	75
26	4.17	13	72	25	76
28	4.83	14	73	26	77
30	5.55	15	74	27	78
32	6.31	67 14 16	67 17 75	67 18 28	67 18 79
34	7.13	17	76	29	80
36	7.99	18	77	30	81
38	8.90	19	78	31	82
40	9.87	20	79	32	83
42	10.9	67 14 21	67 17 80	67 18 33	67 18 84
44	11.9	22	81	34	85
46	13.0	23	82	35	86
48	14.2	24	83	36	87
50	15.4	25	84	37	88
55	18.7	67 14 26	67 17 85	67 18 38	67 18 89
60	22.2	27	86	39	90
65	26.0	28	87	40	91
70	30.2	29	88	41	92
75	34.7	30	89	42	93
80	39.5	67 14 31	67 17 90	67 18 43	67 18 94
85	44.5	32	91	44	95
90	49.9	33	92	45	96
100	61.7	34	93	46	97

Unit Per Lgh.

SUS 304 18 Chrome & 8 Nickel		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A.)	6 mtr (Singapore)
Diam mm	Kgs Per Mtr				
9	0.5	67 14 51	67 18 98	67 19 75	67 20 09
10	0.62	52	99	76	10
12	0.89	53	67 19 00	77	11
13	1.04	54	23	78	12
14	1.21	55	24	79	13
15	1.39	67 14 56	67 19 25	67 19 80	67 20 14
16	1.58	57	26	81	15
19	2.23	58	27	82	16
20	2.47	59	28	83	17
22	2.98	60	29	84	18
24	3.55	67 14 61	67 19 30	67 19 85	67 20 19
25	3.85	62	31	86	20
26	4.17	63	32	87	21
28	4.83	64	33	88	22
30	5.55	65	34	89	23
32	6.31	67 14 66	67 19 35	67 19 90	67 20 24
34	7.13	67	36	91	25
36	7.99	68	37	92	26
38	8.90	69	38	93	27
40	9.87	70	39	94	28
42	10.9	67 14 71	67 19 40	67 19 95	67 20 29
44	11.9	72	41	96	30
46	13.0	73	42	97	31
48	14.2	74	43	98	32
50	15.4	75	44	99	33
55	18.7	67 14 76	67 19 45	67 20 00	67 20 34
60	22.2	77	46	01	35
65	26.0	78	47	02	36
70	30.2	79	48	03	37
75	34.7	80	49	04	38
80	39.5	67 14 81	67 19 50	67 20 05	67 20 39
85	44.5	82	72	06	40
90	49.9	83	73	07	41
100	61.7	84	74	08	42

(to be continued)

Stainless Steel Hexagons

Hot Rolled

SUS 430 - AISI (ASTM) 430 ... 18 Chrome
SUS 304 - AISI (ASTM) 304 ... 18 Chrome & 8 Nickel

Supplied in the following standard lengths. If you require a length other than the standard mentioned, please specify when ordering.

Europe : 3 M Japan : 4 M
U.S. : 12 ft. Singapore : 12 ft.

How to order : CODE

Stainless steel hexagon, SUS 430 or SUS 304, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.

SUS 430 18 Chrome		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
Across Flats mm	Kgs Per Mtr			
12	0.979	67 15 01	67 20 43	67 20 63
14	1.33	02	44	64
17	1.96	03	45	65
19	2.45	04	46	66
21	3.00	05	47	67
23	3.60	67 15 06	67 20 48	67 20 68
26	4.60	07	49	69
29	5.72	08	50	70
32	6.96	09	51	71
35	8.33	10	52	72
38	9.82	67 15 11	67 20 53	67 20 73
41	11.4	12	54	74
46	14.4	13	55	75
50	17.0	14	56	76
54	19.8	15	57	77
58	22.9	67 15 16	67 20 58	67 20 78
63	27.0	17	59	79
67	30.5	18	60	80
71	34.3	19	61	81
77	40.3	20	62	82

Unit Per Lgh.

SUS 304 18 Chrome & 8 Nickel		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
Across Flats mm	Kgs Per Mtr			
12	0.979	67 15 31	67 20 83	67 21 45
14	1.33	32	84	46
17	1.96	33	85	47
19	2.45	34	86	48
21	3.00	35	87	49

(to be continued)

Unit Per Lgh.

SUS 304 18 Chrome & 8 Nickel		4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
Across Flats mm	Kgs Per Mtr			
23	3.60	67 15 36	67 20 88	67 21 50
26	4.60	37	89	51
29	5.72	38	90	52
32	6.96	39	91	53
35	8.33	40	92	54
38	9.82	67 15 41	67 20 93	67 21 55
41	11.4	42	94	56
46	14.4	43	95	57
50	17.0	44	96	58
54	19.8	45	97	59
58	22.9	67 15 46	67 20 98	67 21 60
63	27.0	47	99	61
67	30.5	48	67 21 00	62
71	34.3	49	43	63
77	40.3	50	44	64

Stainless Steel Plates

Hot Rolled

SUS 304 - AISI (ASTM) 304 ... 18 Chrome & 8 Nickel

Supplied in the following standard sizes.

Europe : 1 x 2 M
Japan : 1 x 2 M
U.S. : 4 x 8 ft.
Singapore : 4 x 8 ft.

How to order : CODE

Stainless steel plate, SUS 304, THICKNESS mm, 1 x 2 mtr, NUMBER of SHEETS required

Unit Per sht.

Thickness mm	Kgs Per Sht	1 x 2 mtr (Japan & Europe)	4 x 8 feet (U.S.A.& Singapore)
0.5	8.0	67 16 01	67 21 65
0.6	9.6	02	66
0.8	12.7	03	67
1.0	15.9	04	68
1.5	23.8	05	69
2.0	31.7	67 16 06	67 21 70
2.5	39.6	07	77
3.0	47.6	08	78
4.0	63.4	09	79
5.0	79.3	10	80
6.0	95.2	67 16 11	67 21 81
7.0	111	12	82
8.0	127	13	83
9.0	143	14	84
10.0	159	15	85
12.0	190	67 16 16	67 21 86
15.0	238	17	87
20.0	317	18	88
25.0	396	19	89

Copper Rounds

Supplied in the following standard lengths. If you require a length other than the standard mentioned, please specify when ordering.

Europe : 4 M
U.S. : 12 ft.
Japan : 4 M
Singapore : 12 ft.

How to order : CODE

Copper round, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Diam mm	Kgs Per Sht	4 mtr (Japan & Europe)	12 feet (U.S.A.& Singapore)
10	0.698	67 18 01	67 21 90
12	1.01	02	91
13	1.18	03	92
14	1.37	04	93
15	1.57	05	94
16	1.79	67 18 06	67 21 95
19	2.52	07	96
20	2.79	08	97
22	3.38	09	98
25	4.36	10	99
28	5.47	67 18 11	67 22 00
30	6.28	12	24
32	7.15	13	25
35	8.55	14	26
38	10.1	15	27
40	11.2	67 18 16	67 22 28
42	12.3	17	29
45	14.1	18	30
50	17.5	19	31

Copper Wire

How to order : CODE

Copper wire, DIAM mm x TOTAL LENGTH mtr

Unit Per Kgs.

CODE	Diameter		Kgs Per 1,000 m	CODE	Diameter		Kgs Per 1,000 m
	mm	Swg			mm	Swg	
67 18 51	0.3	31	0.6284	67 18 61	1.6	16	17.88
52	0.4	27	1.117	62	1.8	15	22.63
53	0.5	25	1.746	63	2.0	14	27.93
54	0.6	23	2.513	64	2.3	13	36.94
55	0.7	22	3.421	65	2.6	12	47.20
67 18 56	0.8	21	4.469	67 18 66	3.0	11	62.84
57	0.9	20	5.656	67	3.5	9	85.53
58	1.0	19	6.982				
59	1.2	18	10.05				
60	1.4	17	13.68				

Copper Sheets

Supplied in the following standard sizes :

Europe : 1,000 x 500 mm or 1,000 x 1,000 mm
Japan : (1) W 365 x L 1,200 mm, 0.4 - 10 mm thick
(2) W 1,000 x L 2,000 mm, 0.5 - 10 mm thick
Singapore : 1 x 1 M, 0.5 - 3 mm thick.

How to order : CODE

Copper sheet, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

365 mm x 1,200 mm			1,000 mm x 2,000 mm		
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 19 01	0.4	1.558	67 19 51	0.5	8.89
02	0.5	1.947	52	0.6	10.67
03	0.6	2.336	53	0.7	12.45
04	0.7	2.726	54	0.8	14.22
05	0.8	3.115	55	1.0	17.78

(to be continued)

Unit Per Sht.

365 mm × 1,200 mm			1,000 mm × 2,000 mm		
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 19 06	1.0	3.894	**67 19 56**	1.2	21.34
07	1.2	4.673	**57**	1.4	24.90
08	1.4	5.453	**58**	1.5	26.68
09	1.5	5.843	**59**	1.6	28.44
10	1.6	6.228	**60**	1.8	32.0
67 19 11	1.8	7.008	**67 19 61**	2.0	35.56
12	2.0	7.788	**62**	2.3	40.9
13	2.3	8.957	**63**	2.6	46.22
14	2.6	10.12	**64**	2.9	51.56
15	2.9	11.29	**65**	3.2	56.9
67 19 16	3.2	12.46	**67 19 66**	4.0	71.12
17	4	15.58	**67**	5.0	88.90
18	5	19.47	**68**	6.0	106.7
19	6	23.36	**69**	7.0	124.5
20	7	27.26	**70**	8.0	142.2
67 19 21	8	31.15	**67 19 71**	10	177.8
22	10	38.94			

Brass Rounds

Copper 60 %, Zinc 40 %. Supplied in the following standard lengths:

Europe : 3 M
Japan : 4 M
U.S. : 12 ft.
Singapore : 4 M

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Brass round, DIAM mm x TOTAL LENGTH mtr required

Unit Per Lgh.

Diam mm	Kgs Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)
3	0.060	**67 21 01**	**67 22 32**	**67 23 33**
3.5	0.081	**02**	**33**	**34**
4	0.105	**03**	**34**	**35**
4.5	0.133	**04**	**35**	**36**
5	0.165	**05**	**36**	**37**
5.5	0.20	**67 21 06**	**67 22 37**	**67 23 38**
6	0.237	**07**	**38**	**39**
7	0.323	**08**	**39**	**40**
8	0.422	**09**	**40**	**41**
9	0.534	**10**	**41**	**42**
10	0.660	**67 21 11**	**67 22 42**	**67 23 43**
11	0.797	**12**	**43**	**44**
12	0.950	**13**	**44**	**45**
13	1.11	**14**	**45**	**46**
14	1.29	**15**	**46**	**47**
15	1.48	**67 21 16**	**67 22 47**	**67 23 48**
16	1.69	**17**	**48**	**49**
17	1.90	**18**	**49**	**50**
18	2.14	**19**	**50**	**73**
19	2.38	**20**	**84**	**74**
20	2.64	**67 21 21**	**67 22 85**	**67 23 75**
21	2.91	**22**	**86**	**76**
22	3.19	**23**	**87**	**77**
23	3.49	**24**	**88**	**78**
24	3.80	**25**	**89**	**79**
25	4.12	**67 21 26**	**67 22 90**	**67 23 80**
26	4.46	**27**	**91**	**81**
27	4.81	**28**	**92**	**82**
28	5.17	**29**	**93**	**83**
30	5.94	**30**	**94**	**84**
32	6.76	**67 21 31**	**67 22 95**	**67 23 85**
34	7.63	**32**	**96**	**86**
35	8.08	**33**	**97**	**87**
36	8.55	**34**	**98**	**88**
38	9.53	**35**	**99**	**89**
40	10.6	**67 21 36**	**67 23 00**	**67 23 90**
42	11.6	**37**	**27**	**91**
44	12.7	**38**	**28**	**92**
45	13.4	**39**	**29**	**93**
46	14.0	**40**	**30**	**94**
48	15.2	**67 21 41**	**67 23 31**	**67 23 95**
50	16.5	**42**	**32**	**96**

(to be continued)

Brass Squares

Copper 60 %, Zinc 40 %. Supplied in the following standard lengths:

Europe : 3 M
U. S. : 12 ft.
Japan : 4 M
Singapore : 12 ft.

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Brass square, ACROSS FLAT mm, TOTAL LENGTH mtr

Unit Per Lgh.

Across Flats mm	Kgs Per Mtr	4 mtr (Japan)	3 mtr (Europe)	12 feet (U.S.A. & Singapore)
8	0.538	**67 21 71**	**67 23 97**	**67 24 14**
9	0.680	**72**	**98**	**15**
10	0.840	**73**	**99**	**16**
11	1.02	**74**	**67 24 00**	**17**
12	1.21	**75**	**12**	**18**
13	1.42	**67 21 76**	**67 24 13**	**67 24 19**

Brass Hexagons

Supplied in the following standard lengths.

Europe : 3 M
U. S. : 12 ft.
Japan : 4 M
Singapore : 4 M

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Brass hexagon, ACROSS FLAT mm x TOTAL LENGTH mtr

Unit Per Lgh.

Across Flats mm	Kgs Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)
6	0.262	**67 22 01**	**67 24 20**	**67 24 65**
7	0.356	**02**	**32**	**66**
8	0.465	**03**	**33**	**67**
9	0.589	**04**	**34**	**68**
10	0.727	**05**	**35**	**69**
12	1.05	**67 22 06**	**67 24 36**	**67 24 70**
14	1.43	**07**	**37**	**71**
17	2.10	**08**	**38**	**72**
19	2.62	**09**	**39**	**73**
21	3.20	**10**	**40**	**74**
23	3.84	**67 22 11**	**67 24 52**	**67 24 75**
25	4.54	**12**	**53**	**76**
30	6.54	**13**	**54**	**77**
32	7.44	**14**	**55**	**78**
35	8.90	**15**	**56**	**79**

(to be continued)

Unit Per Lgh.

Across Flats mm	Kgs Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)
40	11.6	**67 22 16**	**67 24 57**	**67 24 80**
41	12.2	**17**	**58**	**81**
46	15.4	**18**	**59**	**82**
50	18.2	**19**	**60**	**83**
54	21.2	**20**	**61**	**84**
58	24.4	**67 22 21**	**67 24 62**	**67 24 85**
63	28.8	**22**	**63**	**86**
67	32.6	**23**	**64**	**87**

Brass Plates

Standard Sizes:

1) W 365 x L 1,200 mm ... 0.15 to 30 mm thick
2) W 1,000 x L 2,000 m ... 0.5 to 30 mm thick.

Please specify if you require plates of a size other than those listed above.

How to order : CODE

Brass plate, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

365 mm x 1,200 mm			1,000 mm x 2,000 mm		
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 22 51	0.15	0.551	**67 23 01**	0.6	8.39
52	0.2	0.735	**02**	0.6	10.1
53	0.25	0.919	**03**	0.7	11.7
54	0.3	1.10	**04**	0.8	13.4
55	0.35	1.29	**05**	1.0	16.8
67 22 56	0.4	1.47	**67 23 06**	1.2	20.1
57	0.45	1.65	**07**	1.4	23.5
58	0.5	1.84	**08**	1.5	25.2
59	0.6	2.20	**09**	1.6	26.8
60	0.7	2.57	**10**	1.8	30.2
67 22 61	0.8	2.94	**67 23 11**	2.0	33.6
62	1.0	3.67	**12**	2.3	38.6
63	1.2	4.41	**13**	2.5	42.0
64	1.4	5.14	**14**	3.0	50.3
65	1.5	5.51	**15**	3.2	53.7
67 22 66	1.6	5.88	**67 23 16**	3.5	58.7
67	1.8	6.61	**17**	4	67.1
68	2.0	7.35	**18**	5	83.9
69	2.3	8.45	**19**	6	101
70	2.5	9.19	**20**	7	117
67 22 71	3.0	11.0	**67 23 21**	8	134
72	3.2	11.8	**22**	10	168
73	3.5	12.9	**23**	15	252
74	4	14.7	**24**	20	336
75	5	18.4	**25**	25	420
67 22 76	6	22.0	**67 23 26**	30	503
77	7	25.7			
78	8	29.4			
79	10	36.7			
80	15	55.1			
67 22 81	20	73.5			
82	25	91.9			
83	30	110			

Brass Wire

Sizes other than those listed below are available upon request.

How to order : CODE

Brass wire, DIAM mm x TOTAL LENGTH mtr

Unit Per Kgs.

CODE	Diameter mm	Diameter Swg	Kgs Per 1,000 m	CODE	Diameter mm	Diameter Swg	Kgs Per 1,000 m
67 23 51	0.5	25	1.6830	**67 23 61**	1.8	15	21.7057
52	0.55	24	2.0169	**62**	2.0	14	25.98
53	0.6	23	2.4129	**63**	2.3	13	34.40
54	0.65	-	2.6852	**64**	2.5	-	43.31
55	0.7	22	3.2197	**65**	2.8	-	49.74
67 23 56	0.8	21	4.2817	**67 23 66**	3.0	-	60.26
57	0.9	20	5.2477	**67**	3.2	10	68.60
58	1.0	19	6.6947	**68**	3.5	9	86.87
59	1.2	18	9.6525	**69**	3.8	-	91.57
60	1.4	17	13.1297	**70**	4.0	8	107.16
				67 23 71	4.3	-	128.70
				72	4.5	7	135.50

Brass Shims
(Brass Strips)

A solid shim stock of precision laminated brass. These strips can be easily cut by a power saw or hacksaw and can be punched, bored, or milled by ordinary machinery. The thin stock can be cut easily with metal shears. Supplied in the following standard sizes :

1) 125 mm x 5 mtr
2) 150 mm x 5 mtr
3) 175 mm x 5 mtr

Please specify if you require sizes other than those listed above.

How to order : CODE

Brass shim, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

125 mm x 5 mtr			150 mm x 5 mtr		
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 24 01	0.1	0.525	**67 24 21**	0.1	0.63
02	0.16	0.84	**22**	0.16	1.005
03	0.2	1.05	**23**	0.2	1.26
04	0.26	1.365	**24**	0.26	1.635
05	0.3	1.575	**25**	0.3	1.89
67 24 06	0.35	1.85	**67 24 26**	0.35	2.2
07	0.4	2.1	**27**	0.4	2.515
08	0.5	2.62	**28**	0.5	3.145
09	0.6	3.145	**29**	0.6	3.775
10	0.7	3.67	**30**	0.7	4.405
67 24 11	0.8	4.195	**67 24 31**	0.8	5.05

175 mm x 5 mtr					
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 24 41	0.1	0.735	**67 24 47**	0.4	2.935
42	0.16	1.175	**48**	0.5	3.675
43	0.2	1.47	**49**	0.6	4.405
44	0.26	1.91	**50**	0.7	5.15
45	0.3	2.2	**51**	0.8	5.85
67 24 46	0.35	2.57			

Naval Brass Rounds

Used for shafting or similar parts processing. Resists corrosion from salt water.

Supplied in the following standard lengths:

Europe : 3 M U. S. : 12 ft.
Japan : 4 M Singapore : 4 M

Please specify if you need to have the bar cut to a required length.

How to order : CODE

Naval brass round, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Diam mm	Kgs Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)
10	0.661	**67 25 01**	**67 25 19**	**67 25 37**
13	1.12	**02**	**20**	**38**
16	1.69	**03**	**21**	**39**
19	2.39	**04**	**22**	**40**
22	3.20	**05**	**23**	**41**
25	4.13	**67 25 06**	**67 25 24**	**67 25 42**
28	5.19	**07**	**25**	**43**
30	5.95	**08**	**26**	**44**
32	6.77	**09**	**27**	**45**
35	8.10	**10**	**28**	**46**
38	9.55	**67 25 11**	**67 25 29**	**67 25 47**
42	11.7	**12**	**30**	**48**
45	13.4	**13**	**31**	**49**
50	16.5	**14**	**32**	**50**
55	20.0	**15**	**33**	**69**
60	23.8	**67 25 16**	**67 25 34**	**67 25 70**
65	27.9	**17**	**35**	**71**
70	32.4	**18**	**36**	**72**

High-Tension Brass Rounds

Resists corrosion by salt water. Used chiefly in the manufacture of propeller shafts, etc. Supplied in the following standard lengths:

Europe : 3 M U. S. : 12 ft.
Japan : 4 M Singapore : 4 M

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

High tension brass round, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Diam mm	Kgs Per Mtr	4 mtr (Japan & Singapore)	3 mtr (Europe)	12 feet (U.S.A.)
10	0.661	**67 25 51**	**67 25 73**	**67 25 91**
13	1.12	**52**	**74**	**92**
16	1.69	**53**	**75**	**93**
19	2.39	**54**	**76**	**94**
22	3.20	**55**	**77**	**95**
25	4.13	**67 25 56**	**67 25 78**	**67 25 96**
28	5.19	**57**	**79**	**97**
30	5.95	**58**	**80**	**98**
32	6.77	**59**	**81**	**99**
35	8.10	**60**	**82**	**67 26 00**
38	9.55	**67 25 61**	**67 25 83**	**67 26 01**
42	11.7	**62**	**84**	**02**
45	13.4	**63**	**85**	**03**
50	16.5	**64**	**86**	**04**
55	20.0	**65**	**87**	**05**
60	23.8	**67 25 66**	**67 25 88**	**67 26 06**
65	27.9	**67**	**89**	**07**
70	32.4	**68**	**90**	**08**

Bronze Castings

Solid or hollow castings are available in standard lengths of 300 mm. This anticorrosive material is widely used for sleeves, rebushing, etc. Sizes other than those listed below are available upon request. When ordering, please specify whether you require solid or hollow castings. When ordering hollow castings, please specify the required inner or outer diameters.

How to order : CODE

Bronze casting, SOLID or HOLLOWED,DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Solid Length 300 mm			Hollowed Length 300 mm			
CODE	Diam. mm	Kgs Per Length	CODE	Size mm O.D.	Size mm I.D.	Kgs Per Length
67 27 01	20	1.0	**67 27 51**	40	20	3.0
02	25	1.5	**52**	45	20	3.9
03	30	2.1	**53**	45	25	3.4
04	35	2.9	**54**	50	20	4.9
05	40	3.7	**55**	55	25	5.6
67 27 06	45	4.6	**67 27 56**	60	30	6.4
07	50	5.7	**57**	65	30	7.7
08	55	6.8	**58**	65	35	7.1
09	60	8.1	**59**	70	35	8.5
10	65	9.5	**60**	75	35	10.1
67 27 11	70	11.0	**67 27 61**	80	40	11.0
12	75	12.5	**62**	90	45	13.9
13	80	14.2	**63**	100	50	17.0
14	85	16.0	**64**	110	60	19.3
15	90	17.9	**65**	120	60	24.8
67 27 16	95	20.0	**67 27 66**	140	90	26.0
17	100	22.7	**67**	200	100	68.0

Phosphor Bronze Wire

Sizes larger or smaller than those listed below are also available upon request.

How to order : CODE

Phosphor bronze wire, DIAM mm x TOTAL LENGTH mtr

Unit Per Kgs.

CODE	Diameter mm	Diameter Swg	Kgs Per 1,000 m	CODE	Diameter mm	Diameter Swg	Kgs Per 1,000 m
67 28 11	0.5	25	1.746	**67 28 21**	1.8	15	22.63
12	0.55	24	2.112	**22**	2.0	14	27.93
13	0.60	23	2.513	**23**	2.3	13	36.94
14	0.65	-	2.950	**24**	2.5	12	43.64
15	0.7	22	3.421	**25**	2.8	-	54.74
67 28 16	0.8	21	4.469	**67 28 26**	3.0	11	62.84
17	0.9	20	5.656	**27**	3.2	-	71.49
18	1.0	19	6.982	**28**	3.5	9	85.53
19	1.2	18	10.05	**29**	3.8	-	
20	1.4	17	13.68	**30**	4.0	8	111.7
				67 28 31	4.3	-	
				32	4.5	7	141.4

Aluminium Rounds

Supplied in the following standard lengths:

Europe : 6 M U. S. : 12 ft.
Japan : 5 M Singapore : 16 ft.

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Aluminium round, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Diam mm	Kgs Per Mtr	5 mtr (Japan)	6 mtr (Europe)	12 feet (U.S.A.)	16 feet (Singapore)
6	0.0766	**67 30 01**	**67 30 11**	**67 30 21**	**67 30 31**
10	0.212	**02**	**12**	**22**	**32**
15	0.478	**03**	**13**	**23**	**33**
20	0.852	**04**	**14**	**24**	**34**
25	1.33	**05**	**15**	**25**	**35**
30	1.92	**67 30 06**	**67 30 16**	**67 30 26**	**67 30 36**
35	2.61	**07**	**17**	**27**	**37**
40	3.41	**08**	**18**	**28**	**38**
45	4.31	**09**	**19**	**29**	**39**
50	5.32	**10**	**20**	**30**	**40**

Aluminium Squares

Sizes other than those listed below are also available upon request. Supplied in the following standard lengths:

Europe : 6 M Japan : 5 M
U. S. : 12 ft. Singapore : 16 ft.

If you require a length other than the standard mentioned, please specify when ordering.

How to order : CODE

Aluminium square, ACROSS FLAT mm,TOTAL LENGTH mtr

Unit Per Lgh.

Across Flats mm	Kgs Per Mtr	5 mtr (Japan)	6 mtr (Europe)	12 feet (U.S.A.)	16 feet (Singapore)
6	0.0976	**67 30 41**	**67 30 51**	**67 30 61**	**67 30 71**
8	0.173	**42**	**52**	**62**	**72**
10	0.271	**43**	**53**	**63**	**73**
12	0.390	**44**	**54**	**64**	**74**
15	0.610	**45**	**55**	**65**	**75**
20	1.08	**67 30 46**	**67 30 56**	**67 30 66**	**67 30 76**
25	1.69	**47**	**57**	**67**	**77**
30	2.44	**48**	**58**	**68**	**78**
40	4.34	**49**	**59**	**69**	**79**
50	6.78	**50**	**60**	**70**	**80**

Aluminium Hexagons

Supplied in the following standard lengths:

Europe : 6 M U. S. : 12 ft.
Japan : 5 M Singapore : 12 ft.

If you require a length different from the standard, please specify when ordering.

How to order : CODE

Aluminium hexagon, ACROSS FLAT mm, TOTAL LENGTH mtr

Unit Per Lgh.

Across Flats mm	Kgs Per Mtr	5 mtr (Japan)	6 mtr (Europe)	12 feet (U.S.A. & Singapore)
6	0.0845	**67 30 81**	**67 30 91**	**67 31 22**
8	0.150	**82**	**92**	**23**
10	0.235	**83**	**93**	**24**
15	0.528	**84**	**94**	**25**
20	0.939	**85**	**95**	**26**
25	1.47	**67 30 86**	**67 30 96**	**67 31 27**
30	2.11	**87**	**97**	**28**
35	2.88	**88**	**98**	**29**
40	3.76	**89**	**99**	**30**
50	5.87	**90**	**67 31 00**	**31**

(to be continued)

Aluminium Plates or Sheets

Standard sheet sizes :
400 mm x 1,200 mm,
1,000 mm x 2,000 mm

How to order : CODE

Aluminium plate, WIDTH x LENGTH mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

400 mm x 1,200 mtr			1,000 mm x 2,000 mtr		
CODE	Thickness mm	Kgs Per Sht	CODE	Thickness mm	Kgs Per Sht
67 31 01	0.2	0.260	**67 31 51**	0.2	1.08
02	0.25	0.325	**52**	0.25	1.36
03	0.3	0.390	**53**	0.3	1.63
04	0.4	0.520	**54**	0.4	2.17
05	0.5	0.650	**55**	0.5	2.71
67 31 06	0.6	0.780	**67 31 56**	0.6	3.25
07	0.7	0.911	**57**	0.7	3.79
08	0.8	1.04	**58**	0.8	4.34
09	1.0	1.30	**59**	1.0	5.42
10	1.2	1.56	**60**	1.2	6.50
67 31 11	1.5	1.95	**67 31 61**	1.5	8.13
12	2.0	2.60	**62**	2.0	10.8
13	2.5	3.25	**63**	2.5	13.6
14	3.0	3.90	**64**	3.0	16.3
15	3.5	4.55	**65**	3.5	19.0
67 31 16	4	5.20	**67 31 66**	4	21.7
17	5	6.50	**67**	5	27.1
18	6	7.80	**68**	6	32.5
19	8	10.4	**69**	8	43.4
20	10	13.0	**70**	10	54.2
67 31 21	12	15.6	**67 31 71**	12	65.0

Lead Plates or Sheets

Standard size sheets are 1,000 x 1,000 mm or cut to a specified length up to 5 meters.

How to order : CODE

Lead plate, 1,000 x 1,000 mm, THICKNESS mm, NUMBER of SHEETS required

Unit Per Sht.

CODE	Thickness mm	Kgs Per 1 m²	CODE	Thickness mm	Kgs Per 1 m²
67 33 01	1.0	11.3	**67 33 04**	3.0	34.0
02	1.5	17.0	**05**	4.0	45.4
03	2.0	22.7	**06**	5.0	56.7

Lead Wire

For caulking and to bind or secure cloth hose or insulation to piping. Sold by coil.

How to order : CODE

Lead wire, DIAM mm x TOTAL LENGTH mtr

Unit Per kgs.

CODE	Diam. mm	Standard Coil	CODE	Diam. mm	Standard Coil
67 33 21	0.5	1 Kgs	**67 33 28**	3.5	2.5 Kgs
22	0.8	1 Kgs	**29**	4.0	2.5 Kgs
23	1.0	2.5 Kgs	**30**	4.5	2.5 Kgs
24	1.5	2.5 Kgs	**31**	5.0	2.5 Kgs
25	2.0	2.5 Kgs	**32**	5.5	2.5 Kgs
67 33 26	2.5	2.5 Kgs	**67 33 33**	6.0	2.5 Kgs
27	3.0	2.5 Kgs	**34**	6.3	2.5 Kgs

Zinc Casting Rounds

Standard length : 300 mm. Specify if you require a hollow or solid casting. If a hollow casting is required, please indicate the size of the inner and outer diameters of the casting. Sizes other than those listed below are available upon request.

How to order : CODE

Zinc casting round, DIAM mm x TOTAL LENGTH mtr

Unit Per Lgh.

Solid
Standard Length 300 mm

CODE	Diam. mm	kgs Per Length	CODE	Diam. mm	kgs Per Length
67 34 01	20	0.7	**67 34 11**	70	8.3
02	25	1.1	**12**	75	9.5
03	30	1.5	**13**	80	10.9
04	35	2.1	**14**	85	12.3
05	40	2.7	**15**	90	13.7
67 34 06	45	3.4	**67 34 16**	95	15.3
07	50	4.2	**17**	100	17.0
08	55	5.1	**18**	105	18.7
09	60	6.1	**19**	110	20.5
10	65	7.2	**20**	115	22.4

Zinc Plates

These zinc plates (anodes) are specially designed for use in the cathodic protection of a ships hull, propeller, ballast tanks, cylinder liner, seawater pipes, etc. The plates are also used for the protection of equipment carrying seawater such as heat exchangers, condensers, and salt water evaporators.

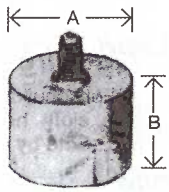
How to order : CODE

Zinc plate, THICKNESS x WIDTH x LENGTH mm, NUMBER of SHEETS required

Unit Per Sht.

CODE	Sizes mm Thick x Width x Length	CODE	Sizes mm Thick x Width x Length
67 34 41	19 x 70 x 150	**67 34 44**	19 x 150 x 300
42	25 x 70 x 150	**45**	25 x 150 x 300
43	12 x 150 x 300	**46**	12 x 150 x 300

Zinc Anode Replacement Elements

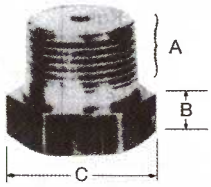


An easily replaceable zinc element for use in pipes which are continuously exposed to seawater. Serves to protect heat exchangers, piping, tanks, pumps, and other hydraulic equipment from corrosion. The anode supplies a continuous protective current to eliminate the corrosion current flowing from a metal surface. Has the same components as the MIL-A-18001-H U. S. A.

Unit Per Pc.

CODE	Type	Size A x B	Weight Grm	Retaining Plug Size
67 35 01	G - 500	12.7 x 19.1	18	NPT 3/8"
02	- 625	15.9 x 19.1	27	" 1/2"
03	- 825	21.0 x 19.1	45	" 3/4"
04	- 1050	26.7 x 19.1	66	" 1"

Zinc Anode Retaining Plugs



A hexagon brass pipe plug containing an anode element.

Unit Per Pc.

CODE	Size NPT	Element Type	CODE	Size NPT	Element Type
67 35 11	3/8"	G-500	**67 35 13**	3/4"	G- 825
12	1/2"	G-625	**14**	1	G-1050

Adhesive Anticorrosive Zinc Tapes

Highly effective anticorrosive tape developed with a base film of adhesive molten galvanized zinc.

Zinc coated layer will not be infiltrated by water, gas, etc. and will not age from ultraviolet rays, so corrosion does not develop from the inner layer.

As the zinc layer of this tape is thick and uniform, it lasts longer than a molten galvanized coating. It can be easily applied and will prevent corrosion at jointed steel parts or pipes.

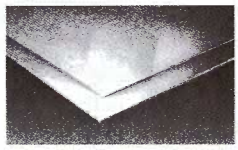
Unit Per Rol.

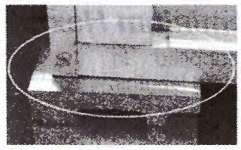
CODE	Width	Thick	Length
67 35 21	25 mm	0.1 mm	20 mtr
22	50 mm		
23	100 mm		

Anti-corrosive Zinc Sheet

ZAP Sheet

Suitable for protection against corrosion of outdoor structures. Made of rolled zinc plate with purity more than 99.99%.





Unit Per Sht.

CODE	Thick mm	Width × Length mm	CODE	Thick mm	Width × Length mm
67 35 31	1	500 × 1,000	**67 35 35**	5	600 × 1,000
32	2	500 × 1,000	**36**	6	
33	3	600 × 1,000	**37**	7	
34	4	600 × 1,000			

Name of Mfr. : Mitsui-Kinzoku Co., Ltd.

Metal Anodes

For protection of hulls of ships, tugs, barges, etc. against sea water corrosion. Corrosion of steel in sea water is an electro chemical process. Metals (zinc, aluminium,

magnesium), when suitably connected to steel in the presence of sea water, will generate an electrical current. This current flows from the anode through the sea water to the structure to be protected. The current generated by the metal anode – steel couple is of sufficient magnitude to mitigate corrosion of the steel. Consequently, the metal anode sacrificially corrodes and the steel is protected.

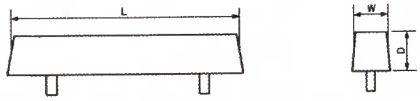
Zinc Anodes

Zinc Anodes have the following characteristics :

1. No sparking problem.
2. Excellent self regulating property, low generation of hydrogen gas.
3. Zn compounds formed react as corrosion inhibitors.
4. Free from troubles caused by electrolytic products.
5. Low anodic polarization and stable protective current.
6. Highest current efficiency.

Standard Products for Ballast Tanks

With bent steel welding bar



With perpendicular steel welding bar

For Clean Ballast Tanks

Type	Size mm D x W x L	Weight kgs	Core mmø	Life Year 30%	40%	45%	50%
MZS- 90P-1	51 x 53 x 1,000	20.2	13		2		
MZS-100P-1	57 x 53.5 x 1,000	22.3	16	3		2	
MZS-135P-1	63.5 x 64 x 1,000	30.0	16	4	3		
MZS-150P-1	65 x 70 x 1,000	34.0	16			3	
MZS-180P-1	72 x 80.5 x 1,000	41.7	16		4		
MZS-200P-1	80 x 81 x 1,000	47.2	16			4	
SN- 2/2	37 x 37 x 500	5.5	13				1
SN- 4/4	53 x 54 x 250	6.6	13		2		
SO- 2/2	43 x 44 x 500	7.3	13	2			
SO- 4/2	62 x 62 x 500	14.3	13	4			
SP- 2/2	48 x 49 x 500	8.9	13				2
SP- 3/2	60 x 61 x 500	13.4	13		2		
SP- 4/2	74 x 74 x 500	20.4	16		4		
SP- 4/4	74 x 74 x 250	10.3	13		3		
SR	34 x 36 x 1,200	10.8	13	2			
ST	48 x 58 x 1,200	21.7	13	4			

For Permanent Ballast Tanks

Type	Size mm D x W x L	Weight kgs	Core mmø	Life Year 30%	40%	50%
SN - 2	37 x 37 x 1,000	10.4	13	2		
SN - 3	45 x 44 x 1,000	14.8	13	3		
SN - 4	54 x 53.5 x 1,000	21.5	16	4		
SO - 2	44 x 43 x 1,000	14.0	13		2	
SO - 3	54 x 53.5 x 1,000	21.5	16		3	
SO - 4	63 x 62 x 1,000	28.9	16		4	
SP - 2	49 x 48 x 1,000	17.5	13			2
SP - 3	61 x 60 x 1,000	27.2	16			3
SP - 4	74 x 74 x 1,000	40.1	16			4

Guide of How to order

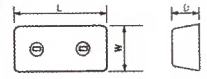
When ordering, please specify the following points :

CODE..... 67 - 35 - 51
Name..... Zinc anode
Used for..... For clean ballast tanks
Type of Welding Bar..... With bent steel welding bar
Type..... MZS-90P-1
Size..... 51 x 53 x 1,000 mm.

7TH
67

Standard Products for Hulls of Ships

(FB)



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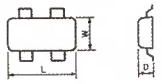
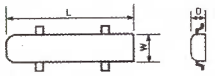
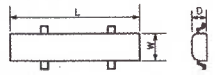


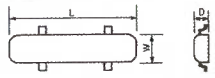
(ZHS-A)



(ZHS-B)



(ZHS-C)



Type	Size mm D x W x L	Weight kgs	Life Year	Type of Installation
3FB	20 x 100 x 200	2.4	0.6	Bolt-on
4FB	30 x100 x 200	3.5	1.0	"
6FB	20 x 150 x 300	5.8	1.3	"
8FB	20 x 150 x 300	8.5	1.7	"
11FB	35 x 150 x 300	10.0	1.9	"
14FB	35 x 200 x 300	13.6	2.5	"
15FB	40 x 200 x 300	15.8	2.7	"
21FB	57 x 100 x 600	19.3	2.4	"
3FS	20 x 100 x 200	2.9	0.6	Weld-on
4FS	30 x 100 x 200	4.2	1.1	"
5FS	40 x 100 x 200	5.2	1.3	"
10FS	30 x 150 x 300	9.5	1.7	"
11FS	35 x 150 x 300	10.7	2.0	"
15FS	35 x 200 x 300	14.8	2.3	"
10ZHS (A.C)	40 x 50 x 800	9.9 - 10.1	1.3	"
15ZHS (A.B.C)	48 x 65 x 800	14.7 - 15.5	1.9 - 2.0	"
18ZHS (A.B.C)	50 x 75 x 800	20.5 - 22.3	2.6 - 2.7	"
48ZHS (A.B.C)	85 x 120 x 800	47.2 - 59.2	5.0 - 5.2	"

Note : Other types of Zinc Anode are available on request.

Guide of How to order

When ordering, please specify the following points :

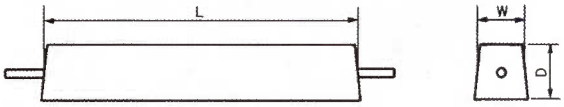
CODE..... 67 - 35 - 51
Name ..... Zinc anode
Used for ..... For hull of ships
Type 3FB
Size ..... 20 × 100 × 200 mm
Type of installation ..... Bolt-on

Aluminium Anodes

This is a new aluminium anode, with the composition of Al-Zn-In. It has been used by ship builders and harbour constructors as the most advanced and ideal galvanic anode for corrosion prevention. It has the following characteristics:

1. Lightweight.
2. Highest current capacity.
3. Lowest cost per ampere year.
4. Extremely small anodic polarization tendency.
5. Stabilized current output throughout anode life.
6. Optimum driving voltage without over-protection.
7. Uniform anode consumption.
8. Excellent, self-regulating property.
9. Low hydrogen generation.

Standard Products for Ballast Tanks



With straight steel welding bar

Type	Size mm W x D x L	Weight kgs	Type of Installation
SA - 2	41 x 27 x 1,000	5.6	Weld-on
SA - 3	51 x 50 x 1,000	8.0	"
SA - 4	60 x 59 x 1,000	10.5	"
SB - 2	47 x 48 x 1,000	7.1	"
SB - 3	60 x 59 x 1,000	10.5	"
SB - 4	71 x 70 x 1,000	14.5	"
SC - 2	54 x 54 x 1,000	8.9	"
SC - 3	69 x 69 x 1,000	13.3	"
SC - 4	81 x 80 x 1,000	18.1	"
SD - 2	35 x 34 x 1,000	4.4	"
SD - 3	42 x 42 x 1,000	6.0	"
SD - 4	51 x 49 x 1,000	7.8	"
SA - 2L	36 x 36 x 2,000	8.8	"
SA - 3L	45 x 44 x 2,000	12.4	"
SA - 4L	53 x 52 x 2,000	16.8	"
SB - 2L	43 x 42 x 2,000	11.5	"
SB - 3L	53 x 52 x 2,000	16.6	"
SB - 4L	62 x 61 x 2,000	22.3	"
SC - 2L	48 x 47 x 2,000	14.0	"
SC - 3L	58 x 58 x 2,000	20.1	"
SC - 4L	69 x 68 x 2,000	27.0	"
SA - 3/2	51 x 50 x 500	4.4	"
SB - 2/2	47 x 48 x 500	3.8	"
SB - 3/2	60 x 59 x 500	5.6	"
SC - 3/2	69 x 68 x 500	6.9	"
SC - 4/2	81 x 80 x 500	9.3	"
SCS - 4	90 x 90 x 500	12.0	"

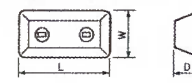
Guide of How to order

When ordering, please specify the following points :

CODE..... 67 - 36 - 01
Name..... Aluminium anode
Used for..... For ballast tank
Type of Welding Bar..... With straight steel welding bar
Type..... SA-2
Size..... 4 × 27 × 1,000 mm
Type of installation..... Weld-on

Standard Products for Ship Hulls and Stern Parts

(MF·MH)



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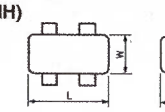

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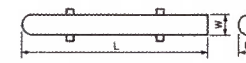


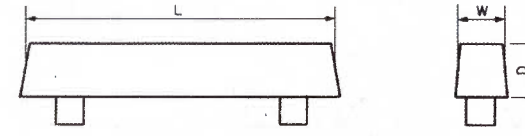
Type	Size mm D x W x L	Weight kgs	Type of Installation
MF - 10	20 x 100 x 200	1.0	Bolt-on
MF - 14	30 x 100 x 200	1.4	"
MF - 34	30 x 150 x 300	3.4	"
MF - 53	35 x 200 x 300	5.3	"
MH - 12	20 x 100 x 200	1.2	Weld-on
MH - 17	30 x 100 x 200	1.7	"
MH - 40	30 x 150 x 300	4.0	"
MH - 60	35 x 200 x 300	6.0	"
SK - 1	40 x 50 x 800	4.4	"
SK - 2	57 x 75 x 800	8.8	"

Guide of How to order

When ordering, please specify the following points :

CODE..... 67 - 36 - 01
Name..... Aluminium anode
Used for..... For ships hulls and stern parts
Type..... MF-10
Size..... 20 × 100 × 200 mm
Type of installation..... Bolt-on

Standard Products for Drilling Rigs



With Perpendicular Steel Welding Bar

Type	Life Year	Size mm W x D x L	Weight kgs
54KA - 2.5	4 - 5	70 x 96 x 2,500	52.9
62KA - 0.9	4 - 6	140 x 146 x 900	62.0
73KA - 2.0	4 - 5	110 x 112 x 2,000	73.1
78KA - 2.0	9 - 11	105 x 110 x 2,000	74.0
80KA - 2.5	4 - 5	100 x 105 x 2,500	78.4
80KA - 1.0	8 - 10	160 x 170 x 1,000	80.4
110KA - 0.6	9 - 11	250 x 250 x 600	110.0
116KA - 1.8	7 - 8	140 x 146 x 1,800	116.0
120KA - 2.5	8 -10	155 x 103 x 2,500	117.3
163KA - 2.0	15 - 20	160 x 170 x 2,000	159.4
390KA - 2.0	18 - 22	260 x 260 x 2,000	409.0
415KA - 2.4	20 - 25	250 x 253 x 2,400	415.1
470KA - 2.7	20 - 25	247 x 247 x 2,700	470.0
513KA - 2.0	25 - 30	290 x 290 x 2,000	513.0
590KA - 3.0	25 - 30	270 x 275 x 2,930	595.0

Guide of How to order

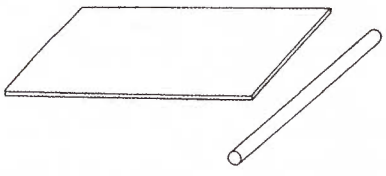
When ordering, please specify the following points :

CODE..... 67 - 36 - 01

Name..... Aluminium anode
Used for..... For drilling rigs
Type of Welding Bar..... With perpendicular steel welding bar
Type..... 54KA-2.5
Size..... 70 x 96 x 1,500 mm

Soft Magnetic Irons

Also called Pure Iron or Swedish Iron. For use in cathodic protection, also for electrical application such as cores, yokes, armatures, etc. Bar type and strip type available.



1. Soft Magnetic Iron Bars

Standard Size

Diameter (mm)	Standard Length
6, 6.5, 7, 8, 9, 9.5, 10, 11.1, 12, 15, 16	3 Mtrs

Characteristics

Class	Symbol	Magnetic characteristic					Hardness	
		Magnetic flux density T				Coercive force A/m	HRB	HV
		B_2	B_3	B_5	B_{25}	H_c		
Class 0	SUYB 0	1.1 min.	1.25 min.	1.35 min.	1.55 min.	63.2 max.	60 to 90	110 to 195
Class 1	SUYB 1	1 min.	1.2 min.	1.35 min.	1.55 min.	79.1 max.		
Class 2	SUYB 2	0.75 min.	1.1 min.	1.3 min.	1.55 min.	103 max.		
Class 3	SUYB 3	0.4 min.	0.8 min.	1.1 min.	1.5 min.	142 max.		

Remarks: 1. B_2, B_3, B_5 and B_{25} mean the symbols denoting the magnetic flux densities at the magnetic field intensity of 159.2 A/m, 238.8 A/m, 398 A/m and 1,990 A/m, respectively.
2. Coercive force (Hc) shall be the values for the magnetic flux density of 1.5 T.

How to order : 67 - 37 - 01

Soft magnetic iron bar, class x diameter (kgs)

2. Soft Magnetic Iron Plates

Standard Size

Thickness (mm)	Standard W x L mm Approx.
0.6, 0.8, 1, 1.2, 1.3, 1.5, 1.6, 1.75, 1.8, 2, 2.1, 2.3, 2.4, 2.8, 2.85, 3.2, 3.5, 4, 4.5	200 x 300, 400 mm

Characteristics

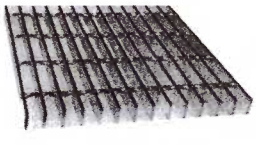
Class	Symbol	Magnetic characteristic					Hardness	
		Magnetic flux density T				Coercive force A/m	HRB	HV
		B_1	B_2	B_3	B_5	B_{25}	H_c		
Class 0	SUYP 0	0.8 min.	1.1 min.	1.25 min.	1.35 min.	1.55 min.	63.2 max.	45 to 75	85 to 140
Class 1	SUYP 1	0.5 min.	1 min.	1.2 min.	1.35 min.	1.55 min.	79.1 max.		
Class 2	SUYP 2	0.2 min.	0.75 min.	1.1 min.	1.3 min.	1.55 min.	103 max.		
Class 3	SUYP 3	0.1 min.	0.4 min.	0.8 min.	1.1 min.	1.5 min.	142 max.		

Remarks: 1. B1, B2, B3, B5 and B25 mean the symbols denoting the magnetic flux densities at the magnetic field intensity of 79.6 A/m, 159.2 A/m, 238.8 A/m, 398 A/m and 1,990 A/m, respectively.
2. Coercive force (Hc) shall be the values for the magnetic flux density of 1.5 T.

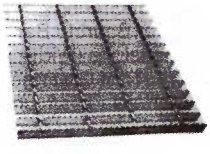
Plain Style Gratings

Ideal for use in ships' flooring, stair tread of gangway, catway, pump room, engine room, etc.

Plain style grating consists of twisted square cross bars and plain bearing bars. Bearing bars are laid parallel to each other at 1-3/16" pitch, and cross bars are arranged in 4" pitch vertically to the bearing bars. The contact points of bearing bars and cross bars are electro forged by welding.



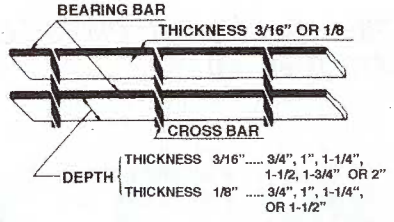
Plain Style



Serrated Style

1. Bearing Bars

Load carrying members which run between the supports and rest directly on them and which are parallel to each other.

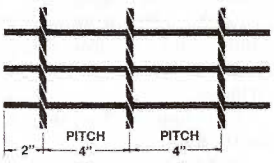


2. Cross Bars

Connecting members which run across bearing bars in a perpendicular direction. Twisted 1/4" x 1/4" square bars are used as cross bars in all types of plain style grating.

3. Pitch of Cross Bars

Pitch means the distance center to center of each cross bar. The pitch is 4" for every type. The distance from the outer end of the bearing bar to the next cross bar is 2".



4. Pitch of Bearing Bars

The pitch is the distance from center to center of each bearing bar. The pitch is 1-3/16" whether the thickness of the bearing bar is 3/16" or 1/8".

5. Width & Length of the Gratings

No matter what size of grating it may be, the direction in which the bearing bars run is referred to as the length, and direction in which the cross bars run is referred to as the width.

Most common plain style sizes are as follows and are available as ready made stock.

How to order : CODE

Grating, plain style, galvanized iron, SIZE, PITCH of bearing bar and cross bar

Unit Per Sht.

CODE	Size	Bearing Bar			Cross Bar		Finish
		Thickness	Depth	Pitch	Twist	Pitch	
67 38 01	2' × 20'	1/8"	1"	1-3/16"	1/4" × 1/4"	4"	Galvanized Iron
02	2' × 24'						
03	3' × 20'						
04	3' × 24'						

Besides the above sizes, a wide variety of sizes are available. **When ordering, please specify the following points to avoid errors and delays.**

1. Type of Grating
2. Size of Bearing Bar
3. Dimensions (Width x Length)
4. Number of Gratings
5. Standard Finish (unpainted, grey primary coated, black primary coated or galvanized)

Fiber Reinforced Plastic Gratings (FRP Gratings)

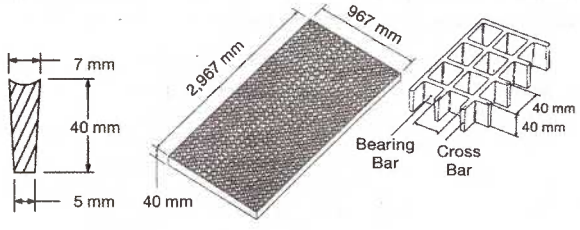
Designed to meet the standards of harsh marine environments and suitable for varied applications such as electrical control flooring, platforms, catwalks, bilges, and drain troughs.

Made of a non-wear synthetic polyester resin which is resistant to salt water corrosion and will withstand contact with acid or industrial chemicals. Although FRP grating is much lighter and easier to handle than metal gratings (18.5), when compared with iron and aluminium on a scale of strength, iron is about 5.4, aluminium is 7, and FRP is 15. This grating is very easy to work with and install wherever it is required, whether in the engine room, on staircases, or on walkways on deck. FRP is indispensable on tankers because it is a non spark, inflammable surface which can be used in situations where it undergoes continual friction with metal surfaces.

FRP has no magnetic properties and will not conduct electricity.

Will be supplied in grey unless otherwise specified.

Square Mesh



How to order : CODE

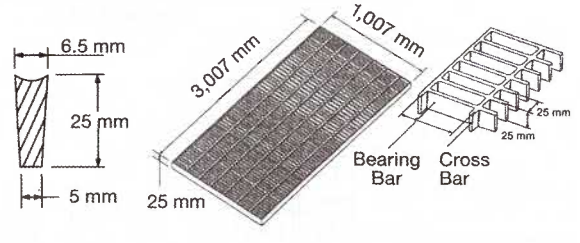
Grating, square mesh, W 2,967 x L 967 x H 40 mm, MATERIAL, FEATURE

Unit Per Sht.

CODE	Material	Features	Weight	
			kgs/sht	kg/m²
67 38 11	Synthetic Polyester Resin	Fire Resistant Chemical resistant/ Sparkless	53	18.5
67 38 12	Synthetic Polyester Resin	Chemical resistant/ Sparkless	53	18.5
67 38 13	Epoxy Acrylate Resin	Chemical resistant/ Sparkless/Acid, Alkali resistant	53	18.5

When ordering, please specify the material and size you require. If no specific size is necessary, it is suggested that you order the grating by sheet.

Rectangle Mesh



How to order : CODE

Grating, rectangle mesh, W 3,007 x L 1,007 x H 25 mm, MATERIAL, FEATURE

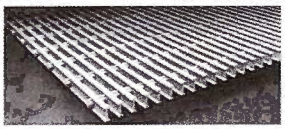
Unit Per Sht.

CODE	Material	Features	Weight	
			kgs/sht	kg/m²
67 38 15	Synthetic Polyester Resin	Fire Resistant Chemical resistant/ Sparkless	35	11.5
67 38 16	Synthetic Polyester Resin	Chemical resistant/ Sparkless	35	11.5
67 38 17	Epoxy Acrylate Resin	Chemical resistant/ Sparkless/Acid, Alkali resistant	35	11.5

When ordering, please specify the material and size you require. If no specific size is necessary, it is suggested that you order the grating by sheet.

Phenolic Fiberglass Gratings

DURAGRID®



A high strength, light weight, and easy to install fire integrity composite grating for ships and vessels, offering a "Fit it and Forget it" solution to walkway grating.

DURAGRID® Phenolic's corrosion- and fire- resistance has made this product a champion in the Marine and Offshore Oil and Gas industries for decades.

Features :

- Higher strength than equivalent steel grating.
- No Rust – typically outlasts the ship's lifespan (can be transferred).
- Dependable anti-skid surface for safety and comfort.
- Light weight - up to 75% lighter than comparable steel grating.
- Safe and easy to install – no welding or hot works.

Regulatory Information and Approvals* :

- ASTM: First composite grating to meet ASTM F3059-15 standard, an enhancement to and expected replacement of USCG PFM2-98.
- USCG: 164.040/16/0 (38 mm and 45 mm (1-½" - 1-¾")).
- IMO: Meets requirements for Safe Access to Tanker Bows (Resolution MSC.62(67)) (SC 253 Dec 2011 Rev 1 May 2016).
- Numerous Class Approvals such as ABS, DNV, and LR.

* For a current and complete list of these approvals, please contact Strongwell directly.

Typical Ship Applications :

- Center passage walkway grating
- Oil spill tank grating
- Winch stand grating
- Manifold grating
- Various stage areas (Monkey, Wheel House, etc.)

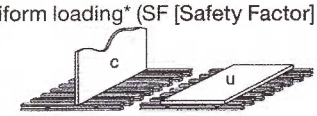
Availability* & Panel Sizes :

- Factory: I-6000 in 3' x 20', 4' x 20', 1M x 6M (38 mm (1-1/2") or 45 mm (1.75") thickness)
- Rotterdam or Factory: 1M x 6M (38 mm (1.5") thickness)
- Weight: 38 mm thickness - 16.8 kg/M² (3.4 lb/ft²)
  45 mm thickness – 19.0 kg/M² (3.9 lb/ft²)

*Strongwell can also drop ship to a specific location or port.

Performance (I-6000 38 mm) :

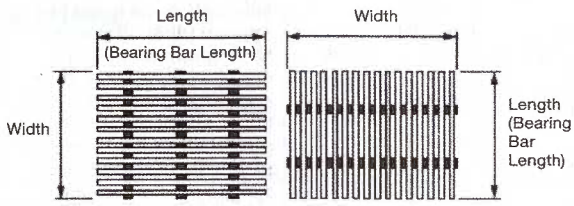
- 16.8 kN/m² (350 lb/ft²) uniform loading* (SF [Safety Factor] + 6:1)
- 11.7 kN/m (11.7 lb/ft) concentrated loading* (SF + 5:1)



* Based on a midspan deflection of 6.35 mm (.25") on qualified span of 1,120 mm (44")

Installation :

DURAGRID® Phenolic installs similar to how steel grating is installed. The bearing bar (BB) is the load carrying member which runs between supports. This is the panel length and is typically designated with a (BB) after the dimension to avoid confusion. DURAGRID® Phenolic does not require any banding after cutting. Loads are effectively transferred by a series of cross-rods spaced every 6" (150 mm) (sometimes referred to as "cross-rod pitch").



Panel Sizes are Specified: Width × Length

Installation is easy; the grating can be cut using simple hand tools such as a circular saw (diamond or masonry blades suggested) or a jig saw (carbide grit blades suggested). Panels are lightweight – single panels are typically moved by hand.

How to order : 67 - 38 - 21

Grating, Phenolic Fiberglass, DURAGRID,.....

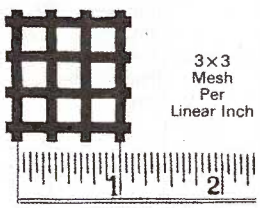
When ordering, please specify:

- *Square Foot (SF) or Square Meter (M²) Measurements of the areas that needs grating*
- *Hardware (Part # 744 clip & 797 bolt set) – 4 clips per panel or 4 clips per M²*

Gauze Wire

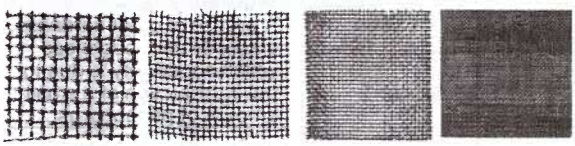
Available :

1) Galvanized Iron
2) Brass – Copper
3) Nylon
4) Plastic Coated Iron
5) Bronze
6) Stainless Steel



Mesh denotes the number of openings horizontally and vertically per linear inch. It is measured from center to center of the parallel wires, as illustrated above.

Actual Square Meshes



10 x 10 20 x 20 30 x 30 60 x 60

When in doubt about the correct wire size and mesh, the safest and surest way is to send a cut sample of the gauze cloth required and indicate its proposed use in advance. The standard width of stainless steel gauze wire is 1,000 mm and for other materials the width is 910 mm, all supplied in varying lengths.

How to order : 67 - 39 - 01

Gauze wire, for PROPOSED USE, MATERIAL – MESH – WIDTH and LENGTH

Copper Alloy Approx. Constituent

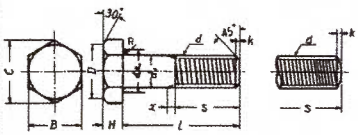
Name	Approx. main constituent	Descriptions
Brass	Copper 70% or 60% Zinc 30 or 40 Others * *	Brass is generally an alloy of copper and zinc, although some brasses may contain other elements. Most commercial brass contains about 60 - 70% copper and 40 - 30% zinc. Other alloys are frequently added so as to change its physical characteristics.
Munz Metal	Copper 60% Zinc 40 Others *	An alloy of copper zinc and lead patented by C. F. Muntze, an English-man, about 1833, when rolled and annealed it becomes strong and malleable. Used mainly for ship construction, particularly as sheathing, bolts and rivets which are exposed to sea water.
Admiralty Brass	Copper 71% Zinc 28 Tin 1	An alloy resistant to corrosion from salt water. Used chiefly in the manufacture of condenser tubes.
Naval Brass	Copper 60% Zinc 39 Tin 1	Brass composed usually of 60% copper, 39% zinc, 1% tin and used for bolts or other parts which are submerged under water.
Bronze	Copper 99-75% Tin 1-25 Zinc * Phosphor * Tin *	Bronze is the general name for alloys of copper and tin. Frequently, other alloys such as zinc, lead, manganese, nickel, phosphorus and aluminium, are added to create desired characteristics.
Gunmetal	Copper 88% Tin 10 Others 2 Zinc *	An alloy of copper, tin and zinc, iron and lead. Used in the manufacture of sleeves for rubber stocks and propeller shafts, pump manifolds, bolts and nuts, ship's bell, gland and gland bushings and many other uses where strength is required.
Phosphor Bronze	Copper 89% Tin 10 Phosphor 1	A bronze of great hardness, elasticity and toughness which superiority is due to the introduction of a small amount of phosphorus.
Monel Metal	Nickel 67% Copper 28 Others 5	Trademark – used for an alloy of approximately 67% nickel, 28% copper and 5% other elements that is made by direction from ore in which the constituent metals occur in these properties.
Babbit Metal	Tin 93-77% Antimony 5-15 Copper 2-8	A very soft alloy, variable in its composition of tin, copper and antimony. It is used as linings for bearings and to reduce friction.

* – denotes very little constituent.

69

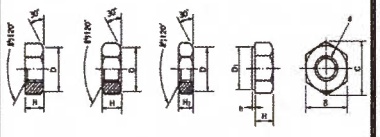
SCREWS & NUTS

Bolts



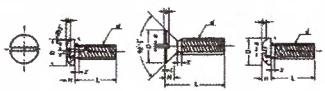
P. 69-1 ~ 17

Nuts



P. 69-17 ~ 18

Screws

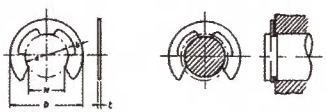


P. 69-18 ~ 22

Washers

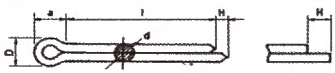
P. 69-22 ~ 23

Circlips



P. 69-24

Keys & Pins



P. 69-24 ~ 27

Hooks/Eyes

P. 69-27

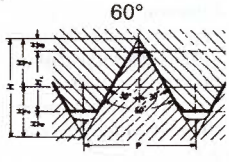
Bolts & Nuts

Generally speaking items such as bolts and nuts have so many types, materials, thread types, and especially sizes, it is impossible to provide order codes for them all. For this reason, the items described below are standard types and only a few of them are provided with codes.

Thread Information

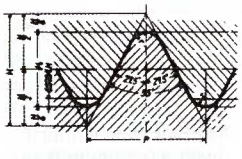
As metric threads are now most common, all the items below are described by metric standards. However, Whitworth and unified threads are also available upon request. The following thread tables are illustrated for your reference. You can easily find the type of threads you require from this table.

Metric Thread



Coarse		Fine		Coarse		Fine	
Screw Diam.	Pitch	Screw Diam.	Pitch	Screw Diam.	Pitch	Screw Diam.	Pitch
M 2	0.4	M 2	0.25	M20	2.5	M12	1.5
2.2	0.45	2.2	0.25	22	2.5	12	1.25
2.3	0.4	2.5	0.35	24	3	12	1
2.5	0.45	3	0.35	27	3	14	1.5
2.6	0.45	3.5	0.35	30	3.5	14	1.25
M 3	0.5	M 4	0.5	M33	3.5	M14	1
3.5	0.6	4.5	0.5	36	4	15	1.5
4	0.7	5	0.5	39	4	15	1
4.5	0.75	5.5	0.5	42	4.5	16	1.5
5	0.8	6	0.75	45	4.5	16	1
M 6	1	M 7	0.75	M48	5	M17	1.5
7	1	8	1	52	5	17	1
8	1.25	8	0.75	56	5.5	18	2
9	1.25	9	1	60	5.5	18	1.5
10	1.5	9	0.75	64	6	18	1
M11	1.5	M10	1.25				
12	1.75	10	1				
14	2	10	0.75				
16	2	11	1				
18	2.5	11	0.75				

Whitworth Thread

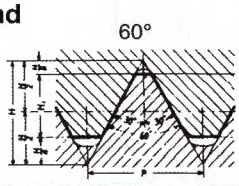


Screw Diam.		Threads Per Inch	Screw Diam.		Threads Per Inch
Inch	Equiv. mm		Inch	Equiv. mm	
W1/8	3.175	40	W2-1/2	63.5	4
(1/4)	6.35	20	2-3/4	79.85	3-1/2
(5/16)	7.938	18	3	76.2	3-1/2
3/8	9.525	16	3-1/4	82.55	3-1/4
1/16	11.112	14	3-1/2	88.9	3-1/4
W1/2	12.7	12	W3-3/4	95.25	3
(9/16)	14.288	12	4	101.6	3
5/8	15.875	11	(4-1/4)	107.95	2-7/8
3/4	19.050	10	4-1/2	114.3	2-7/8
7/8	22.225	9	(4-3/4)	120.65	2-3/4
W1	25.4	8	W5	127.0	2-3/4
1-1/8	28.575	7	(5-1/4)	133.35	2-5/8
1-1/4	31.75	7	5-1/2	139.7	2-5/8
1-3/8	34.925	6	(5-3/4)	146.05	2-1/2
1-1/2	38.1	6	6	152.4	2-1/2
W1-5/8	41.275	5			
1-3/4	44.45	5			
1-7/8	47.625	4-1/2			
2	50.8	4-1/2			
2-1/4	57.15	4			

* Size in bracket rarely used.

(to be continued)

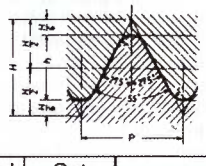
Unified Thread



UNF			UNC		
Screw No. & Diam.		Threads Per Inch	Screw No. & Diam.		Threads Per Inch
No.	0 - 80 UNF	80	No.	1 - 64 UNC	64
	1 - 72 UNF	72		2 - 56 UNC	56
	2 - 64 UNF	64		3 - 48 UNC	48
	3 - 56 UNF	56		4 - 40 UNC	40
	4 - 48 UNF	48		5 - 40 UNC	40
No.	5 - 44 UNF	44	No.	6 - 32 UNC	32
	6 - 40 UNF	40		8 - 32 UNC	32
	8 - 36 UNF	36		10 - 24 UNC	24
	10 - 32 UNF	32		12 - 24 UNC	24
	12 - 28 UNF	28		1/4 - 20 UNC	20
No.	1/4 - 28 UNF	28	No.	5/16 - 18 UNC	18
	5/16 - 24 UNF	24		3/8 - 16 UNC	16
	3/8 - 24 UNF	24		7/16 - 14 UNC	14
	7/16 - 20 UNF	20		1/2 - 13 UNC	13
	1/2 - 20 UNF	20		9/16 - 12 UNC	12
No.	9/16 - 18 UNF	18	No.	5/8 - 11 UNC	11
	5/8 - 18 UNF	18		3/4 - 10 UNC	10
	3/4 - 16 UNF	16		7/8 - 9 UNC	9
	7/8 - 14 UNF	14		1 - 8 UNC	8
	1 - 12 UNF	12		1-1/8 - 7 UNC	7
No.	1-1/8 - 12 UNF	12	No.	1-1/4 - 7 UNC	7
	1-1/4 - 12 UNF	12		1-3/8 - 6 UNC	6
	1-3/8 - 12 UNF	12		1-1/2 - 6 UNC	6
	1-1/2 - 12 UNF	12		1-3/4 - 5 UNC	5
			No.	2-4 - 1/2 UNC	4-1/2
				2-1/4 - 4-1/2 UNC	4-1/2
				2-1/2 - 4 UNC	4
				2-3/4 - 4 UNC	4
				3 - 4 UNC	4
			No.	3-1/4 - 4 UNC	4
				3-1/2 - 4 UNC	4
				3-3/4 - 4 UNC	4
				4 - 4 UNC	4

Pipe Thread

55°
Parallel Pipe Thread

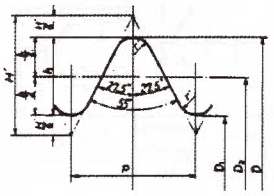


Nominal Size		Thread Per Inch	Out Diam. mm.	Nominal Size		Thread Per Inch	Out Diam. mm.
PF	3/4	14	26.44	PF	5	11	138.43
	(7/8)	14	30.20		(5-1/2)	11	151.13
	1	11	33.24		6	11	163.83
	(1-1/8)	11	37.89		7	11	189.23
	1-1/4	11	41.91		8	11	214.63

(to be continued)

Nominal Size	Thread Per Inch	Out Diam. mm.	Nominal Size	Thread Per Inch	Out Diam. mm.
PF 1-1/2	11	47.80	PF 9	11	240.03
(1-3/4)	11	53.74	10	11	265.43
2	11	59.61	12	11	316.23
(2-1/4)	11	65.71			
2-1/2	11	75.18			
PF (2-3/4)	11	81.53			
3	11	87.88	* Size in bracket rarely used.		
3-1/2	11	100.33	Ref: PF = G (ISO)		
4	11	113.03			
(4-1/2)	11	125.73			

55°
Taper Pipe Thread



Nominal Size	Thread Per Inch	Out Diam. mm.	Nominal Size	Thread Per Inch	Out Diam. mm.
PT 3/4	14	26.44	PT 4	11	113.03
1	11	33.24	5	11	138.43
1-1/4	11	41.91	6	11	163.83
1-1/2	11	47.80	7	11	189.23
2	11	59.61	8	11	214.63
PT 2-1/2	11	75.18	PT 9	11	240.03
3	11	87.88	10	11	265.43
3-1/2	11	100.33	12	11	316.23

Ref: PT = R (ISO)

Abstracted World Screw Thread Designation

	Symbol	Type of Screw Thread	Standard
ISO	M	ISO General purpose metric screw threads	ISO 261
	S	ISO Miniature screw threads	ISO 1501
	UNC	ISO Inch screw threads (coarse screw threads)	ISO 263
	UNF	ISO Inch screw threads (fine screw threads)	"
	UNEF	ISO Inch screw threads (extra-fine screw threads)	"
	UN	ISO Inch screw threads (constant-pitch series)	"
	R	Taper pipe external threads	ISO 7/1
	Rc	Taper pipe internal threads	"
	Rp	Taper pipe parallel internal threads	"
	G	Taper pipe parallel external threads and taper pipe parallel internal threads	ISO 228/1

(to be continued)

Japan	M	Metric coarse screw threads	JIS B 0205
	M	Metric fine screw threads	JIS B 0207
	S	Miniature screw threads	JIS B 0201
	UNC	Unified coarse screw threads	JIS B 0206
	UNF	Unified fine screw threads	JIS B 0208
	R	Taper pipe external threads	JIS B 0203
	Rc	Taper pipe intrenal threads	JIS B 0203
	Rp	Taper pipe parallel internal threads	JIS B 0203
	G	Parallel pipe threads	JIS B 0202
	PF	Parallel pipe threads not specified in ISO	JIS B 0202 Appendix
	PT	Taper pipe threads not specified in ISO	JIS B 0203 Appendix
	CTC	Screw threads for thin steel conduits	JIS B 0204
	CTG	Screw threads for thick steel conduits	JIS B 0204
	E	Screw threads for electric lamps	JIS C 7709
USA	UN	Unified inch screw threads	ANSI B 1.1
	UNC/ UNRC	Unified coarse thread series	ANSI B 1.1
	UNF/ UNRF	Unified fine thread series	ANSI B 1.1
	UNEF/ UNREF	Unified extra-fine-thread series	ANSI B 1.1
	UN/ UNRS	Unified threads of special diameters, pitches and lengths of engagement	ANSI B 1.1
	NR	American National thread with a 0.108p to 0.144 p controlled root radius	MIL-B-7838
	Acme	Acme screw threads	ANSI B 1.5
	Sub-Acme	Stub-Acme screw threads	ANSI B 1.8
	Butt	Buttress inch screw threads	ANSI B 1.9

(to be continued)

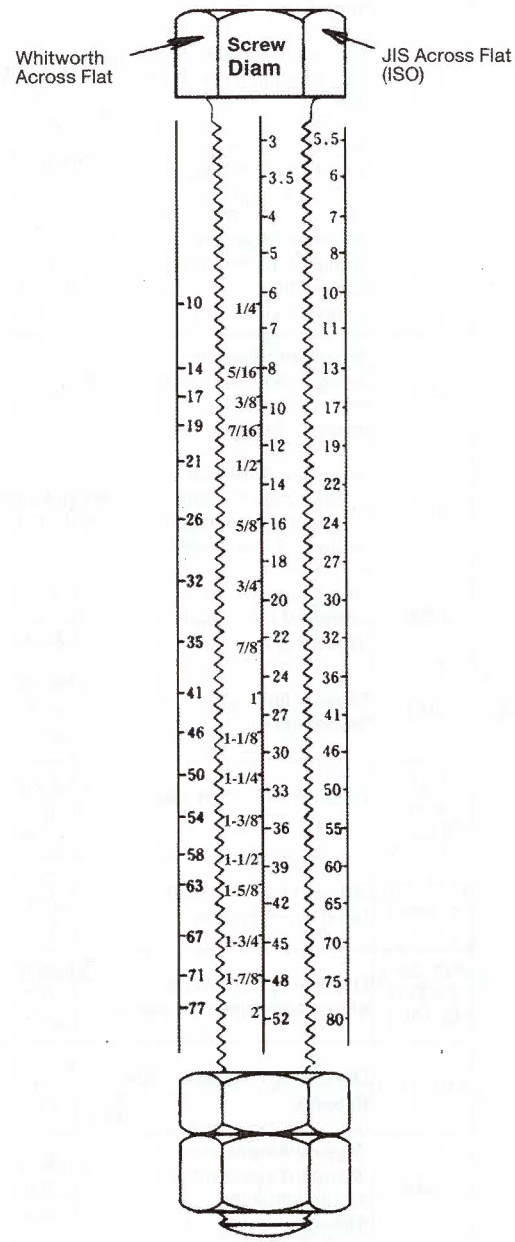
	Symbol	Type of Screw Thread	Standard
USA	UNM	Unified miniature thread series	ANSI B 1.10
	NC5	Class 5 interference-fit thread	ANSI B 1.12
	NPT	American Standard taper pipe threads for general use	ANSI/ASME B 1.20.1
	NPSC	American Standard straight pipe thread in pipe couplings	ANSI/ASME B 1.20.1
	NPSL	American Standard straight pipe threads for loose-fitting mechanical joints with locknuts	ANSI/ASME B 1.20.1
	NPSM	American Standard straight pipe threads for free-fitting mechanical joints for fixtures	ANS/ASME B 1.20.1
	NPSH	American Standard straight pipe threads for loose-fitting mechanical joints for hose couplings	ANSI/ASME B 1.20.1
	NPTF	Dryseal American Standard taper pipe threads	ANSI B 1.20.3, 1.20.4
	F-PTF	Dryseal fine taper pipe thread series	ANSI B 1.20.3, 1.20.4
	PTF-SAE SHORT	Dryseal SAE short taper threads	ANSI B 1.20.3, 1.20.4
	PTF-SPL SHORT	Dryseal special short taper pipe threads	ANSI B 1.20.3, 1.20.4
	PTF-SPL EXTRA SHORT	Dryseal special extra short taper pipe threads	ANSI B 1.20.3, 1.20.4
	SPL-PTF	Dryseal special taper pipe threads	ANSI B 1.20.3, 1.20.4
	NPSI	Dryseal American Standard intermediate internal straight pipe threads	ANSI B 1.20.3, 1.20.4
	NPSF	Dryseal American Standard fuel internal straight pipe threads	ANSI B 1.20.3, 1.20.4
	NGO	National gas outlet threads	ANSI B 57.1
	NGS	National gas straight threads	ANSI B 57.1
	NGT	National gas taper threads	ANSI B 57.1
	SGT	Special gas taper threads	ANSI B 57.1
	NH	Hose coupling and firehose coupling threads	USAS B 2.4
	NHR	Hose coupling and firehose coupling threads	USAS B 2.4
	NPSH	Hose coupling and firehose coupling threads	USAS B 2.4
United Kingdom	UNS	Unified special series	BS 1580
	B.S.W.	British Standard Whitworth coarse threads	BS 84
	BSF	British Standard fine threads	BS 84
	BSP	British Standard pipe thread	BS 21.2779
	B.A	B. A. - Screw thread	BS 93, 1929
	Acme	Acme threads, general purpose	BS 1104
	Buttress	Buttress thread	BS 1657
	E	Edison screw thread	BS 5042
Germany	GI	Rundgewinde, vorzugsweise fûr Glasbehâtnisse	DIN 168
	S	Sâgengewinde (Buttress thread)	DIN 513. 2781, 20401
	Rd	Rundgewinde (Knuckle thread)	DIN 405, 262, 264 3182, 7273, 15403, 20400
	W	Whitworth-gewinde	DIN 168, 477, 6630 4668, 49301
	KS, KT	Gewinde, vorzugsweise fûr Kunststoffbehâltnisse	DIN 6063
	E	Elektrogewinde (Edison screw thread)	DIN 40400
	Pg	Stahlpanzerrohrgewinde (Steel conduit thread)	DIN 40430
	Glasg	Glasgewinde (Thread for cover glasses, porcelain and cast iron caps)	DIN 40450
	Gf	Kegeliges Rohrgewinde	DIN 4930
	Gg	Gestângerohrgewinde, kegelig (Threads for drill pipe)	DIN 4941, 20314
	HA	Gewinde fûr Knochenschraube	DIN 58810
	RMS	Gewindeanschluß fûr Microskopobjektive	DIN 58888

(to be continued)

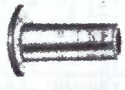
Bolt Head & Nut Across Flat Size Table

Spanner Opening mm	Applicable Bolt				
	Metric Thread (ISO)			Old Standard	
	Hex Bolt	Small Hex. Bolt	High Tension Bolt	Whitworth Bolt	Metric Bolt
5.5	M3				
6	M3.5				
7	M4				
8	M5				
9					
10	M6				
11	M7				
12		M8			
13	M8				
14		M10			M8
15					
17	M10	M12		W3/8	M10
19	M12	M14		W7/16	
21				W1/2	M12
22	M14	M16	M12		
23					M14
24	M16	M18			
26				W5/8	M16
27	M18	M20	M16		
29					M18
30	M20	M22			
32	M22	M24	M20	W3/4	M20
35				W7/8	
36	M24	M27	M22		
38					M24
41	M27	M30	M24	W1	M27
46	M30	M33		W1-1/8	M30
50	M33	M36		W1-1/4	M33
54				W1-3/8	M36
55	M36	M39			
58				W1-1/2	M39
60	M39				
63				W1-5/8	M42
65	M42				
67				W1-3/4	M45
70	M45				
71				W1-7/8	M48
75	M48				
77				W2	
80	M52				

Bolt & Spanner Reference Table

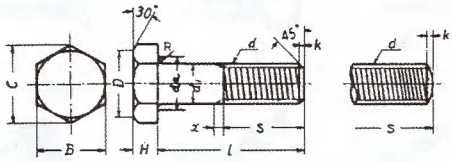


Summary Illustration of Bolts, Screws, Nuts, etc.

Hexagon Head Bolt	Square Head Bolt	Hexagon Head Set Screw	Countersunk Head Bolt	Hexagon Socket Head Cap Screw	Cap Head Square Neck Bolt (Carriage Bolt)
Stud Bolt	Continuous Thread Stud (All Thread Rod)	Eye Bolt	Eye Bolt	Wing Bolt	Knob Bolt
Hexagon Nut	Hexagon Slotted Nut	Hexagon Castellated Nut	Square Nut	Plate Nut	Pipe Nut
Long Nut	Hexagon Cap Nut	Wing Nut	Square Weld Nut	Hexagon Weld Nut	Hexagon Flange Nut
Eye Nut	Square Set Screw	Slotted Set Screw	Hexagon Socket Set Screw	Hexagon socket Headless Tapered Pipe Plug	Thumb Screw
Helisert	Slotted Round head Machine Screw	Slotted Countersunk Machine Screw	Slotted Flat Fillister Head Machine Screw	Cross Recessed Pan Head Machine Screw	Cross Recessed Countersunk Head Machine Screw
Cross Recessed Oval Head Machine Screw	Cross Recessed Truss Head Machine Screw	Cross Recessed Binding Head Machine Screw	Cross Recessed Round Head Sash Screw	Slotted Pan Head Fuse Screw	Cross Recessed Pan Head tapping Screw
Cross Recessed Round head Wood Screw	Cross Recessed Oval Head Wood Screw	Cross Recessed Countersunk Head Wood Screw	Plain Washer	Spring Washer	Flange Lock Washer
Shake Proof Lock Washer Internal	Shake Proof Lock Washer External	Shake Proof Lock Washer Countersunk	Square and Beveled Washer	Beveled Washer	Quanset Washer
Single Flapped Washer	Double Flapped Washer	Stop Ring External	Stop Ring Internal	Cotter Pin	Taper Pin
Straight Pin	Spring Pin	Round head Rivet	Countersunk Head Rivet	Thin Flat Head Rivet	 Semi Tubular Rivet
Split Rivet	Blind Rivet	Screw Hook	Cup Hook	Screw Eye	U Bolt

Hexagon Head Bolts, Half Threaded

(Ref. JIS B 1180 – 93)



7TH
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d	Pitch		d1	H	B	C	L	S
	Coarse	Fine	Standard Size			Approx.	Recommended	
M 3	0.5		3	2	5.5	6.4	5- 30	12
M 4	0.7		4	2.8	7	8.1	6- 30	14
M 5	0.8		5	3.5	8	9.2	8- 50	14
M 6	1		6	4	10	11.5	8- 70	18
M 8	1.25	1	8	5.5	13	15	10-100	22
M10	1.5	1.25	10	7	17	19.6	14-100	26
M12	1.75	1.25	12	8	19	21.9	20-140	30
M14	2	1.5	14	9	22	25.4	25-150	34
M16	2	1.5	16	10	24	27.7	20-140	38
M18	2.5	1.5	18	12	27	31.2	25-200	42
M20	2.5	1.5	20	13	30	34.6	25-200	50
M22	2.5	1.5	22	14	32	37	30-200	54
M24	3	2	24	15	36	41.6	30-200	54- 60
M27	3	2	27	17	41	47.3	50-200	62
M30	3.5	2	30	19	46	53.1	40-220	66- 72
M33	3.5	2	33	21	50	57.7	70-240	74
M36	4	3	36	23	55	63.5	50-240	78- 84
M42	4.5		42	26	65	75	55-325	90- 96
M48	5		48	30	75	86.5	60-325	102-108
M56	5.5		56	35	85	98.1	130-400	124-137
M64	6		64	40	95	110	130-400	140-153
M72	6		72	45	105	121	130-400	156-169
M80	6		80	50	115	133	130-400	172-185

Material: Steel, Stainless Steel, Bronze & Brass

Steel, Ungalv.

How to order: CODE

Bolt, hex head, steel, ungalv., half threaded,
DIAM x LENGTH mm
or
Bolt with nut, hex head, steel, ungalv., half threaded,
DIAM x LENGTH mm
If you require WHOLE THREADED, please specify.

CODE	Size	Unit	CODE	Size	Unit
Steel ungalv. Bolt only			**Steel ungalv. Bolt with Nut**		
69 01 01	M3 × 5 mm	Pc.	**69 09 01**	M3 × 5 mm	Set
02	" × 6 "	"	**02**	" × 6 "	"
03	" × 8 "	"	**03**	" × 8 "	"
04	" × 10 "	"	**04**	" × 10 "	"
05	" × 12 "	"	**05**	" × 12 "	"
69 01 06	M3 × 15 mm	Pc.	**69 09 06**	M3 × 15 mm	Set
07	" × 16 "	"	**07**	" × 16 "	"
08	" × 20 "	"	**08**	" × 20 "	"
09	" × 25 "	"	**09**	" × 25 "	"
10	" × 30 "	"	**10**	" × 30 "	"
69 01 11	M3 × 40 mm	Pc.	**69 09 11**	M3 × 40 mm	Set
12	" × 50 "	"	**12**	" × 50 "	"
13	" × 60 "	"	**13**	" × 60 "	"
14	" × 70 "	"	**14**	" × 70 "	"
15	" × 80 "	"	**15**	" × 80 "	"
69 01 16	M3 × 90 mm	Pc.	**69 09 16**	M3 × 90 mm	Set
17	" ×100 "	"	**17**	" ×100 "	"
18	" ×110 "	"	**18**	" ×110 "	"
19	" ×120 "	"	**19**	" ×120 "	"
20	" ×130 "	"	**20**	" ×130 "	"
69 01 21	M3 ×140 mm	Pc.	**69 09 21**	M3 ×140 mm	Set
22	" ×150 "	"	**22**	" ×150 "	"

(to be continued)

69 01 25	M4 × 6 mm	Pc.	**69 09 25**	M4 × 6 mm	Set
26	" × 8 "	"	**26**	" × 8 "	"
27	" × 10 "	"	**27**	" × 10 "	"
28	" × 12 "	"	**28**	" × 12 "	"
29	" × 14 "	"	**29**	" × 14 "	"
69 01 30	M4 × 15 mm	Pc.	**69 09 30**	M4 × 15 mm	Set
31	" × 16 "	"	**31**	" × 16 "	"
32	" × 18 "	"	**32**	" × 18 "	"
33	" × 20 "	"	**33**	" × 20 "	"
34	" × 25 "	"	**34**	" × 25 "	"
69 01 35	M4 × 30 mm	Pc.	**69 09 35**	M4 × 30 mm	Set
36	" × 35 "	"	**36**	" × 35 "	"
37	" × 40 "	"	**37**	" × 40 "	"
38	" × 45 "	"	**38**	" × 45 "	"
39	" × 50 "	"	**39**	" × 50 "	"
69 01 40	M4 × 60 mm	Pc.	**69 09 40**	M4 × 60 mm	Set
41	" × 70 "	"	**41**	" × 70 "	"
42	" × 80 "	"	**42**	" × 80 "	"
43	" × 90 "	"	**43**	" × 90 "	"
44	" ×100 "	"	**44**	" ×100 "	"
69 01 45	M4 ×110 mm	Pc.	**69 09 45**	M4 ×110 mm	Set
46	" ×120 "	"	**46**	" ×120 "	"
47	" ×130 "	"	**47**	" ×130 "	"
48	" ×140 "	"	**48**	" ×140 "	"
49	" ×150 "	"	**49**	" ×150 "	"
69 01 51	M5 × 6 mm	Pc.	**69 09 51**	M5 × 6 mm	Set
52	" × 8 "	"	**52**	" × 8 "	"
53	" × 10 "	"	**53**	" × 10 "	"
54	" × 12 "	"	**54**	" × 12 "	"
55	" × 14 "	"	**55**	" × 14 "	"
69 01 56	M5 × 15 mm	Pc.	**69 09 56**	M5 × 15 mm	Set
57	" × 16 "	"	**57**	" × 16 "	"
58	" × 18 "	"	**58**	" × 18 "	"
59	" × 20 "	"	**59**	" × 20 "	"
60	" × 22 "	"	**60**	" × 22 "	"
69 01 61	M5 × 25 mm	Pc.	**69 09 61**	M5 × 25 mm	Set
62	" × 30 "	"	**62**	" × 30 "	"
63	" × 35 "	"	**63**	" × 35 "	"
64	" × 40 "	"	**64**	" × 40 "	"
65	" × 45 "	"	**65**	" × 45 "	"
69 01 66	M5 × 50 mm	Pc.	**69 09 66**	M5 × 50 mm	Set
67	" × 60 "	"	**67**	" × 60 "	"
68	" × 70 "	"	**68**	" × 70 "	"
69	" × 80 "	"	**69**	" × 80 "	"
70	" × 90 "	"	**70**	" × 90 "	"
69 01 71	M5 ×100 mm	Pc.	**69 09 71**	M5 ×100 mm	Set
72	" ×110 "	"	**72**	" ×110 "	"
73	" ×120 "	"	**73**	" ×120 "	"
74	" ×130 "	"	**74**	" ×130 "	"
75	" ×140 "	"	**75**	" ×140 "	"
69 01 76	M5 ×150 mm	Pc.	**69 09 76**	M5 ×150 mm	Set
69 01 81	M6 × 8 mm	Pc.	**69 11 01**	M6 × 8 mm	Set
82	" × 10 "	"	**02**	" × 10 "	"
83	" × 12 "	"	**03**	" × 12 "	"
84	" × 14 "	"	**04**	" × 14 "	"
85	" × 15 "	"	**05**	" × 15 "	"
69 01 86	M6 × 16 mm	Pc.	**69 11 06**	M6 × 16 mm	Set
87	" × 18 "	"	**07**	" × 18 "	"
88	" × 20 "	"	**08**	" × 20 "	"
89	" × 22 "	"	**09**	" × 22 "	"
90	" × 25 "	"	**10**	" × 25 "	"
69 01 91	M6 × 30 mm	Pc.	**69 11 11**	M6 × 30 mm	Set
92	" × 35 "	"	**12**	" × 35 "	"
93	" × 40 "	"	**13**	" × 40 "	"
94	" × 45 "	"	**14**	" × 45 "	"
95	" × 50 "	"	**15**	" × 50 "	"
69 01 96	M6 × 55 mm	Pc.	**69 11 16**	M6 × 55 mm	Set
97	" × 60 "	"	**17**	" × 60 "	"
98	" × 65 "	"	**18**	" × 65 "	"
99	" × 70 "	"	**19**	" × 70 "	"
69 02 00	" × 75 "	"	**20**	" × 75 "	"
69 02 01	M6 × 80 mm	Pc.	**69 11 21**	M6 × 80 mm	Set
02	" × 85 "	"	**22**	" × 85 "	"
03	" × 90 "	"	**23**	" × 90 "	"
04	" × 95 "	"	**24**	" × 95 "	"
05	" ×100 "	"	**25**	" ×100 "	"

(to be continued)

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PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

CODE	Size	Unit	CODE	Size	Unit
Steel ungalv. Bolt only			**Steel ungalv. Bolt with Nut**		
69 02 06	M6 ×110 mm	Pc.	**69 11 26**	M6 ×110 mm	Set
07	" ×120 "	"	**27**	" ×120 "	"
08	" ×130 "	"	**28**	" ×130 "	"
09	" ×140 "	"	**29**	" ×140 "	"
10	" ×150 "	"	**30**	" ×150 "	"
69 02 11	M8 × 10 mm	Pc.	**69 11 31**	M8 × 10 mm	Set
12	" × 12 "	"	**32**	" × 12 "	"
13	" × 14 "	"	**33**	" × 14 "	"
14	" × 15 "	"	**34**	" × 15 "	"
15	" × 16 "	"	**35**	" × 16 "	"
69 02 16	M8 × 18 mm	Pc.	**69 11 36**	M8 × 18 mm	Set
17	" × 20 "	"	**37**	" × 20 "	"
18	" × 22 "	"	**38**	" × 22 "	"
19	" × 25 "	"	**39**	" × 25 "	"
20	" × 28 "	"	**40**	" × 28 "	"
69 02 21	M8 × 30 mm	Pc.	**69 11 41**	M8 × 30 mm	Set
22	" × 35 "	"	**42**	" × 35 "	"
23	" × 40 "	"	**43**	" × 40 "	"
24	" × 45 "	"	**44**	" × 45 "	"
25	" × 50 "	"	**45**	" × 50 "	"
69 02 26	M8 × 55 mm	Pc.	**69 11 46**	M8 × 55 mm	Set
27	" × 60 "	"	**47**	" × 60 "	"
28	" × 65 "	"	**48**	" × 65 "	"
29	" × 70 "	"	**49**	" × 70 "	"
30	" × 75 "	"	**50**	" × 75 "	"
69 02 31	M8 × 80 mm	Pc.	**69 11 51**	M8 × 80 mm	Set
32	" × 85 "	"	**52**	" × 85 "	"
33	" × 90 "	"	**53**	" × 90 "	"
34	" × 95 "	"	**54**	" × 95 "	"
35	" ×100 "	"	**55**	" ×100 "	"
69 02 36	M8 ×110 mm	Pc.	**69 11 56**	M8 ×110 mm	Set
37	" ×120 "	"	**57**	" ×120 "	"
38	" ×130 "	"	**58**	" ×130 "	"
39	" ×140 "	"	**59**	" ×140 "	"
40	" ×150 "	"	**60**	" ×150 "	"
69 02 41	M8 ×160 mm	Pc.	**69 11 61**	M8 ×160 mm	Set
42	" ×170 "	"	**62**	" ×170 "	"
43	" ×180 "	"	**63**	" ×180 "	"
44	" ×190 "	"	**64**	" ×190 "	"
45	" ×200 "	"	**65**	" ×200 "	"
69 02 51	M10× 10 mm	Pc.	**69 11 71**	M10× 10 mm	Set
52	" × 12 "	"	**72**	" × 12 "	"
53	" × 14 "	"	**73**	" × 14 "	"
54	" × 15 "	"	**74**	" × 15 "	"
55	" × 16 "	"	**75**	" × 16 "	"
69 02 56	M10× 18 mm	Pc.	**69 11 76**	M10× 18 mm	Set
57	" × 20 "	"	**77**	" × 20 "	"
58	" × 25 "	"	**78**	" × 25 "	"
59	" × 30 "	"	**79**	" × 30 "	"
60	" × 35 "	"	**80**	" × 35 "	"
69 02 61	M10× 40 mm	Pc.	**69 11 81**	M10× 40 mm	Set
62	" × 45 "	"	**82**	" × 45 "	"
63	" × 50 "	"	**83**	" × 50 "	"
64	" × 55 "	"	**84**	" × 55 "	"
65	" × 60 "	"	**85**	" × 60 "	"
69 02 66	M10× 65 mm	Pc.	**69 11 86**	M10× 65 mm	Set
67	" × 70 "	"	**87**	" × 70 "	"
68	" × 75 "	"	**88**	" × 75 "	"
69	" × 80 "	"	**89**	" × 80 "	"
70	" × 85 "	"	**90**	" × 85 "	"
69 02 71	M10× 90 mm	Pc.	**69 11 91**	M10× 90 mm	Set
72	" × 95 "	"	**92**	" × 95 "	"
73	" ×100 "	"	**93**	" ×100 "	"
74	" ×105 "	"	**94**	" ×105 "	"
75	" ×110 "	"	**95**	" ×110 "	"
69 02 76	M10×115 mm	Pc.	**69 11 96**	M10×115 mm	Set
77	" ×120 "	"	**97**	" ×120 "	"
78	" ×125 "	"	**98**	" ×125 "	"
79	" ×130 "	"	**99**	" ×130 "	"
80	" ×140 "	"	**69 12 00**	" ×140 "	"

(to be continued)

69 02 81	M10×150 mm	Pc.	**69 12 01**	M10×150 mm	Set
82	" ×160 "	"	**02**	" ×160 "	"
83	" ×170 "	"	**03**	" ×170 "	"
84	" ×180 "	"	**04**	" ×180 "	"
85	" ×190 "	"	**05**	" ×190 "	"
69 02 86	M10×200 mm	Pc.	**69 12 06**	M10×200 mm	Set
87	" ×210 "	"	**07**	" ×210 "	"
88	" ×220 "	"	**08**	" ×220 "	"
89	" ×230 "	"	**09**	" ×230 "	"
90	" ×240 "	"	**10**	" ×240 "	"
69 02 91	M10×250 mm	Pc.	**69 12 11**	M10×250 mm	Set
92	" ×300 "	"	**12**	" ×300 "	"
69 02 95	M12× 10 mm	Pc.	**69 12 15**	M12× 10 mm	Set
96	" × 20 "	"	**16**	" × 20 "	"
97	" × 25 "	"	**17**	" × 25 "	"
98	" × 30 "	"	**18**	" × 30 "	"
99	" × 35 "	"	**19**	" × 35 "	"
69 03 00	M12× 40 mm	Pc.	**69 12 20**	M12× 40 mm	Set
01	" × 45 "	"	**21**	" × 45 "	"
02	" × 50 "	"	**22**	" × 50 "	"
03	" × 55 "	"	**23**	" × 55 "	"
04	" × 60 "	"	**24**	" × 60 "	"
69 03 05	M12× 65 mm	Pc.	**69 12 25**	M12× 65 mm	Set
06	" × 70 "	"	**26**	" × 70 "	"
07	" × 75 "	"	**27**	" × 75 "	"
08	" × 80 "	"	**28**	" × 80 "	"
09	" × 85 "	"	**29**	" × 85 "	"
69 03 10	M12× 90 mm	Pc.	**69 12 30**	M12× 90 mm	Set
11	" × 95 "	"	**31**	" × 95 "	"
12	" ×100 "	"	**32**	" ×100 "	"
13	" ×105 "	"	**33**	" ×105 "	"
14	" ×110 "	"	**34**	" ×110 "	"
69 03 15	M12×115 mm	Pc.	**69 12 35**	M12×115 mm	Set
16	" ×120 "	"	**36**	" ×120 "	"
17	" ×125 "	"	**37**	" ×125 "	"
18	" ×130 "	"	**38**	" ×130 "	"
19	" ×140 "	"	**39**	" ×140 "	"
69 03 20	M12×150 mm	Pc.	**69 12 40**	M12×150 mm	Set
21	" ×160 "	"	**41**	" ×160 "	"
22	" ×170 "	"	**42**	" ×170 "	"
23	" ×180 "	"	**43**	" ×180 "	"
24	" ×190 "	"	**44**	" ×190 "	"
69 03 25	M12×200 mm	Pc.	**69 12 45**	M12×200 mm	Set
26	" ×210 "	"	**46**	" ×210 "	"
27	" ×220 "	"	**47**	" ×220 "	"
28	" ×230 "	"	**48**	" ×230 "	"
29	" ×240 "	"	**49**	" ×240 "	"
69 03 30	M12×250 mm	Pc.	**69 12 50**	M12×250 mm	Set
31	" ×260 "	"	**51**	" ×260 "	"
32	" ×270 "	"	**52**	" ×270 "	"
33	" ×280 "	"	**53**	" ×280 "	"
34	" ×290 "	"	**54**	" ×290 "	"
69 03 35	M12×300 mm	Pc.	**69 12 55**	M12×300 mm	Set
36	" ×310 "	"	**56**	" ×310 "	"
37	" ×320 "	"	**57**	" ×320 "	"
38	" ×330 "	"	**58**	" ×330 "	"
39	" ×340 "	"	**59**	" ×340 "	"
69 03 40	M12×350 mm	Pc.	**69 12 60**	M12×350 mm	Set
69 03 41	M14× 25 mm	Pc.	**69 12 61**	M14× 25 mm	Set
42	" × 30 "	"	**62**	" × 30 "	"
43	" × 40 "	"	**63**	" × 40 "	"
44	" × 45 "	"	**64**	" × 45 "	"
45	" × 50 "	"	**65**	" × 50 "	"
69 03 46	M14× 55 mm	Pc.	**69 12 66**	M14× 55 mm	Set
47	" × 60 "	"	**67**	" × 60 "	"
48	" × 65 "	"	**68**	" × 65 "	"
49	" × 70 "	"	**69**	" × 70 "	"
50	" × 75 "	"	**70**	" × 75 "	"
69 03 51	M14× 80 mm	Pc.	**69 12 71**	M14× 80 mm	Set
52	" × 90 "	"	**72**	" × 90 "	"
53	" ×100 "	"	**73**	" ×100 "	"
69 03 55	M16× 10 mm	Pc.	**69 12 75**	M16× 10 mm	Set
56	" × 20 "	"	**76**	" × 20 "	"
57	" × 25 "	"	**77**	" × 25 "	"
58	" × 30 "	"	**78**	" × 30 "	"
59	" × 40 "	"	**79**	" × 40 "	"

(to be continued)

INTERNATIONAL MARINE PURCHASING ASSOCIATION

CODE	Size	Unit	CODE	Size	Unit
Steel ungalv. Bolt only			**Steel ungalv. Bolt with Nut**		
69 03 60	M16× 45 mm	Pc.	69 12 80	M16× 45 mm	Set
61	" × 50 "	"	81	" × 50 "	"
62	" × 55 "	"	82	" × 55 "	"
63	" × 60 "	"	83	" × 60 "	"
64	" × 65 "	"	84	" × 65 "	"
69 03 65	M16× 70 mm	Pc.	69 12 85	M16× 70 mm	Set
66	" × 75 "	"	86	" × 75 "	"
67	" × 80 "	"	87	" × 80 "	"
68	" × 85 "	"	88	" × 85 "	"
69	" × 90 "	"	89	" × 90 "	"
69 03 70	M16× 95 mm	Pc.	69 12 90	M16× 95 mm	Set
71	" ×100 "	"	91	" ×100 "	"
72	" ×105 "	"	92	" ×105 "	"
73	" ×110 "	"	93	" ×110 "	"
74	" ×115 "	"	94	" ×115 "	"
69 03 75	M16×120 mm	Pc.	69 12 95	M16×120 mm	Set
76	" ×125 "	"	96	" ×125 "	"
77	" ×130 "	"	97	" ×130 "	"
78	" ×140 "	"	98	" ×140 "	"
79	" ×150 "	"	99	" ×150 "	"
69 03 80	M16×160 mm	Pc.	69 13 00	M16×160 mm	Set
81	" ×170 "	"	01	" ×170 "	"
82	" ×180 "	"	02	" ×180 "	"
83	" ×190 "	"	03	" ×190 "	"
84	" ×200 "	"	04	" ×200 "	"
69 03 85	M16×210 mm	Pc.	69 13 05	M16×210 mm	Set
86	" ×220 "	"	06	" ×220 "	"
87	" ×230 "	"	07	" ×230 "	"
88	" ×240 "	"	08	" ×240 "	"
89	" ×250 "	"	09	" ×250 "	"
69 03 91	M18× 30 mm	Pc.	69 13 11	M18× 30 mm	Set
92	" × 60 "	"	12	" × 60 "	"
93	" × 65 "	"	13	" × 65 "	"
94	" × 70 "	"	14	" × 70 "	"
95	" × 75 "	"	15	" × 75 "	"
69 03 96	M18× 80 mm	Pc.	69 13 16	M18× 80 mm	Set
97	" × 85 "	"	17	" × 85 "	"
98	" × 90 "	"	18	" × 90 "	"
99	" ×100 "	"	19	" ×100 "	"
69 04 00	" ×120 "	"	20	" ×120 "	"
69 04 01	M20× 10 mm	Pc.	69 13 21	M20× 10 mm	Set
02	" × 20 "	"	22	" × 20 "	"
03	" × 30 "	"	23	" × 30 "	"
04	" × 40 "	"	24	" × 40 "	"
05	" × 50 "	"	25	" × 50 "	"
69 04 06	M20× 55 mm	Pc.	69 13 26	M20× 55 mm	Set
07	" × 60 "	"	27	" × 60 "	"
08	" × 65 "	"	28	" × 65 "	"
09	" × 70 "	"	29	" × 70 "	"
10	" × 75 "	"	30	" × 75 "	"
69 04 11	M20× 80 mm	Pc.	69 13 31	M20× 80 mm	Set
12	" × 85 "	"	32	" × 85 "	"
13	" × 90 "	"	33	" × 90 "	"
14	" × 95 "	"	34	" × 95 "	"
15	" ×100 "	"	35	" ×100 "	"
69 04 16	M20×105 mm	Pc.	69 13 36	M20×105 mm	Set
17	" ×110 "	"	37	" ×110 "	"
18	" ×115 "	"	38	" ×115 "	"
19	" ×120 "	"	39	" ×120 "	"
20	" ×125 "	"	40	" ×125 "	"
69 04 21	M20×130 mm	Pc.	69 13 41	M20×130 mm	Set
22	" ×140 "	"	42	" ×140 "	"
23	" ×150 "	"	43	" ×150 "	"
24	" ×160 "	"	44	" ×160 "	"
25	" ×170 "	"	45	" ×170 "	"
69 04 26	M20×180 mm	Pc.	69 13 46	M20×180 mm	Set
27	" ×190 "	"	47	" ×190 "	"
28	" ×200 "	"	48	" ×200 "	"
29	" ×210 "	"	49	" ×210 "	"
30	" ×230 "	"	50	" ×230 "	"
69 04 31	M20×260 mm	Pc.	69 13 51	M20×260 mm	Set

(to be continued)

69 04 35	M22× 40 mm	Pc.	69 13 55	M22× 40 mm	Set
36	" × 45 "	"	56	" × 45 "	"
37	" × 50 "	"	57	" × 50 "	"
38	" × 55 "	"	58	" × 55 "	"
39	" × 60 "	"	59	" × 60 "	"
69 04 40	M22× 65 mm	Pc.	69 13 60	M22× 65 mm	Set
41	" × 70 "	"	61	" × 70 "	"
42	" × 75 "	"	62	" × 75 "	"
43	" × 80 "	"	63	" × 80 "	"
44	" × 85 "	"	64	" × 85 "	"
69 04 45	M22× 90 mm	Pc.	69 13 65	M22× 90 mm	Set
46	" × 95 "	"	66	" × 95 "	"
47	" ×100 "	"	67	" ×100 "	"
48	" ×105 "	"	68	" ×105 "	"
49	" ×110 "	"	69	" ×110 "	"
69 04 50	M22×115 mm	Pc.	69 13 70	M22×115 mm	Set
51	" ×120 "	"	71	" ×120 "	"
52	" ×125 "	"	72	" ×125 "	"
53	" ×130 "	"	73	" ×130 "	"
54	" ×140 "	"	74	" ×140 "	"
69 04 55	M22×150 mm	Pc.	69 13 75	M22×150 mm	Set
56	" ×160 "	"	76	" ×160 "	"
57	" ×170 "	"	77	" ×170 "	"
58	" ×200 "	"	78	" ×200 "	"
59	" ×220 "	"	79	" ×220 "	"
69 04 60	M22×230 mm	Pc.	69 13 80	M22×230 mm	Set
61	" ×260 "	"	81	" ×260 "	"
69 04 65	M24× 10 mm	Pc.	69 13 85	M24× 10 mm	Set
66	" × 20 "	"	86	" × 20 "	"
67	" × 30 "	"	87	" × 30 "	"
68	" × 40 "	"	88	" × 40 "	"
69	" × 45 "	"	89	" × 45 "	"
69 04 70	M24× 50 mm	Pc.	69 13 90	M24× 50 mm	Set
71	" × 55 "	"	91	" × 55 "	"
72	" × 60 "	"	92	" × 60 "	"
73	" × 65 "	"	93	" × 65 "	"
74	" × 70 "	"	94	" × 70 "	"
69 04 75	M24× 75 mm	Pc.	69 13 95	M24× 75 mm	Set
76	" × 80 "	"	96	" × 80 "	"
77	" × 85 "	"	97	" × 85 "	"
78	" × 90 "	"	98	" × 90 "	"
79	" × 95 "	"	99	" × 95 "	"
69 04 80	M24×100 mm	Pc.	69 14 00	M24×100 mm	Set
81	" ×105 "	"	01	" ×105 "	"
82	" ×110 "	"	02	" ×110 "	"
83	" ×115 "	"	03	" ×115 "	"
84	" ×120 "	"	04	" ×120 "	"
69 04 85	M24×125 mm	Pc.	69 14 05	M24×125 mm	Set
86	" ×130 "	"	06	" ×130 "	"
87	" ×140 "	"	07	" ×140 "	"
88	" ×150 "	"	08	" ×150 "	"
89	" ×170 "	"	09	" ×170 "	"
69 04 90	M24×220 mm	Pc.	69 14 10	M24×220 mm	Set
91	" ×250 "	"	11	" ×250 "	"
92	" ×260 "	"	12	" ×260 "	"
69 08 01	M27× 90 mm	Pc.	69 14 15	M27× 90 mm	Set
02	" ×100 "	"	16	" ×100 "	"
03	" ×110 "	"	17	" ×110 "	"
04	" ×120 "	"	18	" ×120 "	"
05	" ×130 "	"	19	" ×130 "	"
69 08 06	M27×180 mm	Pc.	69 14 20	M27×180 mm	Set
69 08 11	M30× 75 mm	Pc.	69 14 21	M30× 75 mm	Set
12	" × 80 "	"	22	" × 80 "	"
13	" × 85 "	"	23	" × 85 "	"
14	" ×100 "	"	24	" ×100 "	"
15	" ×110 "	"	25	" ×110 "	"
69 08 16	M30×120 mm	Pc.	69 14 26	M30×120 mm	Set
17	" ×130 "	"	27	" ×130 "	"
18	" ×140 "	"	28	" ×140 "	"
19	" ×150 "	"	29	" ×150 "	"
20	" ×200 "	"	30	" ×200 "	"
69 08 21	M30×250 mm	Pc.	69 14 31	M30×250 mm	Set
69 08 25	M36×100 mm	Pc.	69 14 35	M36×100 mm	Set
26	" ×140 "	"	36	" ×140 "	"
27	" ×150 "	"	37	" ×150 "	"
28	" ×180 "	"	38	" ×180 "	"

Stainless Steel

How to order : CODE

Bolt, hex head, stainless steel, half threaded,
DIAM x LENGTH mm
or
Bolt with nut, hex head, stainless steel, half threaded,
DIAM x LENGTH mm

If you require WHOLE THREADED, please specify.

CODE	Size	Unit	CODE	Size	Unit
Stainless Steel Bolt only			**Stainless Steel Bolt with Nut**		
69 16 01	M3 × 5 mm	Pc.	**69 23 01**	M3 × 5 mm	Set
02	" × 6 "	"	**02**	" × 6 "	"
03	" × 8 "	"	**03**	" × 8 "	"
04	" × 10 "	"	**04**	" × 10 "	"
05	" × 12 "	"	**05**	" × 12 "	"
69 16 06	M3 × 15 mm	Pc.	**69 23 06**	M3 × 15 mm	Set
07	" × 16 "	"	**07**	" × 16 "	"
08	" × 20 "	"	**08**	" × 20 "	"
09	" × 25 "	"	**09**	" × 25 "	"
10	" × 30 "	"	**10**	" × 30 "	"
69 16 11	M3 × 40 mm	Pc.	**69 23 11**	M3 × 40 mm	Set
12	" × 50 "	"	**12**	" × 50 "	"
13	" × 60 "	"	**13**	" × 60 "	"
14	" × 70 "	"	**14**	" × 70 "	"
15	" × 80 "	"	**15**	" × 80 "	"
69 16 16	M3 × 90 mm	Pc.	**69 23 16**	M3 × 90 mm	Set
17	" ×100 "	"	**17**	" ×100 "	"
18	" ×110 "	"	**18**	" ×110 "	"
19	" ×120 "	"	**19**	" ×120 "	"
20	" ×130 "	"	**20**	" ×130 "	"
69 16 21	M3 ×140 mm	Pc.	**69 23 21**	M3 ×140 mm	Set
22	" ×150 "	"	**22**	" ×150 "	"
69 16 25	M4 × 6 mm	Pc.	**69 23 25**	M4 × 6 mm	Set
26	" × 8 "	"	**26**	" × 8 "	"
27	" × 10 "	"	**27**	" × 10 "	"
28	" × 12 "	"	**28**	" × 12 "	"
29	" × 14 "	"	**29**	" × 14 "	"
69 16 30	M4 × 15 mm	Pc.	**69 23 30**	M4 × 15 mm	Set
31	" × 16 "	"	**31**	" × 16 "	"
32	" × 18 "	"	**32**	" × 18 "	"
33	" × 20 "	"	**33**	" × 20 "	"
34	" × 25 "	"	**34**	" × 25 "	"
69 16 35	M4 × 30 mm	Pc.	**69 23 35**	M4 × 30 mm	Set
36	" × 35 "	"	**36**	" × 35 "	"
37	" × 40 "	"	**37**	" × 40 "	"
38	" × 45 "	"	**38**	" × 45 "	"
39	" × 50 "	"	**39**	" × 50 "	"
69 16 40	M4 × 60 mm	Pc.	**69 23 40**	M4 × 60 mm	Set
41	" × 70 "	"	**41**	" × 70 "	"
42	" × 80 "	"	**42**	" × 80 "	"
43	" × 90 "	"	**43**	" × 90 "	"
44	" ×100 "	"	**44**	" ×100 "	"
69 16 45	M4 ×110 mm	Pc.	**69 23 45**	M4 ×110 mm	Set
46	" ×120 "	"	**46**	" ×120 "	"
47	" ×130 "	"	**47**	" ×130 "	"
48	" ×140 "	"	**48**	" ×140 "	"
49	" ×150 "	"	**49**	" ×150 "	"
69 16 51	M5 × 6 mm	Pc.	**69 23 51**	M5 × 6 mm	Set
52	" × 8 "	"	**52**	" × 8 "	"
53	" × 10 "	"	**53**	" × 10 "	"
54	" × 12 "	"	**54**	" × 12 "	"
55	" × 14 "	"	**55**	" × 14 "	"
69 16 56	M5 × 15 mm	Pc.	**69 23 56**	M5 × 15 mm	Set
57	" × 16 "	"	**57**	" × 16 "	"
58	" × 18 "	"	**58**	" × 18 "	"
59	" × 20 "	"	**59**	" × 20 "	"
60	" × 22 "	"	**60**	" × 22 "	"
69 16 61	M5 × 25 mm	Pc.	**69 23 61**	M5 × 25 mm	Set
62	" × 30 "	"	**62**	" × 30 "	"
63	" × 35 "	"	**63**	" × 35 "	"
64	" × 40 "	"	**64**	" × 40 "	"
65	" × 45 "	"	**65**	" × 45 "	"

(to be continued)

69 16 66	M5 × 50 mm	Pc.	**69 23 66**	M5 × 50 mm	Set
67	" × 60 "	"	**67**	" × 60 "	"
68	" × 70 "	"	**68**	" × 70 "	"
69	" × 80 "	"	**69**	" × 80 "	"
70	" × 90 "	"	**70**	" × 90 "	"
69 16 71	M5 ×100 mm	Pc.	**69 23 71**	M5 ×100 mm	Set
72	" ×110 "	"	**72**	" ×110 "	"
73	" ×120 "	"	**73**	" ×120 "	"
74	" ×130 "	"	**74**	" ×130 "	"
75	" ×140 "	"	**75**	" ×140 "	"
69 16 76	M5 ×150 mm	Pc.	**69 23 76**	M5 ×150 mm	Set
69 16 81	M6 × 8 mm	Pc.	**69 25 01**	M6 × 8 mm	Set
82	" × 10 "	"	**02**	" × 10 "	"
83	" × 12 "	"	**03**	" × 12 "	"
84	" × 14 "	"	**04**	" × 14 "	"
85	" × 15 "	"	**05**	" × 15 "	"
69 16 86	M6 × 16 mm	Pc.	**69 25 06**	M6 × 16 mm	Set
87	" × 18 "	"	**07**	" × 18 "	"
88	" × 20 "	"	**08**	" × 20 "	"
89	" × 22 "	"	**09**	" × 22 "	"
90	" × 25 "	"	**10**	" × 25 "	"
69 16 91	M6 × 30 mm	Pc.	**69 25 11**	M6 × 30 mm	Set
92	" × 35 "	"	**12**	" × 35 "	"
93	" × 40 "	"	**13**	" × 40 "	"
94	" × 45 "	"	**14**	" × 45 "	"
95	" × 50 "	"	**15**	" × 50 "	"
69 16 96	M6 × 55 mm	Pc.	**69 25 16**	M6 × 55 mm	Set
97	" × 60 "	"	**17**	" × 60 "	"
98	" × 65 "	"	**18**	" × 65 "	"
99	" × 70 "	"	**19**	" × 70 "	"
69 17 00	" × 75 "	"	**20**	" × 75 "	"
69 17 01	M6 × 80 mm	Pc.	**69 25 21**	M6 × 80 mm	Set
02	" × 85 "	"	**22**	" × 85 "	"
03	" × 90 "	"	**23**	" × 90 "	"
04	" × 95 "	"	**24**	" × 95 "	"
05	" ×100 "	"	**25**	" ×100 "	"
69 17 06	M6 ×110 mm	Pc.	**69 25 26**	M6 ×110 mm	Set
07	" ×120 "	"	**27**	" ×120 "	"
08	" ×130 "	"	**28**	" ×130 "	"
09	" ×140 "	"	**29**	" ×140 "	"
10	" ×150 "	"	**30**	" ×150 "	"
69 17 11	M8 × 10 mm	Pc.	**69 25 31**	M8 × 10 mm	Set
12	" × 12 "	"	**32**	" × 12 "	"
13	" × 14 "	"	**33**	" × 14 "	"
14	" × 15 "	"	**34**	" × 15 "	"
15	" × 16 "	"	**35**	" × 16 "	"
69 17 16	M8 × 18 mm	Pc.	**69 25 36**	M8 × 18 mm	Set
17	" × 20 "	"	**37**	" × 20 "	"
18	" × 22 "	"	**38**	" × 22 "	"
19	" × 25 "	"	**39**	" × 25 "	"
20	" × 28 "	"	**40**	" × 28 "	"
69 17 21	M8 × 30 mm	Pc.	**69 25 41**	M8 × 30 mm	Set
22	" × 35 "	"	**42**	" × 35 "	"
23	" × 40 "	"	**43**	" × 40 "	"
24	" × 45 "	"	**44**	" × 45 "	"
25	" × 50 "	"	**45**	" × 50 "	"
69 17 26	M8 × 55 mm	Pc.	**69 25 46**	M8 × 55 mm	Set
27	" × 60 "	"	**47**	" × 60 "	"
28	" × 65 "	"	**48**	" × 65 "	"
29	" × 70 "	"	**49**	" × 70 "	"
30	" × 75 "	"	**50**	" × 75 "	"
69 17 31	M8 × 80 mm	Pc.	**69 25 51**	M8 × 80 mm	Set
32	" × 85 "	"	**52**	" × 85 "	"
33	" × 90 "	"	**53**	" × 90 "	"
34	" × 95 "	"	**54**	" × 95 "	"
35	" ×100 "	"	**55**	" ×100 "	"
69 17 36	M8 ×110 mm	Pc.	**69 25 56**	M8 ×110 mm	Set
37	" ×120 "	"	**57**	" ×120 "	"
38	" ×130 "	"	**58**	" ×130 "	"
39	" ×140 "	"	**59**	" ×140 "	"
40	" ×150 "	"	**60**	" ×150 "	"

(to be continued)

CODE	Size	Unit	CODE	Size	Unit
Stainless Steel Bolt only			**Stainless Steel Bolt with Nut**		
69 17 41	M8 ×160 mm	Pc.	69 25 61	M8 ×160 mm	Set
42	" ×170 "	"	62	" ×170 "	"
43	" ×180 "	"	63	" ×180 "	"
44	" ×190 "	"	64	" ×190 "	"
45	" ×200 "	"	65	" ×200 "	"
69 17 51	M10× 10 mm	Pc.	69 27 01	M10× 10 mm	Set
52	" × 12 "	"	02	" × 12 "	"
53	" × 14 "	"	03	" × 14 "	"
54	" × 15 "	"	04	" × 15 "	"
55	" × 16 "	"	05	" × 16 "	"
69 17 56	M10× 18 mm	Pc.	69 27 06	M10× 18 mm	Set
57	" × 20 "	"	07	" × 20 "	"
58	" × 25 "	"	08	" × 25 "	"
59	" × 30 "	"	09	" × 30 "	"
60	" × 35 "	"	10	" × 35 "	"
69 17 61	M10× 40 mm	Pc.	69 27 11	M10× 40 mm	Set
62	" × 45 "	"	12	" × 45 "	"
63	" × 50 "	"	13	" × 50 "	"
64	" × 55 "	"	14	" × 55 "	"
65	" × 60 "	"	15	" × 60 "	"
69 17 66	M10× 65 mm	Pc.	69 27 16	M10× 65 mm	Set
67	" × 70 "	"	17	" × 70 "	"
68	" × 75 "	"	18	" × 75 "	"
69	" × 80 "	"	19	" × 80 "	"
70	" × 85 "	"	20	" × 85 "	"
69 17 71	M10× 90 mm	Pc.	69 27 21	M10× 90 mm	Set
72	" × 95 "	"	22	" × 95 "	"
73	" ×100 "	"	23	" ×100 "	"
74	" ×105 "	"	24	" ×105 "	"
75	" ×110 "	"	25	" ×110 "	"
69 17 76	M10×115 mm	Pc.	69 27 26	M10×115 mm	Set
77	" ×120 "	"	27	" ×120 "	"
78	" ×125 "	"	28	" ×125 "	"
79	" ×130 "	"	29	" ×130 "	"
80	" ×140 "	"	30	" ×140 "	"
69 17 81	M10×150 mm	Pc.	69 27 31	M10×150 mm	Set
82	" ×160 "	"	32	" ×160 "	"
83	" ×170 "	"	33	" ×170 "	"
84	" ×180 "	"	34	" ×180 "	"
85	" ×190 "	"	35	" ×190 "	"
69 17 86	M10×200 mm	Pc.	69 27 36	M10×200 mm	Set
87	" ×210 "	"	37	" ×210 "	"
88	" ×220 "	"	38	" ×220 "	"
89	" ×230 "	"	39	" ×230 "	"
90	" ×240 "	"	40	" ×240 "	"
69 17 91	M10×250 mm	Pc.	69 27 41	M10×250 mm	Set
92	" ×300 "	"	42	" ×300 "	"
69 17 95	M12× 10 mm	Pc.	69 27 45	M12× 10 mm	Set
96	" × 20 "	"	46	" × 20 "	"
97	" × 25 "	"	47	" × 25 "	"
98	" × 30 "	"	48	" × 30 "	"
99	" × 35 "	"	49	" × 35 "	"
69 18 00	M12× 40 mm	Pc.	69 27 50	M12× 40 mm	Set
01	" × 45 "	"	51	" × 45 "	"
02	" × 50 "	"	52	" × 50 "	"
03	" × 55 "	"	53	" × 55 "	"
04	" × 60 "	"	54	" × 60 "	"
69 18 05	M12× 65 mm	Pc.	69 27 55	M12× 65 mm	Set
06	" × 70 "	"	56	" × 70 "	"
07	" × 75 "	"	57	" × 75 "	"
08	" × 80 "	"	58	" × 80 "	"
09	" × 85 "	"	59	" × 85 "	"
69 18 10	M12× 90 mm	Pc.	69 27 60	M12× 90 mm	Set
11	" × 95 "	"	61	" × 95 "	"
12	" ×100 "	"	62	" ×100 "	"
13	" ×105 "	"	63	" ×105 "	"
14	" ×110 "	"	64	" ×110 "	"
69 18 15	M12×115 mm	Pc.	69 27 65	M12×115 mm	Set
16	" ×120 "	"	66	" ×120 "	"
17	" ×125 "	"	67	" ×125 "	"
18	" ×130 "	"	68	" ×130 "	"
19	" ×140 "	"	69	" ×140 "	"

(to be continued)

69 18 20	M12×150 mm	Pc.	69 27 70	M12×150 mm	Set
21	" ×160 "	"	71	" ×160 "	"
22	" ×170 "	"	72	" ×170 "	"
23	" ×180 "	"	73	" ×180 "	"
24	" ×190 "	"	74	" ×190 "	"
69 18 25	M12×200 mm	Pc.	69 27 75	M12×200 mm	Set
26	" ×210 "	"	76	" ×210 "	"
27	" ×220 "	"	77	" ×220 "	"
28	" ×230 "	"	78	" ×230 "	"
29	" ×240 "	"	79	" ×240 "	"
69 18 30	M12×250 mm	Pc.	69 27 80	M12×250 mm	Set
31	" ×260 "	"	81	" ×260 "	"
32	" ×270 "	"	82	" ×270 "	"
33	" ×280 "	"	83	" ×280 "	"
34	" ×290 "	"	84	" ×290 "	"
69 18 35	M12×300 mm	Pc.	69 27 85	M12×300 mm	Set
36	" ×310 "	"	86	" ×310 "	"
37	" ×320 "	"	87	" ×320 "	"
38	" ×330 "	"	88	" ×330 "	"
39	" ×340 "	"	89	" ×340 "	"
69 18 40	M12×350 mm	Pc.	69 27 90	M12×350 mm	Set
69 18 41	M14× 25 mm	Pc.	69 29 01	M14× 25 mm	Set
42	" × 30 "	"	02	" × 30 "	"
43	" × 40 "	"	03	" × 40 "	"
44	" × 45 "	"	04	" × 45 "	"
45	" × 50 "	"	05	" × 50 "	"
69 18 46	M14× 55 mm	Pc.	69 29 06	M14× 55 mm	Set
47	" × 60 "	"	07	" × 60 "	"
48	" × 65 "	"	08	" × 65 "	"
49	" × 70 "	"	09	" × 70 "	"
50	" × 75 "	"	10	" × 75 "	"
69 18 51	M14× 80 mm	Pc.	69 29 11	M14× 80 mm	Set
52	" × 90 "	"	12	" × 90 "	"
53	" ×100 "	"	13	" ×100 "	"
69 18 55	M16× 10 mm	Pc.	69 29 15	M16× 10 mm	Set
56	" × 20 "	"	16	" × 20 "	"
57	" × 25 "	"	17	" × 25 "	"
58	" × 30 "	"	18	" × 30 "	"
59	" × 40 "	"	19	" × 40 "	"
69 18 60	M16× 45 mm	Pc.	69 29 20	M16× 45 mm	Set
61	" × 50 "	"	21	" × 50 "	"
62	" × 55 "	"	22	" × 55 "	"
63	" × 60 "	"	23	" × 60 "	"
64	" × 65 "	"	24	" × 65 "	"
69 18 65	M16× 70 mm	Pc.	69 29 25	M16× 70 mm	Set
66	" × 75 "	"	26	" × 75 "	"
67	" × 80 "	"	27	" × 80 "	"
68	" × 85 "	"	28	" × 85 "	"
69	" × 90 "	"	29	" × 90 "	"
69 18 70	M16× 95 mm	Pc.	69 29 30	M16× 95 mm	Set
71	" ×100 "	"	31	" ×100 "	"
72	" ×105 "	"	32	" ×105 "	"
73	" ×110 "	"	33	" ×110 "	"
74	" ×115 "	"	34	" ×115 "	"
69 18 75	M16×120 mm	Pc.	69 29 35	M16×120 mm	Set
76	" ×125 "	"	36	" ×125 "	"
77	" ×130 "	"	37	" ×130 "	"
78	" ×140 "	"	38	" ×140 "	"
79	" ×150 "	"	39	" ×150 "	"
69 18 80	M16×160 mm	Pc.	69 29 40	M16×160 mm	Set
81	" ×170 "	"	41	" ×170 "	"
82	" ×180 "	"	42	" ×180 "	"
83	" ×190 "	"	43	" ×190 "	"
84	" ×200 "	"	44	" ×200 "	"
69 18 85	M16×210 mm	Pc.	69 29 45	M16×210 mm	Set
86	" ×220 "	"	46	" ×220 "	"
87	" ×230 "	"	47	" ×230 "	"
88	" ×240 "	"	48	" ×240 "	"
89	" ×250 "	"	49	" ×250 "	"
69 18 91	M18× 30 mm	Pc.	69 29 51	M18× 30 mm	Set
92	" × 60 "	"	52	" × 60 "	"
93	" × 65 "	"	53	" × 65 "	"
94	" × 70 "	"	54	" × 70 "	"
95	" × 75 "	"	55	" × 75 "	"

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PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

CODE	Size	Unit	CODE	Size	Unit
Stainless Steel Bolt only			**Stainless Steel Bolt with Nut**		
69 18 96	M18× 80 mm	Pc.	69 29 56	M18× 80 mm	Set
97	" × 85 "	"	57	" × 85 "	"
98	" × 90 "	"	58	" × 90 "	"
99	" ×100 "	"	59	" ×100 "	"
69 19 00	" ×120 "	"	60	" ×120 "	"
69 19 01	M20× 10 mm	Pc.	69 29 61	M20× 10 mm	Set
02	" × 20 "	"	62	" × 20 "	"
03	" × 30 "	"	63	" × 30 "	"
04	" × 40 "	"	64	" × 40 "	"
05	" × 50 "	"	65	" × 50 "	"
69 19 06	M20× 55 mm	Pc.	69 29 66	M20× 55 mm	Set
07	" × 60 "	"	67	" × 60 "	"
08	" × 65 "	"	68	" × 65 "	"
09	" × 70 "	"	69	" × 70 "	"
10	" × 75 "	"	70	" × 75 "	"
69 19 11	M20× 80 mm	Pc.	69 29 71	M20× 80 mm	Set
12	" × 85 "	"	72	" × 85 "	"
13	" × 90 "	"	73	" × 90 "	"
14	" × 95 "	"	74	" × 95 "	"
15	" ×100 "	"	75	" ×100 "	"
69 19 16	M20×105 mm	Pc.	69 29 76	M20×105 mm	Set
17	" ×110 "	"	77	" ×110 "	"
18	" ×115 "	"	78	" ×115 "	"
19	" ×120 "	"	79	" ×120 "	"
20	" ×125 "	"	80	" ×125 "	"
69 19 21	M20×130 mm	Pc.	69 29 81	M20×130 mm	Set
22	" ×140 "	"	82	" ×140 "	"
23	" ×150 "	"	83	" ×150 "	"
24	" ×160 "	"	84	" ×160 "	"
25	" ×170 "	"	85	" ×170 "	"
69 19 26	M20×180 mm	Pc.	69 29 86	M20×180 mm	Set
27	" ×190 "	"	87	" ×190 "	"
28	" ×200 "	"	88	" ×200 "	"
29	" ×210 "	"	89	" ×210 "	"
30	" ×230 "	"	90	" ×230 "	"
69 19 31	M20×260 mm	Pc.	69 29 91	M20×260 mm	Set
69 19 35	M22× 40 mm	Pc.	69 31 01	M22× 40 mm	Set
36	" × 45 "	"	02	" × 45 "	"
37	" × 50 "	"	03	" × 50 "	"
38	" × 55 "	"	04	" × 55 "	"
39	" × 60 "	"	05	" × 60 "	"
69 19 40	M22× 65 mm	Pc.	69 31 06	M22× 65 mm	Set
41	" × 70 "	"	07	" × 70 "	"
42	" × 75 "	"	08	" × 75 "	"
43	" × 80 "	"	09	" × 80 "	"
44	" × 85 "	"	10	" × 85 "	"
69 19 45	M22× 90 mm	Pc.	69 31 11	M22× 90 mm	Set
46	" × 95 "	"	12	" × 95 "	"
47	" ×100 "	"	13	" ×100 "	"
48	" ×105 "	"	14	" ×105 "	"
49	" ×110 "	"	15	" ×110 "	"
69 19 50	M22×115 mm	Pc.	69 31 16	M22×115 mm	Set
51	" ×120 "	"	17	" ×120 "	"
52	" ×125 "	"	18	" ×125 "	"
53	" ×130 "	"	19	" ×130 "	"
54	" ×140 "	"	20	" ×140 "	"
69 19 55	M22×150 mm	Pc.	69 31 21	M22× 50 mm	Set
56	" ×160 "	"	22	" ×160 "	"
57	" ×170 "	"	23	" ×170 "	"
58	" ×200 "	"	24	" ×200 "	"
59	" ×220 "	"	25	" ×220 "	"
69 19 60	M22×230 mm	Pc.	69 31 26	M22×230 mm	Set
61	" ×260 "	"	27	" ×260 "	"
69 19 65	M24× 10 mm	Pc.	69 31 31	M24× 10 mm	Set
66	" × 20 "	"	32	" × 20 "	"
67	" × 30 "	"	33	" × 30 "	"
68	" × 40 "	"	34	" × 40 "	"
69	" × 45 "	"	35	" × 45 "	"

(to be continued)

69 19 70	M24× 50 mm	Pc.	69 31 36	M24× 50 mm	Set
71	" × 55 "	"	37	" × 55 "	"
72	" × 60 "	"	38	" × 60 "	"
73	" × 65 "	"	39	" × 65 "	"
74	" × 70 "	"	40	" × 70 "	"
69 19 75	M24× 75 mm	Pc.	69 31 41	M24× 7 mm	Set
76	" × 80 "	"	42	" × 80 "	"
77	" × 85 "	"	43	" × 85 "	"
78	" × 90 "	"	44	" × 90 "	"
79	" × 95 "	"	45	" × 95 "	"
69 19 80	M24×100 mm	Pc.	69 31 46	M24×100 mm	Set
81	" ×105 "	"	47	" ×105 "	"
82	" ×110 "	"	48	" ×110 "	"
83	" ×115 "	"	49	" ×115 "	"
84	" ×120 "	"	50	" ×120 "	"
69 19 85	M24×125mm	Pc.	69 31 51	M24×125 mm	Set
86	" ×130 "	"	52	" ×130 "	"
87	" ×140 "	"	53	" ×140 "	"
88	" ×150 "	"	54	" ×150 "	"
89	" ×170 "	"	55	" ×170 "	"
69 19 90	M24×220 mm	Pc.	69 31 56	M24×220 mm	Set
91	" ×250 "	"	57	" ×250 "	"
92	" ×260 "	"	58	" ×260 "	"
69 21 01	M27× 90 mm	Pc.	69 31 61	M27× 90 mm	Set
02	" ×100 "	"	62	" ×100 "	"
03	" ×110 "	"	63	" ×110 "	"
04	" ×120 "	"	64	" ×120 "	"
05	" ×130 "	"	65	" ×130 "	"
69 21 06	M27×180 mm	Pc.	69 31 66	M27×180 mm	Set
69 21 11	M30× 75 mm	Pc.	69 31 71	M30× 75 mm	Set
12	" × 80 "	"	72	" × 80 "	"
13	" × 85 "	"	73	" × 85 "	"
14	" ×100 "	"	74	" ×100 "	"
15	" ×110 "	"	75	" ×110 "	"
69 21 16	M30×120 mm	Pc.	69 31 76	M30×120 mm	Set
17	" ×130 "	"	77	" ×130 "	"
18	" ×140 "	"	78	" ×140 "	"
19	" ×150 "	"	79	" ×150 "	"
20	" ×200 "	"	80	" ×200 "	"
69 21 21	M30×250 mm	Pc.	69 31 81	M30×250 mm	Set
69 21 25	M36×100 mm	Pc.	69 31 85	M36×100 mm	Set
26	" ×140 "	"	86	" ×140 "	"
27	" ×150 "	"	87	" ×150 "	"
28	" ×180 "	"	88	" ×180 "	"

Brass

How to order : CODE

Bolt, hex head, brass, half threaded,
DIAM x LENGTH mm
or
Bolt with nut, hex head, brass, half threaded,
DIAM x LENGTH mm
If you require WHOLE THREADED, please specify.

CODE	Size	Unit	CODE	Size	Unit
Brass Bolt only			**Brass Bolt with Nut**		
69 32 01	M3 × 5 mm	Pc.	69 41 01	M3 × 5 mm	Set
02	" × 6 "	"	02	" × 6 "	"
03	" × 8 "	"	03	" × 8 "	"
04	" × 10 "	"	04	" × 10 "	"
05	" × 12 "	"	05	" × 12 "	"
69 32 06	M3 × 15 mm	Pc.	69 41 06	M3 × 15 mm	Set
07	" × 16 "	"	07	" × 16 "	"
08	" × 20 "	"	08	" × 20 "	"
09	" × 25 "	"	09	" × 25 "	"
10	" × 30 "	"	10	" × 30 "	"
69 32 11	M3 × 40 mm	Pc.	69 41 11	M3 × 40 mm	Set
12	" × 50 "	"	12	" × 50 "	"
13	" × 60 "	"	13	" × 60 "	"
14	" × 70 "	"	14	" × 70 "	"
15	" × 80 "	"	15	" × 80 "	"

(to be continued)

INTERNATIONAL MARINE PURCHASING ASSOCIATION

CODE	Size	Unit	CODE	Size	Unit
Brass Bolt only			**Brass Bolt with Nut**		
69 32 16	M3 × 90 mm	Pc.	69 41 16	M3 × 90 mm	Set
17	" ×100 "	"	17	" ×100 "	"
18	" ×110 "	"	18	" ×110 "	"
19	" ×120 "	"	19	" ×120 "	"
20	" ×130 "	"	20	" ×130 "	"
69 32 21	M3 ×140 mm	Pc.	69 41 21	M3 ×140 mm	Set
22	" ×150 "	"	22	" ×150 "	"
69 32 25	M4 × 6 mm	Pc.	69 41 25	M4 × 6 mm	Set
26	" × 8 "	"	26	" × 8 "	"
27	" × 10 "	"	27	" × 10 "	"
28	" × 12 "	"	28	" × 12 "	"
29	" × 14 "	"	29	" × 14 "	"
69 32 30	M4 × 15 mm	Pc.	69 41 30	M4 × 15 mm	Set
31	" × 16 "	"	31	" × 16 "	"
32	" × 18 "	"	32	" × 18 "	"
33	" × 20 "	"	33	" × 20 "	"
34	" × 25 "	"	34	" × 25 "	"
69 32 35	M4 × 30 mm	Pc.	69 41 35	M4 × 30 mm	Set
36	" × 35 "	"	36	" × 35 "	"
37	" × 40 "	"	37	" × 40 "	"
38	" × 45 "	"	38	" × 45 "	"
39	" × 50 "	"	39	" × 50 "	"
69 32 40	M4 × 60 mm	Pc.	69 41 40	M4 × 60 mm	Set
41	" × 70 "	"	41	" × 70 "	"
42	" × 80 "	"	42	" × 80 "	"
43	" × 90 "	"	43	" × 90 "	"
44	" ×100 "	"	44	" ×100 "	"
69 32 45	M4 ×110 mm	Pc.	69 41 45	M4 ×110 mm	Set
46	" ×120 "	"	46	" ×120 "	"
47	" ×130 "	"	47	" ×130 "	"
48	" ×140 "	"	48	" ×140 "	"
49	" ×150 "	"	49	" ×150 "	"
69 32 51	M5 × 6 mm	Pc.	69 41 51	M5 × 6 mm	Set
52	" × 8 "	"	52	" × 8 "	"
53	" × 10 "	"	53	" × 10 "	"
54	" × 12 "	"	54	" × 12 "	"
55	" × 14 "	"	55	" × 14 "	"
69 32 56	M5 × 15 mm	Pc.	69 41 56	M5 × 15 mm	Set
57	" × 16 "	"	57	" × 16 "	"
58	" × 18 "	"	58	" × 18 "	"
59	" × 20 "	"	59	" × 20 "	"
60	" × 22 "	"	60	" × 22 "	"
69 32 61	M5 × 25 mm	Pc.	69 41 61	M5 × 25 mm	Set
62	" × 30 "	"	62	" × 30 "	"
63	" × 35 "	"	63	" × 35 "	"
64	" × 40 "	"	64	" × 40 "	"
65	" × 45 "	"	65	" × 45 "	"
69 32 66	M5 × 50 mm	Pc.	69 41 66	M5 × 50 mm	Set
67	" × 60 "	"	67	" × 60 "	"
68	" × 70 "	"	68	" × 70 "	"
69	" × 80 "	"	69	" × 80 "	"
70	" × 90 "	"	70	" × 90 "	"
69 32 71	M5 ×100 mm	Pc.	69 41 71	M5 ×100 mm	Set
72	" ×110 "	"	72	" ×110 "	"
73	" ×120 "	"	73	" ×120 "	"
74	" ×130 "	"	74	" ×130 "	"
75	" ×140 "	"	75	" ×140 "	"
69 32 76	M5 ×150 mm	Pc.	69 41 76	M5 ×150 mm	Set
69 32 81	M6 × 8 mm	Pc.	69 43 01	M6 × 8 mm	Set
82	" × 10 "	"	02	" × 10 "	"
83	" × 12 "	"	03	" × 12 "	"
84	" × 14 "	"	04	" × 14 "	"
85	" × 15 "	"	05	" × 15 "	"
69 32 86	M6 × 16 mm	Pc.	69 43 06	M6 × 16 mm	Set
87	" × 18 "	"	07	" × 18 "	"
88	" × 20 "	"	08	" × 20 "	"
89	" × 22 "	"	09	" × 22 "	"
90	" × 25 "	"	10	" × 25 "	"

(to be continued)

69 32 91	M6 × 30 mm	Pc.	69 43 11	M6 × 30 mm	Set
92	" × 35 "	"	12	" × 35 "	"
93	" × 40 "	"	13	" × 40 "	"
94	" × 45 "	"	14	" × 45 "	"
95	" × 50 "	"	15	" × 50 "	"
69 32 96	M6 × 55 mm	Pc.	69 43 16	M6 × 55 mm	Set
97	" × 60 "	"	17	" × 60 "	"
98	" × 65 "	"	18	" × 65 "	"
99	" × 70 "	"	19	" × 70 "	"
69 33 00	" × 75 "	"	20	" × 75 "	"
69 33 01	M6 × 80 mm	Pc.	69 43 21	M6 × 80 mm	Set
02	" × 85 "	"	22	" × 85 "	"
03	" × 90 "	"	23	" × 90 "	"
04	" × 95 "	"	24	" × 95 "	"
05	" ×100 "	"	25	" ×100 "	"
69 33 06	M6 ×110 mm	Pc.	69 43 26	M6 ×110 mm	Set
07	" ×120 "	"	27	" ×120 "	"
08	" ×130 "	"	28	" ×130 "	"
09	" ×140 "	"	29	" ×140 "	"
10	" ×150 "	"	30	" ×150 "	"
69 33 11	M8 × 10 mm	Pc.	69 43 31	M8 × 10 mm	Set
12	" × 12 "	"	32	" × 12 "	"
13	" × 14 "	"	33	" × 14 "	"
14	" × 15 "	"	34	" × 15 "	"
15	" × 16 "	"	35	" × 16 "	"
69 33 16	M8 × 18 mm	Pc.	69 43 36	M8 × 18 mm	Set
17	" × 20 "	"	37	" × 20 "	"
18	" × 22 "	"	38	" × 22 "	"
19	" × 25 "	"	39	" × 25 "	"
20	" × 28 "	"	40	" × 28 "	"
69 33 21	M8 × 30 mm	Pc.	69 43 41	M8 × 30 mm	Set
22	" × 35 "	"	42	" × 35 "	"
23	" × 40 "	"	43	" × 40 "	"
24	" × 45 "	"	44	" × 45 "	"
25	" × 50 "	"	45	" × 50 "	"
69 33 26	M8 × 55 mm	Pc.	69 43 46	M8 × 55 mm	Set
27	" × 60 "	"	47	" × 60 "	"
28	" × 65 "	"	48	" × 65 "	"
29	" × 70 "	"	49	" × 70 "	"
30	" × 75 "	"	50	" × 75 "	"
69 33 31	M8 × 80 mm	Pc.	69 43 51	M8 × 80 mm	Set
32	" × 85 "	"	52	" × 85 "	"
33	" × 90 "	"	53	" × 90 "	"
34	" × 95 "	"	54	" × 95 "	"
35	" ×100 "	"	55	" ×100 "	"
69 33 36	M8 ×110 mm	Pc.	69 43 56	M8 ×110 mm	Set
37	" ×120 "	"	57	" ×120 "	"
38	" ×130 "	"	58	" ×130 "	"
39	" ×140 "	"	59	" ×140 "	"
40	" ×150 "	"	60	" ×150 "	"
69 33 41	M8 ×160 mm	Pc.	69 43 61	M8 ×160 mm	Set
42	" ×170 "	"	62	" ×170 "	"
43	" ×180 "	"	63	" ×180 "	"
44	" ×190 "	"	64	" ×190 "	"
45	" ×200 "	"	65	" ×200 "	"
69 33 51	M10× 10 mm	Pc.	69 45 01	M10× 10 mm	Set
52	" × 12 "	"	02	" × 12 "	"
53	" × 14 "	"	03	" × 14 "	"
54	" × 15 "	"	04	" × 15 "	"
55	" × 16 "	"	05	" × 16 "	"
69 33 56	M10× 18 mm	Pc.	69 45 06	M10× 18 mm	Set
57	" × 20 "	"	07	" × 20 "	"
58	" × 25 "	"	08	" × 25 "	"
59	" × 30 "	"	09	" × 30 "	"
60	" × 35 "	"	10	" × 35 "	"
69 33 61	M10× 40 mm	Pc.	69 45 11	M10× 40 mm	Set
62	" × 45 "	"	12	" × 45 "	"
63	" × 50 "	"	13	" × 50 "	"
64	" × 55 "	"	14	" × 55 "	"
65	" × 60 "	"	15	" × 60 "	"
69 33 66	M10× 65 mm	Pc.	69 45 16	M10× 65 mm	Set
67	" × 70 "	"	17	" × 70 "	"
68	" × 75 "	"	18	" × 75 "	"
69	" × 80 "	"	19	" × 80 "	"
70	" × 85 "	"	20	" × 85 "	"

(to be continued)

PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

CODE	Size	Unit
Brass Bolt only		
69 33 71	M10× 90 mm	Pc.
72	" × 95 "	"
73	" ×100 "	"
74	" ×105 "	"
75	" ×110 "	"
69 33 76	M10×115 mm	Pc.
77	" ×120 "	"
78	" ×125 "	"
79	" ×130 "	"
80	" ×140 "	"
69 33 81	M10×150 mm	Pc.
82	" ×160 "	"
83	" ×170 "	"
84	" ×180 "	"
85	" ×190 "	"
69 33 86	M10×200 mm	Pc.
87	" ×210 "	"
88	" ×220 "	"
89	" ×230 "	"
90	" ×240 "	"
69 33 91	M10×250 mm	Pc.
92	" ×300 "	"
69 36 01	M12× 10 mm	Pc.
02	" × 20 "	"
03	" × 25 "	"
04	" × 30 "	"
05	" × 35 "	"
69 36 06	M12× 40 mm	Pc.
07	" × 45 "	"
08	" × 50 "	"
09	" × 55 "	"
10	" × 60 "	"
69 36 11	M12× 65 mm	Pc.
12	" × 70 "	"
13	" × 75 "	"
14	" × 80 "	"
15	" × 85 "	"
69 36 16	M12× 90 mm	Pc.
17	" × 95 "	"
18	" ×100 "	"
19	" ×105 "	"
20	" ×110 "	"
69 36 21	M12×115 mm	Pc.
22	" ×120 "	"
23	" ×125 "	"
24	" ×130 "	"
25	" ×140 "	"
69 36 26	M12×150 mm	Pc.
27	" ×160 "	"
28	" ×170 "	"
29	" ×180 "	"
30	" ×190 "	"
69 36 31	M12×200 mm	Pc.
32	" ×210 "	"
33	" ×220 "	"
34	" ×230 "	"
35	" ×240 "	"
69 36 36	M12×250 mm	Pc.
37	" ×260 "	"
38	" ×270 "	"
39	" ×280 "	"
40	" ×290 "	"
69 36 41	M12×300 mm	Pc.
42	" ×310 "	"
43	" ×320 "	"
44	" ×330 "	"
45	" ×340 "	"
69 36 46	M12×350 mm	Pc.

CODE	Size	Unit
Brass Bolt with Nut		
69 45 21	M10× 90 mm	Set
22	" × 95 "	"
23	" ×100 "	"
24	" ×105 "	"
25	" ×110 "	"
69 45 26	M10×115 mm	Set
27	" ×120 "	"
28	" ×125 "	"
29	" ×130 "	"
30	" ×140 "	"
69 45 31	M10×150 mm	Set
32	" ×160 "	"
33	" ×170 "	"
34	" ×180 "	"
35	" ×190 "	"
69 45 36	M10×200 mm	Set
37	" ×210 "	"
38	" ×220 "	"
39	" ×230 "	"
40	" ×240 "	"
69 45 41	M10×250 mm	Set
42	" ×300 "	"
69 45 45	M12× 10 mm	Set
46	" × 20 "	"
47	" × 25 "	"
48	" × 30 "	"
49	" × 35 "	"
69 45 50	M12× 40 mm	Set
51	" × 45 "	"
52	" × 50 "	"
53	" × 55 "	"
54	" × 60 "	"
69 45 55	M12× 65 mm	Set
56	" × 70 "	"
57	" × 75 "	"
58	" × 80 "	"
59	" × 85 "	"
69 45 60	M12× 90 mm	Set
61	" × 95 "	"
62	" ×100 "	"
63	" ×105 "	"
64	" ×110 "	"
69 45 65	M12×115 mm	Set
66	" ×120 "	"
67	" ×125 "	"
68	" ×130 "	"
69	" ×140 "	"
69 45 70	M12×150 mm	Set
71	" ×160 "	"
72	" ×170 "	"
73	" ×180 "	"
74	" ×190 "	"
69 45 75	M12×200 mm	Set
76	" ×210 "	"
77	" ×220 "	"
78	" ×230 "	"
79	" ×240 "	"
69 45 80	M12×250 mm	Set
81	" ×260 "	"
82	" ×270 "	"
83	" ×280 "	"
84	" ×290 "	"
69 45 85	M12×300 mm	Set
86	" ×310 "	"
87	" ×320 "	"
88	" ×330 "	"
89	" ×340 "	"
69 45 90	M12×350 mm	Set

(to be continued)

69 36 51	M14× 25 mm	Pc.	69 47 01	M14× 25 mm	Set
52	" × 30 "	"	02	" × 30 "	"
53	" × 40 "	"	03	" × 40 "	"
54	" × 45 "	"	04	" × 45 "	"
55	" × 50 "	"	05	" × 50 "	"
69 36 56	M14× 55 mm	Pc.	69 47 06	M14× 55 mm	Set
57	" × 60 "	"	07	" × 60 "	"
58	" × 65 "	"	08	" × 65 "	"
59	" × 70 "	"	09	" × 70 "	"
60	" × 75 "	"	10	" × 75 "	"
69 36 61	M14× 80 mm	Pc.	69 47 11	M14× 80 mm	Set
62	" × 90 "	"	12	" × 90 "	"
63	" ×100 "	"	13	" ×100 "	"
69 36 65	M16× 10 mm	Pc.	69 47 15	M16× 10 mm	Set
66	" × 20 "	"	16	" × 20 "	"
67	" × 25 "	"	17	" × 25 "	"
68	" × 30 "	"	18	" × 30 "	"
69	" × 40 "	"	19	" × 40 "	"
69 36 70	M16× 45 mm	Pc.	69 47 20	M16× 45 mm	Set
71	" × 50 "	"	21	" × 50 "	"
72	" × 55 "	"	22	" × 55 "	"
73	" × 60 "	"	23	" × 60 "	"
74	" × 65 "	"	24	" × 65 "	"
69 36 75	M16× 70 mm	Pc.	69 47 25	M16× 70 mm	Set
76	" × 75 "	"	26	" × 75 "	"
77	" × 80 "	"	27	" × 80 "	"
78	" × 85 "	"	28	" × 85 "	"
79	" × 90 "	"	29	" × 90 "	"
69 36 80	M16× 95 mm	Pc.	69 47 30	M16× 95 mm	Set
81	" ×100 "	"	31	" ×100 "	"
82	" ×105 "	"	32	" ×105 "	"
83	" ×110 "	"	33	" ×110 "	"
84	" ×115 "	"	34	" ×115 "	"
69 36 85	M16×120 mm	Pc.	69 47 35	M16×120 mm	Set
86	" ×125 "	"	36	" ×125 "	"
87	" ×130 "	"	37	" ×130 "	"
88	" ×140 "	"	38	" ×140 "	"
89	" ×150 "	"	39	" ×150 "	"
69 36 90	M16×160 mm	Pc.	69 47 40	M16×160 mm	Set
91	" ×170 "	"	41	" ×170 "	"
92	" ×180 "	"	42	" ×180 "	"
93	" ×190 "	"	43	" ×190 "	"
94	" ×200 "	"	44	" ×200 "	"
69 36 95	M16×210 mm	Pc.	69 47 45	M16×210 mm	Set
96	" ×220 "	"	46	" ×220 "	"
97	" ×230 "	"	47	" ×230 "	"
98	" ×240 "	"	48	" ×240 "	"
99	" ×250 "	"	49	" ×250 "	"
69 37 01	M18× 30 mm	Pc.	69 47 51	M18× 30 mm	Set
02	" × 60 "	"	52	" × 60 "	"
03	" × 65 "	"	53	" × 65 "	"
04	" × 70 "	"	54	" × 70 "	"
05	" × 75 "	"	55	" × 75 "	"
69 37 06	M18× 80 mm	Pc.	69 47 56	M18× 80 mm	Set
07	" × 85 "	"	57	" × 85 "	"
08	" × 90 "	"	58	" × 90 "	"
09	" ×100 "	"	59	" ×100 "	"
10	" ×120 "	"	60	" ×120 "	"
69 37 11	M20× 10 mm	Pc.	69 47 61	M20× 10 mm	Set
12	" × 20 "	"	62	" × 20 "	"
13	" × 30 "	"	63	" × 30 "	"
14	" × 40 "	"	64	" × 40 "	"
15	" × 50 "	"	65	" 50 "	"
69 37 16	M20× 55 mm	Pc.	69 47 66	M20× 55 mm	Set
17	" × 60 "	"	67	" × 60 "	"
18	" × 65 "	"	68	" × 65 "	"
19	" × 70 "	"	69	" × 70 "	"
20	" × 75 "	"	70	" × 75 "	"
69 37 21	M20× 80 mm	Pc.	69 47 71	M20× 80 mm	Set
22	" × 85 "	"	72	" × 85 "	"
23	" × 90 "	"	73	" × 90 "	"
24	" × 95 "	"	74	" × 95 "	"
25	" ×100 "	"	75	" ×100 "	"

(to be continued)

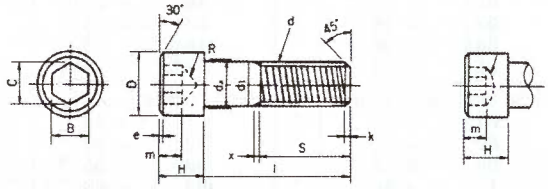
CODE	Size	Unit	CODE	Size	Unit
Brass Bolt only			**Brass Bolt with Nut**		
69 37 26	M20×105 mm	Pc.	**69 47 76**	M20×105 mm	Set
27	" ×110 "	"	**77**	" ×110 "	"
28	" ×115 "	"	**78**	" ×115 "	"
29	" ×120 "	"	**79**	" ×120 "	"
30	" ×125 "	"	**80**	" ×125 "	"
69 37 31	M20×130 mm	Pc.	**69 47 81**	M20×130 mm	Set
32	" ×140 "	"	**82**	" ×140 "	"
33	" ×150 "	"	**83**	" ×150 "	"
34	" ×160 "	"	**84**	" ×160 "	"
35	" ×170 "	"	**85**	" ×170 "	"
69 37 36	M20×180 mm	Pc.	**69 47 86**	M20×180 mm	Set
37	" ×190 "	"	**87**	" ×190 "	"
38	" ×200 "	"	**88**	" ×200 "	"
39	" ×210 "	"	**89**	" ×210 "	"
40	" ×230 "	"	**90**	" ×230 "	"
69 37 41	M20×260 mm	Pc.	**69 47 91**	M20×260 mm	Set
69 37 45	M22× 40 mm	Pc.	**69 51 01**	M22× 40 mm	Set
46	" × 45 "	"	**02**	" × 45 "	"
47	" × 50 "	"	**03**	" × 50 "	"
48	" × 55 "	"	**04**	" × 55 "	"
49	" × 60 "	"	**05**	" × 60 "	"
69 37 50	M22× 65 mm	Pc.	**69 51 06**	M22× 65 mm	Set
51	" × 70 "	"	**07**	" × 70 "	"
52	" × 75 "	"	**08**	" × 75 "	"
53	" × 80 "	"	**09**	" × 80 "	"
54	" × 85 "	"	**10**	" × 85 "	"
69 37 55	M22× 90 mm	Pc.	**69 51 11**	M22× 90 mm	Set
56	" × 95 "	"	**12**	" × 95 "	"
57	" ×100 "	"	**13**	" ×100 "	"
58	" ×105 "	"	**14**	" ×105 "	"
59	" ×110 "	"	**15**	" ×110 "	"
69 37 60	M22×115 mm	Pc.	**69 51 16**	M22×115 mm	Set
61	" ×120 "	"	**17**	" ×120 "	"
62	" ×125 "	"	**18**	" ×125 "	"
63	" ×130 "	"	**19**	" ×130 "	"
64	" ×140 "	"	**20**	" ×140 "	"
69 37 65	M22×150 mm	Pc.	**69 51 21**	M22×150 mm	Set
66	" ×160 "	"	**22**	" ×160 "	"
67	" ×170 "	"	**23**	" ×170 "	"
68	" ×200 "	"	**24**	" ×200 "	"
69	" ×220 "	"	**25**	" ×220 "	"
69 37 70	M22×230 mm	Pc.	**69 51 26**	M22×230 mm	Set
71	" ×260 "	"	**27**	" ×260 "	"
69 39 01	M24× 10 mm	Pc.	**69 51 31**	M24× 10 mm	Set
02	" × 20 "	"	**32**	" × 20 "	"
03	" × 30 "	"	**33**	" × 30 "	"
04	" × 40 "	"	**34**	" × 40 "	"
05	" × 45 "	"	**35**	" × 45 "	"
69 39 06	M24× 50 mm	Pc.	**69 51 36**	M24× 50 mm	Set
07	" × 55 "	"	**37**	" × 55 "	"
08	" × 60 "	"	**38**	" × 60 "	"
09	" × 65 "	"	**39**	" × 65 "	"
10	" × 70 "	"	**40**	" × 70 "	"
69 39 11	M24× 75 mm	Pc.	**69 51 41**	M24× 75 mm	Set
12	" × 80 "	"	**42**	" × 80 "	"
13	" × 85 "	"	**43**	" × 85 "	"
14	" × 90 "	"	**44**	" × 90 "	"
15	" × 95 "	"	**45**	" × 95 "	"
69 39 16	M24×100 mm	Pc.	**69 51 46**	M24×100 mm	Set
17	" ×105 "	"	**47**	" ×105 "	"
18	" ×110 "	"	**48**	" ×110 "	"
19	" ×115 "	"	**49**	" ×115 "	"
20	" ×120 "	"	**50**	" ×120 "	"
69 39 21	M24×125 mm	Pc.	**69 51 51**	M24×125 mm	Set
22	" ×130 "	"	**52**	" ×130 "	"
23	" ×140 "	"	**53**	" ×140 "	"
24	" ×150 "	"	**54**	" ×150 "	"
25	" ×170 "	"	**55**	" ×170 "	"
69 39 26	M24×220 mm	Pc.	**69 51 56**	M24×220 mm	Set
27	" ×250 "	"	**57**	" ×250 "	"
28	" ×260 "	"	**58**	" ×260 "	"

(to be continued)

69 39 31	M27× 90 mm	Pc.	**69 51 61**	M27× 90 mm	Set
32	" ×100 "	"	**62**	" ×100 "	"
33	" ×110 "	"	**63**	" ×110 "	"
34	" ×120 "	"	**64**	" ×120 "	"
35	" ×130 "	"	**65**	" ×130 "	"
69 39 36	M27×180 mm	Pc.	**69 51 66**	M27×180 mm	Set
69 39 41	M30× 75 mm	Pc.	**69 51 71**	M30× 75 mm	Set
42	" × 80 "	"	**72**	" × 80 "	"
43	" × 85 "	"	**73**	" × 85 "	"
44	" ×100 "	"	**74**	" ×100 "	"
45	" ×110 "	"	**75**	" ×110 "	"
69 39 46	M30×120 mm	Pc.	**69 51 76**	M30×120 mm	Set
47	" ×130 "	"	**77**	" ×130 "	"
48	" ×140 "	"	**78**	" ×140 "	"
49	" ×150 "	"	**79**	" ×150 "	"
50	" ×200 "	"	**80**	" ×200 "	"
69 39 51	M30×250 mm	Pc.	**69 51 81**	M30×250 mm	Set
69 39 55	M36×100 mm	Pc.	**69 51 85**	M36×100 mm	Set
56	" ×140 "	"	**86**	" ×140 "	"
57	" ×150 "	"	**87**	" ×150 "	"
58	" ×180 "	"	**88**	" ×180 "	"

Hexagon Socket Head Cap Screws

(Ref. JIS B 1176 – 88)



Size mm

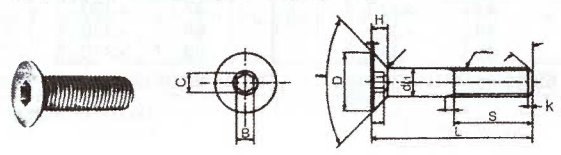
Nominal Size Coarse Thread	Pitch	d_1	D	H	B	C Approx.	L	S
		Standard Size					Recommended	
M3x0.5	0.5	3	5.5	3	2.5	0.2	4- 20	12
M4x0.7	0.7	4	7	4	3	0.3	4- 25	14
M5x0.8	0.8	5	8.5	5	4	0.3	8- 30	16
M 6	1	6	10	6	5	0.4	10 - 50	18
M 8	1.25	8	13	8	6	0.5	12-100	22
M10	1.5	10	16	10	8	0.6	14-120	26
M12	1.75	12	18	12	10	0.7	20-120	30
M16	2	16	24	16	14	1	25-160	38- 44
M20	2.5	20	30	20	17	1	35-180	46- 52
M24	3	24	36	24	19	1	45-300	54- 60- 73
M30	3.5	30	45	30	22	1.5	50-300	66- 72- 85
M36	4	36	54	36	27	1.5	70-300	78- 84- 97
M42	4.5	42	63	42	32	2	80-300	90- 96-109
M48	5	48	72	48	36	2	90-300	102-108-121

Material: Steel and Stainless Steel

Guide of How to Order

CODE **69 05 01**
Name ..... Hexagon socket head cap screw
Material ..... Steel
Nominal Size & Thread ..... M3 × 0.5 Coarse
Length ..... 12 mm

Flat Head Socket Screws



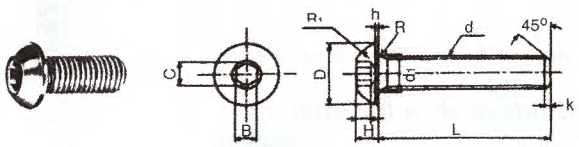
Size mm

Nominal Size	Pitch	d1	D	H	B	C	Recommended
		Standard Size				App-rox.	L	s
M3	0.5	3	6	1.7	2	2.3	6 - 20	12
M4	0.7	4	8	2.3	2.5	2.9	6 - 50	14
M5	0.8	5	10	2.8	3	3.6	8 - 50	16
M6	1	6	12	3.3	4	4.7	8 - 50	18
M8	1.25	8	16	4.4	5	5.9	12 - 70	22
M10	1.5	10	20	5.5	6	7.0	15 - 70	26
M12	1.75	12	24	6.5	8	9.4	20 - 50	30
M16	2	16	30	7.5	10	11.7	25 - 60	38

Guide of How to Order

CODE **69 06 01**
Name ..... Flat head socket screw
Material ..... Steel
Nominal Size & Thread ..... M3 x 0.5
Length ..... 6 mm

Button Head Socket Screws



Size mm

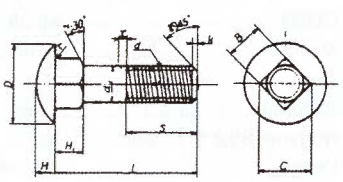
Nominal Size	Pitch	d1	D	H	B	C	Recommended
		Standard Size				App-rox.	L
M3	0.5	3	5.5	2	2	2.3	5 - 20
M4	0.7	4	7.5	2.6	2.5	2.9	6 - 50
M5	0.8	5	9.5	3.4	3	3.6	6 - 50
M6	1	6	10.5	4	4	4.7	8 - 50
M8	1.25	8	14	5	5	5.9	10 - 50
M10	1.5	10	18	6	6	7.0	15 - 50
M12	1.75	12	21	7	8	9.4	20 - 50
M16	2	16	28	8.5	10	11.7	25 - 60

Guide of How to Order

CODE **69 07 01**
Name ..... Button head socket screw
Material ..... Steel
Nominal Size & Thread ..... M3 x 0.5
Length ..... 5 mm

Cap Head Square Neck Bolts
(Carriage Bolts)

(Ref. JIS B 1171–91)



Size mm

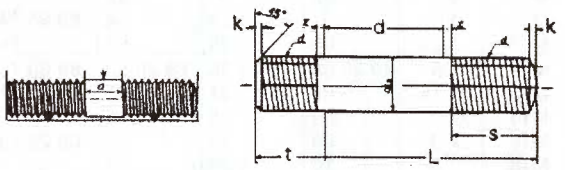
Nominal Size Coarse Thread	d_1	D	H	B	L
M 5x0.8	5	11.5 -17	2.5 - 5.5	6	25- 50
M 6	6	14 - 20	3 - 6	5	30- 75
M 8	8	18 - 26	4 - 7	8	35-100
M10	10	22 - 32	5 - 8	10	40-100
M12	12	26 - 38	6 - 9	12	45-130
M16	16	32	10	16	55-140

Material: Steel and Stainless Steel

Guide of How to Order

CODE **69 10 01**
Name ..... Cap head square neck bolt
Material ..... Steel
Nominal Size & Thread ..... M5 x 0.8 Coarse
Length ..... 25 mm

Stud Bolts
(Ref. JIS B 1173 – 87)



Size mm

Nominal Size (d)			M4	M5	M6	M8	M10	M12	M16	M20
Pitch	Coarse		0.7	0.8	1	1.25	1.5	1.75	2	2.5
	Fine						1.25	1.75	1.5	1.5
d		Standard Size	4	5	6	8	10	12	16	20
s			10	12	14	18	20	22	28	32
t	No.1						12	15	20	25
	No.2		6	7	8	11	15	18	24	30
	No.3		8	10	12	16	20	24	32	40
K Approx.			0.8	0.8	1	1.2	1.5	2	2	2.5
L			12-40	12-45	12-50	12-55	16-100	20-100	32-100	32-160

Material: Steel

Guide of How to Order

CODE **69 15 01**
Name ..... Stud bolt
Material ..... Steel
Nominal Size & Thread ..... M4 x 0.7
Length ..... 12 mm

Studs, Whole Threaded

Size mm

Nominal Size(d)		Length		Nominal Size(d)		Length	
Coarse	Fine			Coarse	Fine		
M3x0.5 M4x0.7 M5x0.8 M6 M8	M8x1	300	1,000	M10 M12 M16 M20 M24	M10x1.25 M12x1.25 M16x1.5 M20x1.5 M24x2	300	1,000

7TH
69

Material: Steel, Stainless Steel, Bronze, Brass or any other metals

Guide of How to Order

CODE **69 20 01**
Name ..... Stud whole thread
Material ..... Steel
Nominal Size & Thread..... M____ x ____ Coarse
Length..... ____ mm

Most common steel & brass studs are coded below.

Metric Coarse Threaded

How to order: CODE

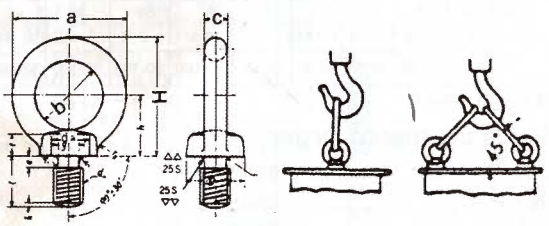
Stud, whole threaded, MATERIAL, THREAD DIAM x PITCH mm, LENGTH

Unit Per Pc.

Thread Diam.	Pitch of Thread	Steel Length 300 mm	Steel Length 1,000 mm	Brass Length 300 mm	Brass Length 1,000 mm
M 3	0.5	-	-	**69 20 51**	-
M 4	0.7	**69 20 02**	-	**52**	-
M 5	0.8	**03**	-	**53**	-
M 6	1.0	**04**	**69 20 24**	**54**	**69 20 74**
M 8	1.25	**05**	**25**	**55**	**75**
M10	1.5	**69 20 06**	**69 20 26**	**69 20 56**	**69 20 76**
M12	1.75	**07**	**27**	**57**	**77**
M14	2.0	**08**	**28**	**58**	-
M16	2.0	**09**	**29**	**59**	**69 20 79**
M18	2.5	**10**	**30**	**60**	-
M20	2.5	**69 20 11**	**69 20 31**	**69 20 61**	**69 20 81**
M22	2.5	**12**	**32**	**62**	-
M24	3.0	**13**	**33**	**63**	-

Eye Bolts, Steel

(Ref. JIS B 1168 – 75)



How to order: CODE

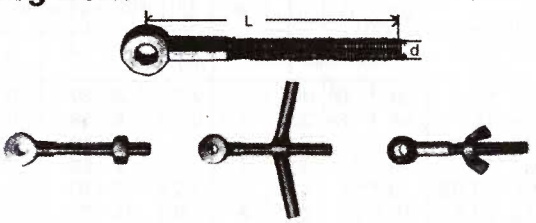
Eye bolt, MATERIAL, SIZE

Unit Per Pc.

CODE	Nominal Size(d)	Size mm a	b	c	H	S.W.L. kgs Vertical	45x2Pcs
69 22 01	M 8	32.6	20	6.3	39.3	80	80
02	M10	41	25	8	48.5	150	150
03	M12	50	30	10	61	220	220
04	M16	60	35	12.5	72	450	450
05	M20	72	40	16	86	630	630
69 22 06	M24	90	50	20	111	950	950
07	M30	110	60	25	135	1,500	1,500
08	M36	133	70	31.5	161.5	2,300	2,300
09	M48	170	90	40	208	4,500	4,500
10	M64	210	110	50	256	9,000	9,000

Material: Steel but stainless steel made also available on application.

Dog Bolts



With Hex Nut With Wing Nut With Butterfly Nut

Diameter (d) Metric Coarse Thread	L mm	Diameter (d) Whitworth Thread	L mm
M 8	60	3/8"	60
M10	60	3/8"	80
M12	80	3/8"	100
M16	100	1/2"	80
M20	120	1/2"	100
M22	140	1/2"	120
M22	200	5/8"	100
M24	160	5/8"	120
M24	200	5/8"	150
		3/4"	120
		3/4"	150
		3/4"	180
		7/8"	140
		7/8"	160
		1"	180

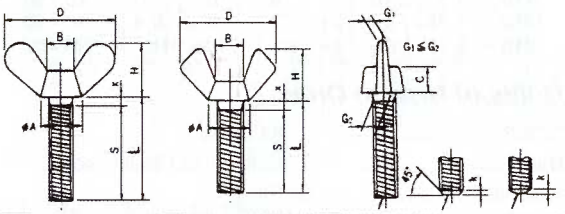
Material: Bronze, Steel, Stainless Steel

Guide of How to Order

CODE **69 24 01**
Name ..... Dog bolt
Material ..... Bronze
Nominal Size & Thread..... M8 Metric Coarse
Length..... 60 mm
Type of Nut ..... with hex nut

Wing Bolts

(Ref. JIS B 1184 – 87)



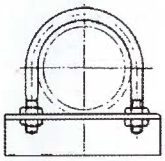
Type		No. 1 or No. 2
Material		Steel, Cast Iron, Bronze, Brass etc.
Nominal Size		M2 - M24
Thread		Metric Coarse Thread
Size mm	D	12 - 112
	H	6 - 56
	L	5 - 150

Guide of How to Order

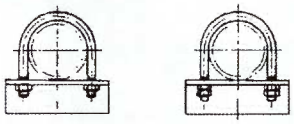
CODE **69 26 01**
Name ..... Wing bolt
Type..... No. 1
Material..... Steel
Nominal Size & Thread..... M2
Length..... 10 mm

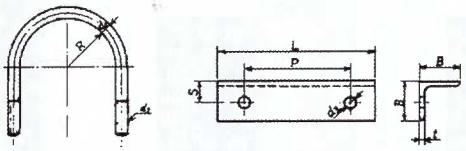
Ship's Steel Pipe U-Bolts

Nominal Sizes 100 or more



Nominal Sizes 90 or less





Remark: The seat made from steel angle bar is shown.

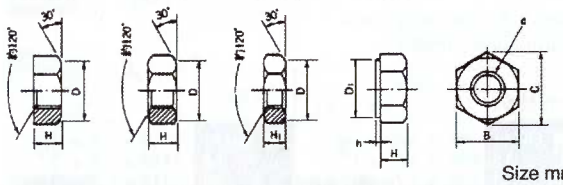
Unit Per Pc./Set

CODE		Nominal Size A	Outside Dia. of Pipe mm	Nominal Size of Thread
Without Seat & Nut (Pc)	With Seat & Nut (Set)			
69 67 01	**69 67 31**	15A	21.7	M10
02	**32**	20A	27.2	M10
03	**33**	25A	34.0	M10
04	**34**	32A	42.7	M10
05	**35**	40A	48.6	M10
69 67 06	**69 67 36**	50A	60.5	M10
07	**37**	65A	76.3	M12
08	**38**	80A	89.1	M12
09	**39**	90A	101.6	M12
10	**40**	100A	114.3	M16
69 67 11	**69 67 41**	125A	139.8	M16
12	**42**	150A	165.2	M16
69 67 13	**69 67 43**	175A	190.7	M16
14	**44**	200A	216.3	M20
15	**45**	225A	241.8	M20
16	**46**	250A	267.4	M20
17	**47**	300A	318.5	M24
69 67 18	**69 67 48**	350A	355.6	M24
19	**49**	400A	406.4	M24
20	**50**	450A	457.2	M30
21	**51**	500A	508.0	M30
22	**52**	550A	558.8	M30
69 67 23	**69 67 53**	600A	609.6	M36
24	**54**	650A	660.4	M36

Hexagon Nuts

(Ref. JIS B 1181 – 93)

No. 1 No. 2 No. 3 No. 4



Size mm

Nominal Size		H	H_1	B	C	D	D_1
Coarse	Fine	Standard Size			Approx.		Minimum
M 2		1.6	1.2	4	4.6	3.8	
M 2.3		1.8	1.4	4.5	5.2	4.3	
M 2.5		2	1.6	5	5.8	4.7	
M 3x0.5		2.4	1.8	5.5	6.4	5.3	
M 4x0.7		3.2	2.4	7	8.1	6.8	
M 5x0.8		4	3.2	8	9.2	7.8	7.2
M 6		5	3.6	10	11.5	9.8	9
M 8	M 8x1	6.5	5	13	15	12.5	11.7
M10	M10x1.25	8	6	17	19.6	16.5	15.8
M12	M12x1.25	10	7	19	21.9	18	17.6
M16	M16x1.5	13	10	24	27.7	23	22.3
M20	M20x1.5	16	12	30	34.6	29	25.6
M24	M24x2	19	14	36	41.6	34	28.5
M30	M30x2	24	18	46	53.1	44	34.2
M36	M36x3	29	21	55	63.5	53	
M42		34	25	65	75	62	
M48		38	29	75	86.5	72	
M56		45	34	85	98.1	82	
M64		51	38	95	110	92	

Material: Steel, Stainless Steel, Bronze or Brass, etc.

How to Order: CODE

Nut, hex head, MATERIAL, SIZE

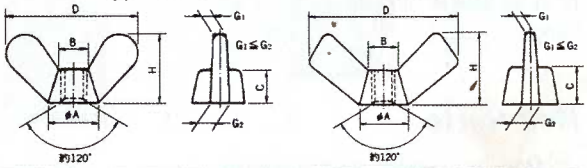
Unit Per Pc.

Nominal Size	CODE		
	Steel Ungalv.	Stainless Steel	Brass
M 3	**69 28 01**	**69 28 21**	**69 28 41**
4	**02**	**22**	**42**
5	**03**	**23**	**43**
6	**04**	**24**	**44**
8	**05**	**25**	**45**
M10	**69 28 06**	**69 28 26**	**69 28 46**
12	**07**	**27**	**47**
14	**08**	**28**	**48**
16	**09**	**29**	**49**
18	**10**	**30**	**50**
M20	**69 28 11**	**69 28 31**	**69 28 51**
22	**12**	**32**	**52**
24	**13**	**33**	**53**
27	**14**	**34**	**54**
30	**15**	**35**	**55**
M36	**69 28 16**	**69 28 36**	**69 28 56**

Wing Nuts

(Ref. JIS B 1185 – 87)

Type No. 1 Type No. 2



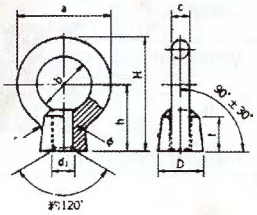
Type		No. 1 or No. 2
Material		Steel, Cast Iron, Bronze, Brass etc.
Nominal Size		M2 - M24
Thread		Metric Coarse Thread
Size mm	D	12 - 112
	H	6 - 56

Guide of How to Order

CODE **69 30 01**
Name ..... Wing nut
Type ..... No. 1
Material ..... Steel
Nominal Size & Thread..... M2

Eye Nuts

(Ref. JIS B 1169 – 75)



(to be continued)

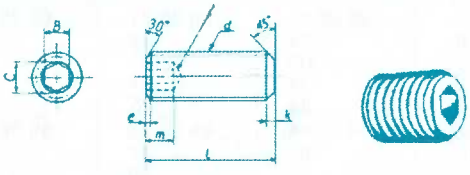
Unit Per Pc.

CODE	Nominal Size(d)	Size mm a	b	c	H	S.W.L. kgs Vertical	45°x2
69 34 01	M 8	32.6	20	6.3	39.3	80	80
02	M10	41	25	8	48.5	150	150
03	M12	50	30	10	61	220	220
04	M16	60	35	12.5	72	450	450
05	M20	72	40	16	86	630	630
69 34 06	M24	90	50	20	111	950	950
07	M30	110	60	25	135	1,500	1,500
08	M36	133	70	31.5	161.5	2,300	2,300
09	M42	151	80	35.5	184.5	2,400	3,400
10	M48	170	90	40	208	4,500	4,500
69 34 11	M64	210	110	50	256	9,000	9,000

Thread : Metric Coarse Thread
Material : Steel but stainless steel made also available on application.

Hexagon Socket Set Screws

(Ref. JIS B 1177 – 88)



Material Nominal Size Thread		Steel M3 x 05 - M20 Metric Coarse Thread
Size mm	B	1.5 - 10
	C	1.7 - 11.7
	L	3 - 50

Guide of How to Order

CODE 69 35 01
Name ..... Hexagon socket set screw
Material ..... Steel
Nominal Size & Thread ..... M3 x 0.5
Length ..... 6 mm

Heli-Serts

Made of stainless steel or bronze.

Instead of building up a thread hole by welding worn out threads or using bushes for rethreading, you just have to clean the hole with a tap and insert these heli-serts.

Tightening procedure is the same as with the original thread.

The proper length of the heli-sert should usually be 1 – 2 times the length of the standard bolts being used.

Kind of Thread		Nominal Size
Metric	Coarse	M2.2 - M36
	Fine	M8 - M30
Whitworth Coarse		W1/4 - W1-1/2
Unity	Coarse	U No. 2 - U1-1/2
	Fine	U No. 6 - U1-1/2
Parallel Pipe Thread		3/8, 3/4

Guide of How to Order

CODE 69 38 01
Name ..... Heli-Sert
Material ..... Stainless Steel
Nominal Size M10
Thread ..... Metric coarse thread 1.5
Length ..... 32 mm

Material: Stainless Steel
Metric Coarse Thread

Unit Per Pc

CODE	Size mm Diam. x Pitch x L	CODE	Size mm Diam. x Pitch x L
69 38 11	M2 x 0.4 x 2	69 38 56	M10 x 1.5 x 10
12	M2 x 0.4 x 3	57	M10 x 1.5 x 15
13	M2 x 0.4 x 4	58	M10 x 1.5 x 20
14	M2 x 0.4 x 5	59	M10 x 1.5 x 25
15	M2 x 0.4 x 6	60	M10 x 1.5 x 30
69 38 16	M2.5 x 0.45 x 2.5	69 38 61	M12 x 1.75 x 12
17	M2.5 x 0.45 x 4	62	M12 x 1.75 x 18
18	M2.5 x 0.45 x 5	63	M12 x 1.75 x 24
19	M2.5 x 0.45 x 6	64	M12 x 1.75 x 30
20	M2.5 x 0.45 x 7.5	65	M12 x 1.75 x 36
69 38 21	M3 x 0.5 x 3	69 38 66	M14 x 2.0 x 14
22	M3 x 0.5 x 4.5	67	M14 x 2.0 x 21
23	M3 x 0.5 x 6	68	M14 x 2.0 x 28
24	M3 x 0.5 x 7.5	69	M14 x 2.0 x 35
25	M3 x 0.5 x 9	70	M14 x 2.0 x 42
69 38 26	M3.5 x 0.6 x 3.5	69 38 71	M16 x 2.0 x 16
27	M3.5 x 0.6 x 5	72	M16 x 2.0 x 24
28	M3.5 x 0.6 x 7	73	M16 x 2.0 x 32
29	M3.5 x 0.6 x 9	74	M16 x 2.0 x 40
30	M3.5 x 0.6 x 10.5	75	M16 x 2.0 x 48
69 38 31	M4 x 0.7 x 4	69 38 76	M18 x 2.5 x 18
32	M4 x 0.7 x 6	77	M18 x 2.5 x 27
33	M4 x 0.7 x 8	78	M18 x 2.5 x 36
34	M4 x 0.7 x 10	79	M18 x 2.5 x 45
35	M4 x 0.7 x 12	80	M18 x 2.5 x 54
69 38 36	M5 x 0.8 x 5	69 38 81	M20 x 2.5 x 20
37	M5 x 0.8 x 7.5	82	M20 x 2.5 x 30
38	M5 x 0.8 x 10	83	M20 x 2.5 x 40
39	M5 x 0.8 x 12.5	84	M20 x 2.5 x 50
40	M5 x 0.8 x 15	85	M20 x 2.5 x 60
69 38 41	M6 x 1.0 x 6	69 38 86	M22 x 2.5 x 22
42	M6 x 1.0 x 9	87	M22 x 2.5 x 33
43	M6 x 1.0 x 12	88	M22 x 2.5 x 44
44	M6 x 1.0 x 15	89	M22 x 2.5 x 55
45	M6 x 1.0 x 18	90	M22 x 2.5 x 66
69 38 46	M7 x 1.0 x 7	69 38 91	M24 x 3.0 x 24
47	M7 x 1.0 x 10.5	92	M24 x 3.0 x 36
48	M7 x 1.0 x 14	93	M24 x 3.0 x 48
49	M7 x 1.0 x 17.5	94	M24 x 3.0 x 60
50	M7 x 1.0 x 21	95	M24 x 3.0 x 72
69 38 51	M8 x 1.25 x 8	69 38 96	M27 x 3.0 x 40
52	M8 x 1.25 x 12	97	M30 x 3.5 x 45
53	M8 x 1.25 x 16	98	M33 x 3.5 x 49
54	M8 x 1.25 x 20	99	M36 x 4.0 x 54
55	M8 x 1.25 x 24		

Material : Stainless Steel
Metric Fine Thread

Unit Per Pc

CODE	Size mm Diam. x Pitch x L	CODE	Size mm Diam. x Pitch x L
69 53 11	M8 x 1.0 x 8	69 53 51	M18 x 1.5 x 18
12	M8 x 1.0 x 12	52	M18 x 1.5 x 27
13	M8 x 1.0 x 16	53	M18 x 1.5 x 36
14	M8 x 1.0 x 20	54	M18 x 1.5 x 45
15	M8 x 1.0 x 24	55	M18 x 1.5 x 54
69 53 16	M10 x 1.0 x 10	69 53 56	M20 x 1.5 x 20
17	M10 x 1.0 x 15	57	M20 x 1.5 x 30
18	M10 x 1.0 x 20	58	M20 x 1.5 x 40
19	M10 x 1.0 x 25	59	M20 x 1.5 x 50
20	M10 x 1.0 x 30	60	M20 x 1.5 x 60

(to be continued)

Unit Per Pc

CODE	Size mm Diam. × Pitch × L	CODE	Size mm Diam. × Pitch × L
69 53 21	M10 x 1.25 x 10	69 53 61	M20 x 2.0 x 20
22	M10 x 1.25 x 15	62	M20 x 2.0 x 30
23	M10 x 1.25 x 20	63	M20 x 2.0 x 40
24	M10 x 1.25 x 25	64	M20 x 2.0 x 50
25	M10 x 1.25 x 30	65	M20 x 2.0 x 60
69 53 26	M12 x 1.0 x 12	69 53 66	M22 x 1.5 x 22
27	M12 x 1.0 x 18	67	M22 x 1.5 x 33
28	M12 x 1.0 x 24	68	M22 x 1.5 x 44
29	M12 x 1.0 x 30	69	M22 x 1.5 x 55
30	M12 x 1.0 x 36	70	M22 x 1.5 x 66
69 53 31	M12 x 1.25 x 12	69 53 71	M24 x 1.5 x 24
32	M12 x 1.25 x 18	72	M24 x 1.5 x 36
33	M12 x 1.25 x 24	73	M24 x 1.5 x 48
34	M12 x 1.25 x 30	74	M24 x 1.5 x 60
35	M12 x 1.25 x 36	75	M24 x 1.5 x 72
69 53 36	M12 x 1.5 x 12	69 53 76	M24 x 2.0 x 24
37	M12 x 1.5 x 18	77	M24 x 2.0 x 36
38	M12 x 1.5 x 24	78	M24 x 2.0 x 48
39	M12 x 1.5 x 30	79	M24 x 2.0 x 60
40	M12 x 1.5 x 36	80	M24 x 2.0 x 72
69 53 41	M14 x 1.5 x 14	69 53 81	M27 x 2.0 x 40
42	M14 x 1.5 x 21	82	M28 x 1.5 x 42
43	M14 x 1.5 x 28	83	M30 x 1.5 x 45
44	M14 x 1.5 x 35	84	M30 x 2.0 x 45
45	M14 x 1.5 x 42	85	M33 x 2.0 x 49
69 53 46	M16 x 1.5 x 16	69 53 86	M36 x 1.5 x 54
47	M16 x 1.5 x 24	87	M36 x 2.0 x 54
48	M16 x 1.5 x 32	88	M36 x 3.0 x 54
49	M16 x 1.5 x 40		
50	M16 x 1.5 x 48		

Material: Stainless Steel
BSW

Unit Per Pc.

CODE	Size mm Diam. × L mm	CODE	Size mm Diam. × L mm
69 57 11	BSW 1/8" × 5	69 57 17	BSW 1/2" × 19
12	BSW 3/16" × 7	18	BSW 9/16" × 21
13	BSW 1/4" × 9	19	BSW 5/8" × 24
14	BSW 5/16" × 12	20	BSW 3/4" × 29
15	BSW 3/8" × 14	21	BSW 7/8" × 33
69 57 16	BSW 7/16" × 17	69 57 22	BSW 1" × 38

Material: Stainless Steel
BSF

Unit Per Pc

CODE	Size mm Diam. × L mm	CODE	Size mm Diam. × L mm
69 57 26	BSF 3/16" × 7	69 57 32	BSF 9/16" × 21
27	BSF 1/4" × 9	33	BSF 5/8" × 24
28	BSF 5/16" × 12	34	BSF 3/4" × 29
29	BSF 3/8" × 14	35	BSF 7/8" × 33
30	BSF 7/16" × 17	36	BSF 1" × 38
69 57 31	BSF 1/2" × 19		

Material: Stainless Steel
UNC

Unit Per Pc.

CODE	Size mm Diam × L mm	CODE	Size mm Diam. × L mm
69 57 41	UNC 1/4" × 9	69 57 48	UNC 3/4" × 29
42	UNC 5/16" × 12	49	UNC 7/8" × 33
43	UNC 3/8" × 14	50	UNC 1" × 38
44	UNC 7/16" × 17	51	UNC 1-1/8" × 43
45	UNC 1/2" × 19	52	UNC 1-1/4" × 48
69 57 46	UNC 9/16" × 21	69 57 53	UNC 1-3/8" × 52
47	UNC 5/8" × 24	54	UNC 1-1/2" × 57

Material: Stainless Steel
UNF

Unit Per Pc.

CODE	Size mm Diam. × L mm	CODE	Size mm Diam. × L mm
69 57 56	UNF 1/4" × 9	69 57 63	UNF 3/4" × 29
57	UNF 5/16" × 12	64	UNF 7/8" × 33
58	UNF 3/8" × 14	65	UNF 1" × 38
59	UNF 7/16" × 17	66	UNF 1-1/8" × 43
60	UNF 1/2" × 19	67	UNF 1-1/4" × 48
69 57 61	UNF 9/16" × 21	69 57 68	UNF 1-3/8" × 52
62	UNF 5/8" × 24	69	UNF 1-1/2" × 57

Material: Stainless Steel
BSP

Unit Per Pc.

CODE	Size mm Diam. × L mm	CODE	Size mm Diam. × L mm
69 57 71	BSP 1/8" × 15	69 57 75	BSP 5/8" × 34
72	BSP 1/4" × 19	76	BSP 3/4" × 40
73	BSP 3/8" × 25	77	BSP 7/8" × 45
74	BSP 1/2" × 31	78	BSP 1" × 49

Manual Inserting Tool

Metric Size

Unit Per Pc.

CODE	For Heli-sert	CODE	For Heli-sert
Coarse Thread		Fine Thread	
69 59 11	M2 × 0.4	69 59 31	M8 × 1.0
12	M2.5 × 0.45	32	M10 × 1.0
13	M3 × 0.5	33	M10 × 1.25
14	M3.5 × 0.6	34	M12 × 1.0
15	M4 × 0.7	35	M12 × 1.25
69 59 16	M5 × 1.0	69 59 36	M12 × 1.5
17	M6 × 1.0	37	M14 × 1.5
18	M7 × 1.0	38	M16 × 1.5
19	M8 × 1.25	39	M18 × 1.5
20	M10 × 1.5	40	M20 × 1.5
69 59 21	M12 × 1.75	69 59 41	M20 × 2.0
22	M14 × 2.0	42	M22 × 1.5
23	M16 × 2.0	43	M24 × 1.5
24	M18 × 2.5	44	M24 × 2.0
25	M20 × 2.5		
69 59 26	M22 × 2.5		
27	M24 × 3.0		

BSW

Unit Per Pc.

CODE	For Heli-sert	CODE	For Heli-sert
69 59 51	BSW 1/8"	69 59 57	BSW 1/2"
52	BSW 3/16"	58	BSW 9/16"
53	BSW 1/4"	59	BSW 5/8"
54	BSW 5/16"	60	BSW 3/4"
55	BSW 3/8"	61	BSW 7/8"
69 59 56	BSW 7/16"	69 59 62	BSW 1"

BSF

Unit Per Pc.

CODE	For Heli-sert	CODE	For Heli-sert
69 59 66	BSF 3/16"	69 59 72	BSF 9/16"
67	BSF 1/4"	73	BSF 5/8"
68	BSF 5/16"	74	BSF 3/4"
69	BSF 3/8"	75	BSF 7/8"
70	BSF 7/16"	76	BSF 1"
69 59 71	BSF 1/2"		

UNC

Unit Per Pc.

CODE	For Heli-sert	CODE	For Heli-sert
69 59 81	UNC 1/4"	**69 59 86**	UNC 9/16"
82	UNC 5/16"	**87**	UNC 5/8"
83	UNC 3/8"	**88**	UNC 3/4"
84	UNC 7/16"	**89**	UNC 7/8"
85	UNC 1/2"	**90**	UNC 1"

UNF

Unit Per Pc.

CODE	For Heli-sert	CODE	For Heli-sert
69 61 11	UNF 1/4"	**69 61 16**	UNF 9/16"
12	UNF 5/16"	**17**	UNF 5/8"
13	UNF 3/8"	**18**	UNF 3/4"
14	UNF 7/16"	**19**	UNF 7/8"
15	UNF 1/2"	**20**	UNF 1"

Inserting Tool 1/2"

Metric Size

Unit Per Pc.

CODE	For Heli-sert	CODE	For Heli-sert
Coarse Thread		Fine Thread	
69 61 21	M27 x 3.0	**69 61 26**	M27 x 2.0
22	M30 x 3.5	**27**	M28 x 1.5
23	M33 x 3.5	**28**	M30 x 1.5
24	M36 x 4.0	**29**	M30 x 2.0
		30	M33 x 2.0
		69 61 31	M36 x 3.0
		32	M36 x 2.0
		33	M36 x 1.5

UNC / UNF / BSP

Unit Per Pc.

CODE	For Heli-sert	CODE	For Heli-sert
Inserting Tool 1/2" - UNC		Inserting Tool 1/4" - BSP	
69 61 36	UNC 1-1/8"	**69 61 46**	BSP 1/8"
37	UNC 1-1/4"	**47**	BSP 1/4"
38	UNC 1-3/8"	**48**	BSP 3/8"
39	UNC 1-1/2"	**49**	BSP 1/2"
Inserting Tool 1/2" - UNF		Inserting Tool 1/2" - BSP	
69 61 41	UNF 1-1/8"	**69 61 51**	BSP 5/8"
42	UNF 1-1/4"	**52**	BSP 3/4"
43	UNF 1-3/8"	**53**	BSP 7/8"
44	UNF 1-1/2"	**54**	BSP 1"

Manual Removal Tool

Unit Per Pc.

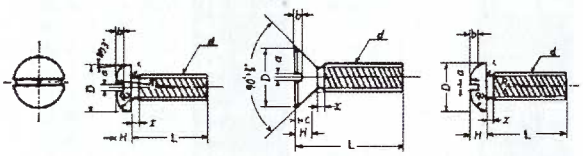
CODE	For Heli-sert	CODE	For Heli-sert
69 61 56	M3 – M10	**69 61 58**	3/16" – 3/8"
57	M11 – M24	**59**	3/8" – 1"

Various Tools for Heli-Sert

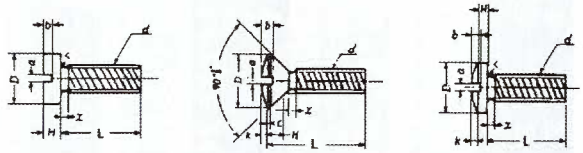
P-Type Inserting Tool | S-Type Inserting Tool | Tongue Removal Tool | T-Type Removal Tool | Powered Inserting Tool

Slotted Head Machine Screws

(Ref. JIS B 1101 – 87)



Pan | Countersunk Flat | Round



Flat | Oval | Fillister

Size mm

d Nominal Size	Pitch	D Pan, Round Court. Flat, Fillister	D Flat, Oval	D Truss	D Binding	L
M1.0	0.25	2.0	2.0			3-10
M1.2	0.25	2.3	2.4			3-12
M1.6	0.35	3.0	3.2			3-16
M1.7	0.35	3.2	3.4			4-20
M2.0	0.40	3.5	4.0	4.5	4.3	4-20
M2.3	0.40	4.0	4.6	5.2	4.9	5-30
M2.5	0.45	4.5	5.0	5.7	5.3	5-30
M2.6	0.45	4.5	5.2	5.9	5.5	5-30
M3x0.5	0.50	5.5	6.0	6.9	6.3	5-40
M4x0.7	0.70	7.0	6.0	9.4	6.3	6-50
M5x0.8	0.80	9.0	10.0	11.8	10.3	8-50
M6.0	1.00	10.5	12.0	14.0	12.4	8-60
M8.0	1.25	14.0	16.0	17.8	16.4	10-60

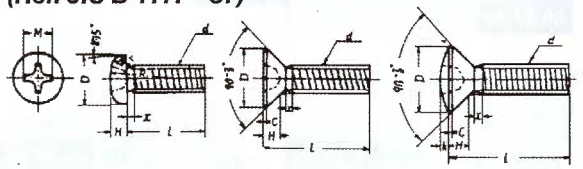
Material: Steel, Stainless Steel, Brass
Thread : Metric Coarse Thread

Guide of How to Order

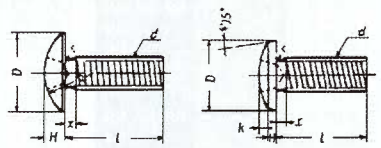
CODE	**69 40 01**
Name	Machine screw
Material	Steel
Shape	Slotted round head
Nominal Size & Thread	M1.6
Length	8 mm

Cross-Recessed Head Machine Screws

(Ref. JIS B 1111 – 87)



Pan | Countersunk Flat | Oval



Truss | Binding

Size mm

Nominal Size d	Pitch	Cross No.	D				L
			Pan	Count. Oval	Truss	Binding	
M2	0.4	1	3.5	4	4.5	4.3	4-20
M2.3	0.4		4	4.6	5.2	4.9	5-30
M2.5	0.45		4.5	5	5.7	5.3	5-30
M2.6	0.45	2	4.5	5.2	5.9	5.5	5-30
M3 x0.5	0.5		5.5	6	6.9	6.3	5-40
M4 x0.7	0.7		7	8	9.4	8.3	6-50
M4.5	0.75		8	9	10.6	9.3	6-50
M5 x0.8	0.8		9	10	11.8	10.3	8-50
M6	1.0	3	10.5	12	14	12.4	8-60
M8	1.25		14	16	17.8	16.4	10-60

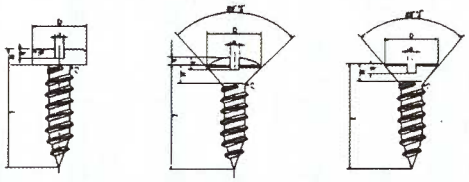
Material: Steel, Stainless Steel, Brass
Thread : Metric Coarse Thread

Guide of How to Order

CODE **69 42 01**
Name ..... Machine screw
Material ..... Brass
Shape ..... Cross recessed oval head
Nominal Size & Thread..... M3 × 0.5
Length..... 20 mm

Tapping Screws
(Sheet Metal Screws)

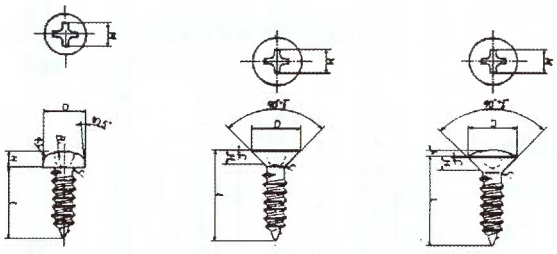
Slotted Head
(Ref. JIS B 1115 – 88)



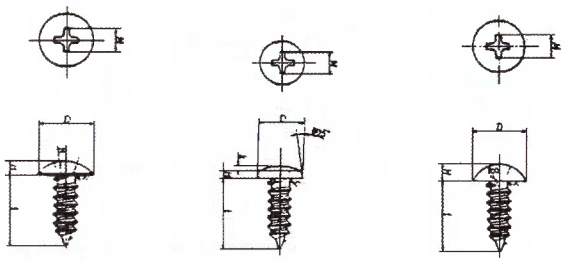
Pan Head Oval Head Countersunk Head

Nominal Size	2 - 6
Material	Steel, Stainless Steel
Length mm	2 - 50

Cross-Recessed Head
(Ref. JIS B 1122 – 88)



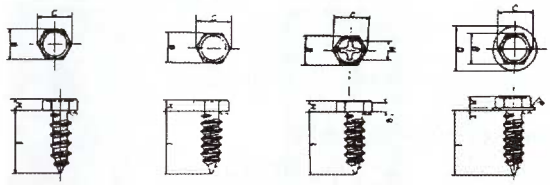
Pan Head Countersunk Head Oval Head



Trust Head Binding Head Round Head

Nominal Size	2 - 6
Material	Steel, Stainless Steel
Length mm	2 - 50

Hexagon Head
(Ref. JIS B 1123 – 88)



Nominal Size	2.2 - 8
Material	Steel, Stainless Steel
Length mm	5 - 60

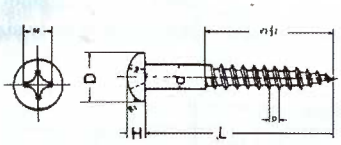
Guide of How to Order

CODE **69 44 01**
Name ..... Tapping screw
Material ..... Steel
Shape ..... Cross recessed oval head
Nominal Size ..... 2.2 mm
Length..... 5 mm

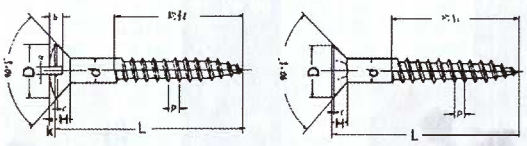
Please confirm Thread Type when ordering.

Slotted Head Wood Screws
(Ref. JIS B 1135 – 74)

Cross-Recessed Head Wood Screws
(Ref. JIS B 1112 – 74)



Round Head



Oval Head Countersunk Flat

Size mm

Nominal Size d	Cross Recessed No	D Head Round	D Head Oval	H (H+K) Head Round	H (H+K) Count	H (H+K) (H+K) Oval	L
1.6		3	3.2	1.3	0.95	1.35	
1.8		3.3	3.6	1.4	1.05	1.45	
2.1	1	3.9	4.2	1.6	1.25	1.75	6.3- 13
2.4		4.4	4.8	1.8	1.4	2	6.3- 20
2.7		5	5.4	2	1.55	2.25	10 - 20
3.1		5.7	6.2	2.3	1.8	2.6	10 - 25
3.5		6.5	7	2.5	2	2.8	13 - 40
3.8	2	7	7.6	2.7	2.15	3.05	13 - 40
4.1		7.6	8.2	2.9	2.35	3.35	16 - 50
4.5		8.3	9	3.1	2.55	3.65	16 - 63
4.8		8.9	9.6	3.3	2.7	3.8	20 - 70
5.1		9.4	10.2	3.5	2.85	4.05	20 - 70
5.5		10.2	11	3.8	3.05	4.35	20 - 80
5.8	3	10.7	11.6	4	3.2	4.6	22 - 80
6.2		11.5	12.4	4.2	3.5	4.9	25 - 80
6.8		12.6	13.6	4.6	3.8	5.4	25 -100
7.5		13.9	15	5	4.15	5.95	25 -100
8	4	14.8	16	5.3	4.4	6.2	32 -100
9.5		17.6	19	6.3	5.15	7.45	32 -100

Material: Steel, Stainless Steel, and Brass

Guide of How to Order

CODE **69 46 01**
Name ..... Wood screw
Material ..... Brass
Head Type ..... Slotted round head
Nominal Size & Thread ..... 2.4 mm
Length ..... 10 mm

Plain Washers

(Ref. JIS B 1256 – 78)

Type — Small Size, Polished, Normal
Material — Steel, Stainless Steel, Brass
Nomianl Size — 1 - 82 mm

Guide of How to Order

CODE **69 48 01**
Name ..... Round washer
Material ..... Steel, Stainless steel or Brass
Nominal Size ..... Specify necessary size

Steel

Unit Per Pc

CODE	Size mm I.D.	O.D.	Thick	CODE	Size mm I.D.	O.D.	Thick
69 48 11	M2.0	6	0.4	69 48 19	M14.0	30	2.6
12	M3.0	8	0.5	20	M16.0	32	2.6
13	M4.0	10	0.8	21	M18.0	36	2.6
14	M5.0	12	0.8	22	M20.0	40	3.2
15	M6.0	13	1.0	23	M22.0	44	3.2
69 48 16	M8.0	18	1.6	69 48 24	M24.0	48	4.0
17	M10.0	22	1.6	25	M27.0	52	4.0
18	M12.0	26	2.3	26	M30.0	58	4.5

Stainless Steel

Unit Per Pc

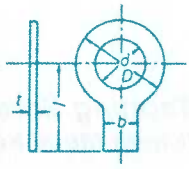
CODE	Size mm I.D.	O.D.	Thick	CODE	Size mm I.D.	O.D.	Thick
69 48 31	M2.0	6	0.4	69 48 39	M14.0	30	2.6
32	M3.0	8	0.5	40	M16.0	32	2.5
33	M4.0	10	0.8	41	M18.0	36	2.5
34	M5.0	12	0.8	42	M20.0	40	3.0
35	M6.0	13	1.0	43	M22.0	44	3.0
69 48 36	M8.0	18	1.6	69 48 44	M24.0	48	3.0
37	M10.0	22	1.6	45	M27.0	52	3.0
38	M12.0	26	2.3	46	M30.0	58	4.0

Brass

Unit Per Pc

CODE	Size mm I.D.	O.D.	Thick	CODE	Size mm I.D.	O.D.	Thick
69 48 51	M2.0	6	0.4	69 48 59	M14.0	30	2.6
52	M3.0	8	0.5	60	M16.0	32	2.6
53	M4.0	10	0.8	61	M18.0	36	2.6
54	M5.0	12	0.8	62	M20.0	40	3.2
55	M6.0	13	1.0	63	M22.0	44	3.2
69 48 56	M8.0	18	1.6	69 48 64	M24.0	48	4.0
57	M10.0	22	1.6	65	M30.0	58	4.5
58	M12.0	26	2.3				

Single Flapped Washers

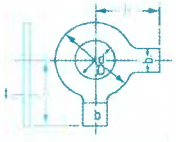


Nominal Size Whitworth	Nominal Size Metric	Size mm d	D	t	l	b
-	3	3.2	12	0.29	13	4
-	4	4.3	14	0.29	14	5
-	5	5.3	17	0.5	15	6
-	6	6.5	18	0.5	15	6
-	8	8.5	22	0.5	20	7
3/8	-	10	26	0.8	22	9
-	10	10.5	26	0.8	22	9
7/16	11	11.5	28	0.8	24	9
-	12	12.5	30	0.8	27	10
1/2	13	13.5	30	0.8	27	10
9/16	14	15	32	0.8	30	10
5/8	16	17	38	1.2	32	12
11/16	17	18	42	1.2	34	14
-	18	19	42	1.2	34	14
3/4	19	20	45	1.2	36	15
-	20	21	45	1.2	36	15
13/16	-	22	45	1.2	36	15
7/8	22	23	48	1.2	40	16
15/16	24	25	52	1.2	44	17
1	-	27	58	1.6	48	20
-	27	28	58	1.6	48	20
1-1/8	-	30	62	1.6	52	21
-	30	31	62	1.6	52	21
1-1/4	-	33	68	1.6	55	23
-	33	34	68	1.6	55	23
1-3/8	-	35	75	1.6	60	25
-	36	37	75	1.6	60	25
1-1/2	-	39	80	1.8	65	26
-	39	40	80	1.8	65	26
1-5/8	-	43	85	1.8	70	28
-	42	44	85	1.8	70	28
1-3/4	-	46	90	1.8	75	30
-	45	47	90	1.8	75	30
1-7/8	48	50	95	1.8	85	32
2	-	53	100	1.8	85	34
-	52	54	100	1.8	85	34

Guide of How to Order

CODE **69 49 01**
Name ..... Single flapped washer
Material ..... Steel
Nominal Size ..... 3 mm

Double Flapped Washers



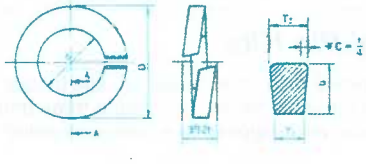
Nominal Size		Size mm					
Whitworth	Metric	d	D	t	l	l1	b
-	3	3.2	7	0.29	13	5	4
-	4	4.3	9	0.29	14	7	5
-	5	5.3	10	0.5	15	8	6
-	6	6.5	13	0.5	15	9	6
-	8	8.5	16	0.5	20	13	7
3/8	-	10	20	0.8	22	14	9
-	10	10.5	20	0.8	22	14	9
7/16	11	11.5	22	0.8	24	17	9
-	12	12.5	24	0.8	27	19	10
1/2	13	13.5	24	0.8	27	19	10
9/16	14	15	26	0.8	30	21	10
5/8	16	17	30	1.2	32	24	12
11/16	17	18	34	1.2	34	26	14
-	18	19	34	1.2	34	26	14
3/4	19	20	38	1.2	36	28	15
-	20	21	38	1.2	36	28	15
13/16	-	22	38	1.2	36	28	15
7/8	22	23	40	1.2	40	32	16
15/16	24	25	44	1.2	44	35	17
1	-	27	48	1.6	48	38	20
-	27	28	48	1.6	48	38	20
1-1/8	-	30	52	1.6	52	42	21
-	30	31	52	1.6	52	42	21
1-1/4	-	33	58	1.6	55	46	23
-	33	34	58	1.6	55	46	23
1-3/8	-	36	62	1.6	60	50	25
-	36	37	62	1.6	60	50	25
1-1/2	-	39	68	1.8	65	55	26
-	39	40	68	1.8	65	55	26
1-5/8	-	43	72	1.8	70	62	28
-	42	44	72	1.8	70	62	28
1-3/4	-	46	78	1.8	75	65	30
-	45	47	78	1.8	75	65	30
1-7/8	48	50	82	1.8	80	70	32
2	-	53	88	1.8	85	75	34
-	52	54	88	1.8	85	75	34

Guide of How to Order

CODE **69 50 01**
Name ..... Double flapped washer
Material ..... Steel
Nominal Size ..... 3 mm

Spring Lock Washers

(Ref. JIS B 1251 – 84)



Type	No.2, For General Use	
	No.3, For Heavy-duty Use	
Meterial	Steel, Stainless Steel, Phosphor Bronze	
Nominal Size	Metric	2 - 136 mm
	Whitworth	5/16 - 1-3/8"

Guide of How to Order

CODE **69 52 01**
Name ..... Spring lock washer
Type ..... For general use
Material ..... Steel, or Stainless steel
Nominal Size ..... Specify necessary size

Steel

Unit Per Pc.

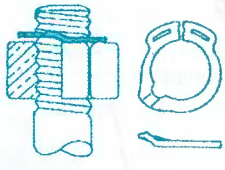
CODE	Size I.D.	CODE	Size I.D.
69 52 11	M2.0	69 52 19	M14.0
12	M3.0	20	M16.0
13	M4.0	21	M18.0
14	M5.0	22	M20.0
15	M6.0	23	M22.0
69 52 16	M8.0	69 52 24	M24.0
17	M10.0	25	M27.0
18	M12.0	26	M30.0

Stainless Steel

Unit Per Pc.

CODE	Size I.D.	CODE	Size I.D.
69 52 31	M2.0	69 52 39	M14.0
32	M3.0	40	M16.0
33	M4.0	41	M18.0
34	M5.0	42	M20.0
35	M6.0	43	M22.0
69 52 36	M8.0	69 52 44	M24.0
37	M10.0	45	M27.0
38	M12.0	46	M30.0

"Super Lock" Washers



An ideal locking device for use on bolts, studs and nuts in service where vibration and loosening are a problem.

Uses: Rail maintenance, mining, construction machinery, automotive, general industry.

Manufactured in metrics standard & suit ISO metric, UNC, BS, Whitworth thread forms.

Made of steel.

Unit Per Minimum 100 Pcs.

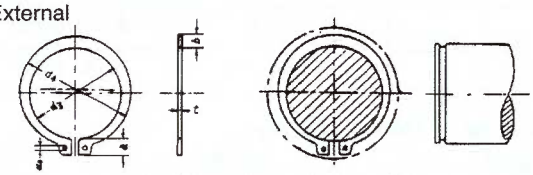
CODE	Size	CODE	Size	CODE	Size
69 54 01	M 4	69 54 06	M 12	69 54 11	M 24
02	M 5	07	M 16	12	M 25
03	M 6	08	M 19	13	M 30
04	M 8	09	M 20	14	M 33
05	M 10	10	M 22	15	M 36

Steel Retaining Rings (C Type)

(Circlip)

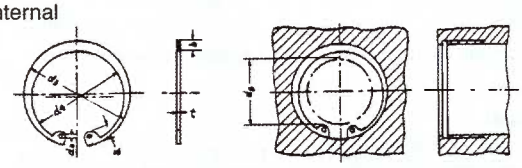
(Ref. JIS B 2804 – 78)

External



Nominal Size 10 mm through 125 mm

Internal

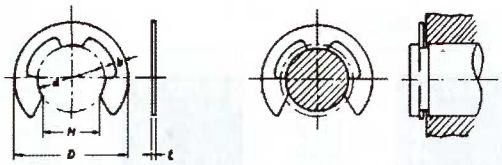


Nominal Size 10 mm through 125 mm

Steel Retaining Rings (E Type)

(Circlip)

(Ref. JIS B 2805 – 78)



Nominal Size 0.8 mm through 12 mm

Guide of How to Order

CODE **69 55 01**
Name ..... Steel retaining ring
Type ..... C type, external
Nominal Size ..... 10 mm

Circlip Kits

Assorted with 3 types of steel circlips, External, Internal and E type, in a compartmented plastic box.

Contents of Kits

Kit 1

External		Internal		'E' Type	
Nom. Size	Q'ty Pc.	Nom. Size	Q'ty Pc.	Nom. Size	Q'ty Pc.
3	75	8	40	1.4	75
4	70	10	30	2	70
5	65	12	30	3	65
6	60			4	60
8	50			5	50
10	30			6	30
12	30			8	30
				10	30

Kit 2

External		Internal		'E' Type	
Nom. Size	Q'ty Pc.	Nom. Size	Q'ty Pc.	Nom. Size	Q'ty Pc.
14	25	14	25	11	25
16	25	15	25	13	25
18	25	16	25	16	25
19	25	18	25		
20	25	19	25		
22	25	20	25		
25	25	22	25		
		25	25		

Unit Per Set

CODE	Kit No.	Total Numbers of Circlips
69 55 11	1	890
12	2	450

Machine Keys

Made of Steel or Stainless Steel bars with double square ends to make your own machine keys.

Steel (S-45C)

Unit Per Pc.

CODE	Size mm		CODE	Size mm	
	b x h	Length		b x h	Length
69 56 01	3 x 3		**69 56 16**	25 x 14	
02	4 x 4		**17**	28 x 16	
03	5 x 5	300	**18**	32 x 18	300
04	6 x 6		**19**	35 x 22	
05	7 x 7		**20**	36 x 20	
69 56 06	8 x 7		**69 56 21**	38 x 24	
07	10 x 8		**22**	40 x 22	
08	12 x 8	300	**23**	42 x 26	300
09	14 x 9		**24**	45 x 25	
10	15 x 10		**25**	50 x 28	
69 56 11	16 x 10				
12	18 x 11				
13	20 x 12	300			
14	22 x 14				
15	24 x 16				

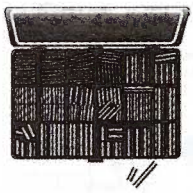
Stainless Steel (SUS-304)

Unit Per Pc.

CODE	Size mm		CODE	Size mm	
	b x h	Length		b x h	Length
69 56 31	3 x 3		**69 56 41**	12 x 12	
32	4 x 4		**42**	15 x 10	
33	5 x 5	300	**43**	15 x 15	300
34	6 x 6		**44**	18 x 12	
35	7 x 7		**45**	20 x 13	
69 56 36	8 x 8		**69 56 46**	24 x 16	
37	10 x 8		**47**	28 x 18	
38	10 x 10	300	**48**	32 x 20	300
39	12 x 8		**49**	35 x 22	
40	12 x 10				

Dowel Pin Kits

Hardened mild steel dowel pin kits of assorted sizes as shown in the table below. Available three patterns of kit for your option, and supplied in a compartmented plastic box.



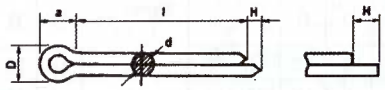
Diam × Length mm	Q'ty Pcs	Diam × Length mm	Q'ty Pcs
Metric Parallel Pins Contaning 315 Pins			
2.5 x 10	25	6 x 24	12
2.5 x 12	25	6 x 32	12
2.5 x 20	20	6 x 40	10
3 x 12	25	8 x 24	10
3 x 20	20	8 x 40	10
3 x 24	15	8 x 50	8
4 x 20	20	10 x 24	10
4 x 24	20	10 x 40	8
4 x 32	15	10 x 50	8
5 x 20	15		
5 x 28	15		
5 x 36	12		
Metric Tapered Pins Containing 345 Pins			
2 x 12	30	4 x 20	20
2 x 16	30	4 x 25	15
2 x 20	30	4 x 30	15
2.5 x 16	25	5 x 25	15
2.5 x 20	25	5 x 30	15
2.5 x 25	20	5 x 40	10
3 x 20	25	6 x 30	10
3 x 25	20	6 x 35	10
3 x 30	20	6 x 40	10
Imperial Parallel Pins Containing 350 Pins			
3/32 x 3/8	30	1/4 x 3/4	12
3/32 x 1/2	30	1/4 x 1	12
3/32 x 3/4	30	1/4 x 1-1/2	10
1/8 x 1/2	25	5/16 x 1	10
1/8 x 3/4	25	5/16 x 1-1/2	10
1/8 x 1	20	5/16 x 2	8
5/32 x 1/2	25	3/8 x 1	10
5/32 x 3/4	20	3/8 x 1-1/2	8
5/32 x 1	15	3/8 x 2	8
3/16 x 3/4	15		
3/16 x 1	15		
3/16 x 1-1/4	12		

Unit Per Set

CODE	Type	Total Q'ty
69 56 51	Metric parallel	315
52	Metric tapered	345
53	Imperial parallel	350

Split Pins

(Ref. JIS B 1351 – 87)



Material	Steel, Stainless Steel, Brass, Copper
Nominal Size	0.6 - 20 mm
Length	4 - 280 mm

Guide of How to Order

CODE **69 58 01**
Name ..... Spring pin (Cotter pin)
Material ..... Steel
Nominal Size ..... 4 mm
Length ..... 10 mm

Taper Pins

(Ref. JIS B 1352 – 88)

Size mm

Nominal Size	d Standard	L	Nominal Size	d Standard	L
0.6	0.6	4-10	6	6	28- 80
0.8	0.8	5-14	8	8	36-125
1	1	6-16	10	10	45-140
1.2	1.2	8-18	13	13	56-160
1.6	1.6	10-25	16	16	70-200
2	2	12-28	20	20	80-225
2.5	2.5	14-36	25	25	100-250
3	3	16-50	30	30	100-280
4	4	18-63	40	40	100-280
5	5	25-70	50	50	100-280

Material: Steel, Stainless Steel

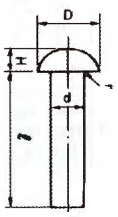
Guide of How to Order

CODE **69 60 01**
Name ..... Taper pin
Material ..... Steel
Nominal Size ..... 1.2 mm
Length ..... 14 mm

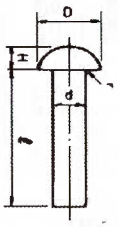
Cold Headed Rivets

(Ref. JIS B 1213 – 78)

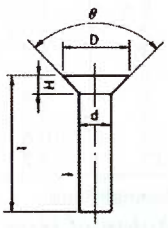
Round



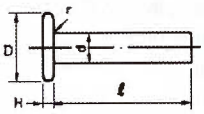
Small Round



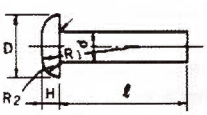
Countersunk



Thin Flat



Pan



Size mm

Nominal Size(d)	Standard Size D					L
	Round	S.Round	Count.	T.Flat	Pan	
1		1.8	2			
1.2		2.2	2.4			Round 3 -70
1.4		2.5	2.8			
1.6		3.0	3.2			
1.7		3.0	3.4			Small Round 1 -30
2		3.5	4.0	4.0		
2.3		4.0	4.6	4.6		
2.5		4.5	5.0	5.0		
2.6		4.5	5.2	5.2		Counter Sunk 1.5-70
3	5.7	5.2	6.0	6.0	6.0	
3.5	6.7	6.2	7.0	7.0	7.0	
4	7.2	7.0	8.0	8.0	8.0	
4.5	8.1	-	9.0	9.0	-	Thin Flat 2 -36
5	9.0	8.8	10.0	10.0	9.5	
6	10.0		12.0	12.0	10.8	
8	13.3		16.0			
10	16.0		16.0			Pan 3 -36
12	19.3		19.0			
13	21.0		21.0			
14	22.0		22.0			

Material: Cold Drawn Steel, Brass, Copper, Aluminium

Guide of How to Order

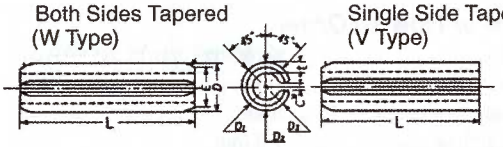
CODE **69 62 01**
Name ..... Cold headed rivet
Material ..... Steel
Head Type ..... Round
Nominal Size ..... 5 mm
Length ..... 20 mm

Spring Pins

(Ref. JIS B 2808 – 78)

Both Sides Tapered (W Type)

Single Side Tapered (V Type)



Size mm

Nominal Size	D		t	Applicable	L
	Max.	Mini		Hole Dia	
1	1.2	1.1	0.2	1	4- 10
1.2	1.4	1.3	0.25	1.2	4- 12
1.4	1.6	1.5	0.28	1.4	4- 14
1.5	1.7	1.6	0.3	1.5	4- 14
1.6	1.8	1.7	0.3	1.6	4- 16
2	2.25	2.15	0.4	2	5- 20
2.5	2.75	2.65	0.5	2.5	5- 25
3	3.25	3.15	0.6	3	6- 32
4	4.4	4.2	0.8	4	8- 40
5	5.4	5.2	1	5	10- 50
6	6.4	6.2	1.2	6	12- 63
8	8.6	8.3	1.6	8	16- 80
10	10.6	10.3	2	10	18-100
13	13.7	13.4	2.5	13	22-140

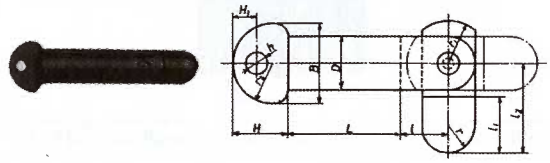
Material: Steel

Guide of How to Order

CODE **69 64 01**
Name ..... Spring pin
Type ..... W type
Material ..... Steel
Nominal Size ..... 2 mm
Length ..... 10 mm

Ship's Toggle Pin A Type

(Ref. JIS F 3905-1975)



Material: Steel

Size mm

Nominal Size	D	B	L	Nominal Size	D	B	L
6	6	10	12-25	20	20	30	45- 65
8	8	12	18-35	22	22	32	50- 85
10	10	14	20-40	25	25	38	55- 90
12	12	18	25-45	28	28	42	60- 95
14	14	20	30-50	30	30	44	65-100
16	16	24	35-55	35	35	52	75-130
18	18	26	40-60	40	40	60	85-140

Guide of How to Order

CODE **69 68 01**
Name ..... Toggle pin
Type ..... A
Material ..... Steel
Nominal Size ..... 12 mm
Length ..... 30 mm

Material: Galvanized Steel

Size mm

Nominal Size	D	B	L	Nominal Size	D	B	L
6	6	10	15- 55	16	16	24	35-100
8	8	12	20- 60	18	18	26	40-100
10	10	14	20-100	20	20	30	45-100
12	12	18	25-100	22	22	32	50- 85
14	14	20	30-100	25	25	38	50- 80

Guide of How to Order

CODE **69 68 02**
Name ..... Toggle pin
Type ..... A
Material ..... Galvanized Steel
Nominal Size ..... 12 mm
Length ..... 30 mm

Material: Stainless Steel

Size mm

Nominal Size	D	B	L	Nominal Size	D	B	L
6	6	10	15- 55	16	16	24	35-100
8	8	12	20-100	18	18	26	40-100
10	10	14	20-100	20	20	30	45-100
12	12	18	25-100	22	22	32	50- 80
14	14	20	35-100				

Guide of How to Order

CODE **69 68 03**
Name ..... Toggle pin
Type ..... A
Material ..... Stainless Steel
Nominal Size ..... 12 mm
Length ..... 30 mm

Material: Brass

Size mm

Nominal Size	D	B	L	Nominal Size	D	B	L
8	8	12	20-50	16	16	24	35-70
10	10	14	20-65	18	18	26	45-70
12	12	18	25-65	20	20	30	45-75
14	14	20	35-65	22	22	32	50-80

Guide of How to Order

CODE **69 68 04**
Name ..... Toggle pin
Type ..... A
Material ..... Brass
Nominal Size ..... 12 mm
Length ..... 30 mm

Cup Hooks, Brass

Made of solid brass to assure a rigid made hook.

Unit Per Pc.

CODE	No.	Length	CODE	No.	Length
69 66 01	13	16 mm	**69 66 06**	9	32 mm
02	12	20 mm	**07**	8	38 mm
03	12	22 mm	**08**	7	45 mm
04	11	25 mm	**09**	7	50 mm
05	10	28 mm			

Screw Hooks, Brass

Made of solid brass.

Unit Per Pc.

CODE	No.	Length	CODE	No.	Length
69 66 21	13	16 mm	**69 66 26**	9	32 mm
22	12	20 mm	**27**	8	38 mm
23	12	22 mm	**28**	7	45 mm
24	11	25 mm	**29**	7	50 mm
25	10	28 mm			

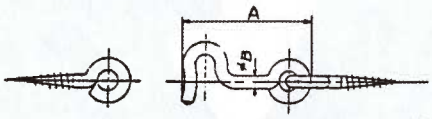
Screw Eyes, Brass

Made of solid brass.

Unit Per Pc.

CODE	No.	Length	CODE	No.	Length
69 66 41	00	15 mm	**69 66 47**	10	40 mm
42	0	20 mm	**48**	12	45 mm
43	2	23 mm	**49**	14	50 mm
44	4	25 mm	**50**	16	60 mm
45	6	30 mm	**51**	18	65 mm
69 66 46	8	35 mm	**69 66 52**	20	75 mm

Gate Hooks & Eyes, Brass



Unit Per Set

CODE	Size mm		CODE	Size mm	
	A	B		A	B
69 66 61	32	2.9	**69 66 64**	65	3.5
62	38	3.0	**65**	90	4.0
63	50	3.2			

Please don't confuse following (1) (2) (3) (4) screws when ordering.

1. Hexagon Head Set Screw

2. Hexagon Socket Set Screw

3. Hexagon Socket Head Cap Screw

4. Hexagon Head Cap Screw-U.S.A. (Hexagon Head Bolt)

ISO (Metric) Bolt Designations on Hex Head Bolt

Common Strength Classes: 4.8, 8.8, 10.9 and 12.9

For example: 4.8 denotes 4 x 100 MPa tensile strength (= 400 N/mm²), and 0.8 x 1200 MPa yield strength (= 960 N/mm²)
12.9 denotes 12 x 100 MPa tensile strength (=1,200 N/mm²), and 0.9 x 1200 MPa yield strength (= 1,080 N/mm²)

Please specify STLENGTH CLASS in addition to size and material if such specific bolts are necessary.

71
PIPES & TUBES

Steel Pipes P. 71-1 ~ 5	Stainless Steel Pipes P. 71-5 ~ 7
Copper Tubes P. 71-7	Aluminium Tubes P. 71-7 ~ 8
PVC Tubes P. 71-8	

Carbon Steel Pipes for Ordinary Piping
Galvanized

Standard length: 5.5 mtrs.

Ref. JIS-G-3452 (SGP) standard industrial quality. SGP denotes Steel Gas Piping.

Equal to ASTM A53, BS1387, and DIN1615, and ISO65 quality. For general purpose use such as in steam lines, water and gas piping, etc.

SGP

How to order: CODE

Pipe, carbon steel, galvanized, NOMINAL SIZE, LENGTH mtr

Unit Per Lgh

Galvanized
Standard Length 5.5 mtrs

CODE	Nominal Size		Size mm		Kgs Per Mtr
	A	B	O.D.	Wall T	
71 01 01	6A	1/8	10.5	2.0	0.419
02	8A	1/4	13.8	2.3	0.652
03	10A	3/8	17.3	2.3	0.851
04	15A	1/2	21.7	2.8	1.310
05	20A	3/4	27.2	2.8	1.680
71 01 06	25A	1	34.0	3.2	2.430
07	32A	1-1/4	42.7	3.5	3.380
08	40A	1-1/2	48.6	3.5	3.890
09	50A	2	60.5	3.8	5.310
10	65A	2-1/2	76.3	4.2	7.470
71 01 11	80A	3	89.1	4.2	8.790
12	90A	3-1/2	101.6	4.2	10.1
13	100A	4	114.3	4.5	12.2
14	125A	5	139.8	4.5	15.0
15	150A	6	165.2	5.0	19.8
71 01 16	175A	7	190.7	5.3	24.2
17	200A	8	216.3	5.8	30.1
18	225A	9	241.8	6.2	36.0
19	250A	10	267.4	6.6	42.4
20	300A	12	318.5	6.9	53.0
71 01 21	350A	14	355.6	7.9	67.7
22	400A	16	406.4	7.9	77.6
23	450A	18	457.2	7.9	87.5
24	500A	20	508.0	7.9	97.4

Carbon Steel Pipes for Ordinary Piping
Ungalvanized

Standard length: 5.5 mtrs.

Exactly the same specifications as described above but ungalvanized.

SGP

How to order: CODE

Pipe, carbon steel, ungalvanized, NOMINAL SIZE, LENGTH mtr

Unit Per Lgh

Black or Ungalvanized
Standard Length 5.5 Mtrs

CODE	Nominal Size		Size mm		Kgs Per Mtr
	A	B	O.D.	Wall T	
71 01 51	6A	1/8	10.5	2.0	0.419
52	8A	1/4	13.8	2.3	0.652
53	10A	3/8	17.3	2.3	0.851
54	15A	1/2	21.7	2.8	1.310
55	20A	3/4	27.2	2.8	1.680
71 01 56	25A	1	34.0	3.2	2.430
57	32A	1-1/4	42.7	3.5	3.380
58	40A	1-1/2	48.6	3.5	3.890
59	50A	2	60.5	3.8	5.310
60	65A	2-1/2	76.3	4.2	7.470
71 01 61	80A	3	89.1	4.2	8.790
62	90A	3-1/2	101.6	4.2	10.1
63	100A	4	114.3	4.5	12.2
64	125A	5	139.8	4.5	15.0
65	150A	6	165.2	5.0	19.8
71 01 66	175A	7	190.7	5.3	24.2
67	200A	8	216.3	5.8	30.1
68	225A	9	241.8	6.2	36.0
69	250A	10	267.4	6.6	42.4
70	300A	12	318.5	6.9	53.0
71 01 71	350A	14	355.6	7.9	67.7
72	400A	16	406.4	7.9	77.6
73	450A	18	457.2	7.9	87.5
74	500A	20	508.2	7.9	97.4

Carbon Steel Pipes
for Pressure Services

Standard length: 5.5 mtrs.

Ref. JIS-G-3454 (STPG-370) standard industrial quality. STPG denotes Steel Tube Piping General.

Equal quality to ASTM A135/A53 or DIN1626/1629 and ISO2604. Both ends are plain ends. Available in black only. Two types of electric resistant welding (ERW) and seamless pipes are available. Most common schedule (Wall Thickness) Number 40 and 80 are listed below.

STPG

ERW (Electric Resistant Welding) Pipes

How to order: CODE

Pipe, carbon steel for pressure service, ERW, SCHEDULE NO., NOMINAL SIZE, Length mtr

Unit Per Lgh

ERW Schedule-40
Standard Length 5.5 mtrs

CODE	Nominal Size		Size mm		Test Pressure MPa	Kgs Per Mtr
	A	B	O.D.	Wall T		
71 02 01	6A	1/8	10.5	1.7	6.0	0.369
02	8A	1/4	13.8	2.2	"	0.629
03	10A	3/8	17.3	2.3	"	0.851
04	15A	1/2	21.7	2.8	"	1.31
05	20A	3/4	27.2	2.9	"	1.74

(to be continued)

Unit Per Lgh

ERW Schedule-40
Standard Length 5.5 mtrs

CODE	Nominal Size		Size mm		Test Pressure MPa	Kgs Per Mtr
	A	B	O.D.	Wall T		
71 02 06	25A	1	34.0	3.4	6.0	2.57
07	32A	1-1/4	42.7	3.6	"	3.47
08	40A	1-1/2	48.6	3.7	"	4.10
09	50A	2	60.5	3.9	"	5.44
10	65A	2-1/2	76.3	5.2	"	9.12
71 02 11	80A	3	89.1	5.5	6.0	11.3
12	90A	3-1/2	101.6	5.7	"	13.5
13	100A	4	114.3	6.0	"	16.0
14	125A	5	139.8	6.6	"	21.7
15	150A	6	165.2	7.1	"	27.7
71 02 16	200A	8	216.3	8.2	6.0	42.1
17	250A	10	267.4	9.3	"	59.2
18	300A	12	318.5	10.3	"	78.3
19	350A	14	355.6	11.1	"	94.3
20	400A	16	406.4	12.7	"	123
71 02 21	450A	18	457.2	14.3	6.0	156
22	500A	20	508.0	15.1	"	184

ERW Shedule-80
Standard Length 5.5 mtrs

71 02 26	6A	1/8	10.5	2.4	12.0	0.479
27	8A	1/4	13.8	3.0	"	0.799
28	10A	3/8	17.3	3.2	"	1.11
29	15A	1/2	21.7	3.7	"	1.64
30	20A	3/4	27.2	3.9	"	2.24
71 02 31	25A	1	34.0	4.5	12.0	3.27
32	32A	1-1/4	42.7	4.9	"	4.57
33	40A	1-1/2	48.6	5.1	"	5.47
34	50A	2	60.5	5.5	"	7.46
35	65A	2-1/2	76.3	7.0	"	12.0
71 02 36	80A	3	89.1	7.6	12.0	15.3
37	90A	3-1/2	101.6	8.1	"	18.7
38	100A	4	114.3	8.6	"	22.4
39	125A	5	139.8	9.5	"	30.5
40	150A	6	165.2	11.0	"	41.8
71 02 41	200A	8	216.3	12.7	12.0	63.8
42	250A	10	267.4	15.1	"	93.9
43	300A	12	318.5	17.4	"	129
44	350A	14	355.6	19.0	"	158
45	400A	16	406.4	21.4	"	203
71 02 46	450A	18	457.2	23.8	12.0	254
47	500A	20	508.0	26.2	"	311

Seamless Pipes

How to order: CODE

Pipe, carbon steel for pressure service, seamless, SCHEDULE NO., NOMINAL SIZE, LENGTH mtr

Unit Per Lgh

Seamless Schedule-40
Standard Length 5.5 mtrs

CODE	Nominal Size		Size mm		Test Pressure MPa	Kgs Per Mtr
	A	B	O.D.	Wall T		
71 02 51	6A	1/8	10.5	1.7	6.0	0.369
52	8A	1/4	13.8	2.2	"	0.629
53	10A	3/8	17.3	2.3	"	0.851
54	15A	1/2	21.7	2.8	"	1.31
55	20A	3/4	27.2	2.9	"	1.74
71 02 56	25A	1	34.0	3.4	6.0	2.57
57	32A	1-1/4	42.7	3.6	"	3.47
58	40A	1-1/2	48.6	3.7	"	4.10
59	50A	2	60.5	3.9	"	5.44
60	65A	2-1/2	76.3	5.2	"	9.12
71 02 61	80A	3	89.1	5.5	6.0	11.3
62	90A	3-1/2	101.6	5.7	"	13.5
63	100A	4	114.3	6.0	"	16.0
64	125A	5	139.8	6.6	"	21.7
65	150A	6	165.2	7.1	"	27.7
71 02 66	200A	8	216.3	8.2	6.0	42.1
67	250A	10	267.4	9.3	"	59.2
68	300A	12	318.5	10.3	"	78.3
69	350A	14	355.6	11.1	"	94.3
70	400A	16	406.4	12.7	"	123
71 02 71	450A	18	457.2	14.3	6.0	156
72	500A	20	508.0	15.1	"	184

Seamless Schedule-80
Standard Length 5.5 mtrs

71 02 76	6A	1/8	10.5	2.4	12.0	0.479
77	8A	1/4	13.8	3.0	"	0.799
78	10A	3/8	17.3	3.2	"	1.11
79	15A	1/2	21.7	3.7	"	1.64
80	20A	3/4	27.2	3.9	"	2.24
71 02 81	25A	1	34.0	4.5	12.0	3.27
82	32A	1-1/4	42.7	4.9	"	4.57
83	40A	1-1/2	48.6	5.1	"	5.47
84	50A	2	60.5	5.5	"	7.46
85	65A	2-1/2	76.3	7.0	"	12.0
71 02 86	80A	3	89.1	7.6	12.0	15.3
87	90A	3-1/2	101.6	8.1	"	18.7
88	100A	4	114.3	8.6	"	22.4
89	125A	5	139.8	9.5	"	30.5
90	150A	6	165.2	11.0	"	41.8
71 02 91	200A	8	216.3	12.7	12.0	63.8
92	250A	10	267.4	15.1	"	93.9
93	300A	12	318.5	17.4	"	129
94	350A	14	355.6	19.0	"	158
95	400A	16	406.4	21.4	"	203
71 02 96	450A	18	457.2	23.8	12.0	254
97	500A	20	508.0	26.2	"	311

Carbon Steel Pipes
for High Pressure Service

Standard length: 5.5 mtrs.

Ref. JIS-G-3455 (STS-370) quality. STS denotes Steel Tube Special.

Equal quality to BS778, DIN1630, ISO2604. Plain both ends. Available in black only. Most common schedule (Wall Thickness) number 40, 80 and 160 are listed below. They are used for temperatures less than 350°C.

STS

How to order: CODE

Pipe, carbon steel for high pressure, NOMINAL SIZE, LENGTH mtr

(to be continued)

Unit Per Lgh

Schedule-40
Standard Length 5.5 mtrs

CODE	Nominal Size A	Nominal Size B	Size mm O.D.	Size mm Wall T	Test Pressure MPa	Kgs Per Mtr
71 04 01	6A	1/8	10.5	1.7	6.0	0.369
02	8A	1/4	13.8	2.2	"	0.629
03	10A	3/8	17.3	2.3	"	0.851
04	15A	1/2	21.7	2.8	"	1.31
05	20A	3/4	27.2	2.9	"	1.74
71 04 06	25A	1	34.0	3.4	6.0	2.57
07	32A	1-1/4	42.7	3.6	"	3.47
08	40A	1-1/2	48.6	3.7	"	4.10
09	50A	2	60.5	3.9	"	5.44
10	65A	2-1/2	76.3	5.2	"	9.12
71 04 11	80A	3	89.1	5.5	6.0	11.3
12	90A	3-1/2	101.6	5.7	"	13.5
13	100A	4	114.3	6.0	"	16.0
14	125A	5	139.8	6.6	"	21.7
15	150A	6	165.2	7.1	"	27.7
71 04 16	200A	8	216.3	8.2	6.0	42.1
17	250A	10	267.4	9.3	"	59.2
18	300A	12	318.5	10.3	"	78.3
19	350A	14	355.6	11.1	"	94.3
20	400A	16	406.4	12.7	"	123
71 04 21	450A	18	457.2	14.3	6.0	156
22	500A	20	508.0	15.1	"	184

Schedule-80
Standard Length 5.5 mtrs

71 04 26	6A	1/8	10.5	2.4	12.0	0.479
27	8A	1/4	13.8	3.0	"	0.799
28	10A	3/8	17.3	3.2	"	1.11
29	15A	1/2	21.7	3.7	"	1.64
30	20A	3/4	27.2	3.9	"	2.24
71 04 31	25A	1	34.0	4.5	12.0	3.27
32	32A	1-1/4	42.7	4.9	"	4.57
33	40A	1-1/2	48.6	5.1	"	5.47
34	50A	2	60.5	5.5	"	7.46
35	65A	2-1/2	76.3	7.0	"	12.0
71 04 36	80A	3	89.1	7.6	12.0	15.3
37	90A	3-1/2	101.6	8.1	"	18.7
38	100A	4	114.3	8.6	"	22.4
39	125A	5	139.8	9.5	"	30.5
40	150A	6	165.2	11.0	"	41.8
71 04 41	200A	8	216.3	12.7	12.0	63.8
42	250A	10	267.4	15.1	"	93.9
43	300A	12	318.5	17.4	"	129
44	350A	14	355.6	19.0	"	158
45	400A	16	406.4	21.4	"	203
71 04 46	450A	18	457.2	23.8	12.0	254
47	500A	20	508.0	26.2	"	311

Schedule-160
Standard Length 5.5 mtrs

71 04 51	15A	1/2	21.7	4.7	20.0	1.97
52	20A	3/4	27.2	5.5	"	2.94
53	25A	1	34.0	6.4	"	4.36
54	32A	1-1/4	42.7	6.4	"	5.73
55	40A	1-1/2	48.6	7.1	"	7.27
71 04 56	50A	2	60.5	8.7	20.0	11.1
57	65A	2-1/2	76.3	9.5	"	15.6
58	80A	3	89.1	11.1	"	21.4
59	90A	3-1/2	101.6	12.7	"	27.8
60	100A	4	114.3	13.5	"	33.6
71 04 61	125A	5	139.8	15.9	20.0	48.6
62	150A	6	165.2	18.2	"	66.6
63	200A	8	216.3	23.0	"	110
64	250A	10	267.4	28.6	"	168
65	300A	12	318.5	33.3	"	234
71 04 66	350A	14	355.6	35.7	20.0	282
67	400A	16	406.4	40.5	"	365

Carbon Steel Pipes
for High Temperature Service

Standard length: 5.5 mtrs.

Ref. JIS-G-3456 (STPT-370) standard industrial quality. STPT denotes Steel Tube Piping Temperature. Equal quality to ASTM A106, DIN17175, BS3602 and ISO2604. Available in black only. Most common schedule (Wall Thickness) number 40, 80 and 160 are listed below. They are used for temperatures over 350°C.

STPT

How to order: CODE

Pipe, carbon steel for high temperature service,SCHEDULE NO., NOMINAL SIZE, LENGTH mtr

Unit Per Lgh

Schedule-40
Standard Length 5.5 mtrs

CODE	Nominal Size A	Nominal Size B	Size mm O.D.	Size mm Wall T	Kgs Per Mtr
71 05 01	6A	1/8	10.5	1.7	0.369
02	8A	1/4	13.8	2.2	0.629
03	10A	3/8	17.3	2.3	0.851
04	15A	1/2	21.7	2.8	1.31
05	20A	3/4	27.2	2.9	1.74
71 05 06	25A	1	34.0	3.4	2.57
07	32A	1-1/4	42.7	3.6	3.47
08	40A	1-1/2	48.6	3.7	4.10
09	50A	2	60.5	3.9	5.44
10	65A	2-1/2	76.3	5.2	9.12
71 05 11	80A	3	89.1	5.5	11.3
12	90A	3-1/2	101.6	5.7	13.5
13	100A	4	114.3	6.0	16.0
14	125A	5	139.8	6.6	21.7
15	150A	6	165.2	7.1	27.7
71 05 16	200A	8	216.3	8.2	42.1
17	250A	10	267.4	9.3	59.2
18	300A	12	318.5	10.3	78.3
19	350A	14	355.6	11.1	94.3
20	400A	16	406.4	12.7	123
71 05 21	450A	18	457.2	14.3	156
22	500A	20	508.0	15.1	184

Schedule-80
Standard Length 5.5 mtrs

71 05 26	6A	1/8	10.5	2.4	0.479
27	8A	1/4	13.8	3.0	0.799
28	10A	3/8	17.3	3.2	1.11
29	15A	1/2	21.7	3.7	1.64
30	20A	3/4	27.2	3.9	2.24
71 05 31	25A	1	34.0	4.5	3.27
32	32A	1-1/4	42.7	4.9	4.57
33	40A	1-1/2	48.6	5.1	5.47
34	50A	2	60.5	5.5	7.46
35	65A	2-1/2	76.3	7.0	12.0
71 05 36	80A	3	89.1	7.6	15.3
37	90A	3-1/2	101.6	8.1	18.7
38	100A	4	114.3	8.6	22.4
39	125A	5	139.8	9.5	30.5
40	150A	6	165.2	11.0	41.8
71 05 41	200A	8	216.3	12.7	63.8
42	250A	10	267.4	15.1	93.9
43	300A	12	318.5	17.4	129
44	350A	14	355.6	19.0	158
45	400A	16	406.4	21.4	203
71 05 46	450A	18	457.2	23.8	254
47	500A	20	508.0	26.2	311

(to be continued)

Unit Per Lgh

Schedule-160
Standard Length 5.5 mtrs

CODE	Nominal Size		Size mm		Kgs
	A	B	O.D.	Wall T	Per Mtr
71 05 51	15A	1/2	21.7	4.7	1.97
52	20A	3/4	27.2	5.5	2.94
53	25A	1	34.0	6.4	4.36
54	32A	1-1/4	42.7	6.4	5.73
55	40A	1-1/2	48.6	7.1	7.27
71 05 56	50A	2	60.5	8.7	11.1
57	65A	2-1/2	76.3	9.5	15.6
58	80A	3	89.1	11.1	21.4
59	90A	3-1/2	101.6	12.7	27.8
60	100A	4	114.3	13.5	33.6
71 05 61	125A	5	139.8	15.9	48.6
62	150A	6	165.2	18.2	66.6
63	200A	8	216.3	23.0	110
64	250A	10	267.4	28.6	168
65	300A	12	318.5	33.3	234
71 05 66	350A	14	355.6	35.7	282
67	400A	16	406.4	40.5	365

Steel Pipes
for Low Temperature Service

Standard length: 5.5 mtrs

Ref. JIS-G-3460 (STPL-380) quality. STPL denotes Steel Tube Piping Low. Equal quality of ASTM A333, BS3603, and ISO2604. Available in black only. Most common schedule (Wall Thickness) Number 40 and 80 are listed below. They are used for Temperatures below 0°C.

STPL

How to order: CODE

Pipe, steel for low temperature service, SCHEDULE NO., NOMINAL SIZE, LENGTH mtr

Unit Per Lgh

Schedule-40
Standard Length 5.5 mtrs

CODE	Nominal Size		Size mm		Kgs
	A	B	O.D.	Wall T	Per Mtr
71 06 01	6A	1/8	10.5	1.7	0.369
02	8A	1/4	13.8	2.2	0.629
03	10A	3/8	17.3	2.3	0.851
04	15A	1/2	21.7	2.8	1.31
05	20A	3/4	27.2	2.9	1.74
71 06 06	25A	1	34.0	3.4	2.57
07	32A	1-1/4	42.7	3.6	3.47
08	40A	1-1/2	48.6	3.7	4.10
09	50A	2	60.5	3.9	5.44
10	65A	2-1/2	76.3	5.2	9.12
71 06 11	80A	3	89.1	5.5	11.3
12	90A	3-1/2	101.6	5.7	13.5
13	100A	4	114.3	6.0	16.0
14	125A	5	139.8	6.6	21.7
15	150A	6	165.2	7.1	27.7
71 06 16	200A	8	216.3	8.2	42.1
17	250A	10	267.4	9.3	59.2
18	300A	12	318.5	10.3	78.3
19	350A	14	355.6	11.1	94.3
20	400A	16	406.4	12.7	123
71 06 21	450A	18	457.2	14.3	156
22	500A	20	508.0	15.1	184

(to be continued)

Schedule-80
Standard Length 5.5 mtrs

71 06 26	6A	1/8	10.5	2.4	0.479
27	8A	1/4	13.8	3.0	0.799
28	10A	3/8	17.3	3.2	1.11
29	15A	1/2	21.7	3.7	1.64
30	20A	3/4	27.2	3.9	2.24
71 06 31	25A	1	34.0	4.5	3.27
32	32A	1-1/4	42.7	4.9	4.57
33	40A	1-1/2	48.6	5.1	5.47
34	50A	2	60.5	5.5	7.46
35	65A	2-1/2	76.3	7.0	12.0
71 06 36	80A	3	89.1	7.6	15.3
37	90A	3-1/2	101.6	8.1	18.7
38	100A	4	114.3	8.6	22.4
39	125A	5	139.8	9.5	30.5
40	150A	6	165.2	11.0	41.8
71 06 41	200A	8	216.3	12.7	63.8
42	250A	10	267.4	15.1	93.9
43	300A	12	318.5	17.4	129
44	350A	14	355.6	19.0	158
45	400A	16	406.4	21.4	203
71 06 46	450A	18	457.2	23.8	254
47	500A	20	508.0	26.2	311

Carbon Steel Precision Tubes
for Hydraulic Line Service

The carbon steel precision tubes for hydraulic line service are classed according to the working pressure, appropriate standard and manufacturing process. The most common classes of line service items are abstracted and listed below.

Name	Class of Working Pressure	Symbol of Standard	Manufacturing Process
Precision carbon steel tubes for hydraulic line service	Under 210 kgf/cm^2	OST 2	SC
	Under 100 kgf/cm^2	OST 1	S-C E-C

Standard length of pipe is 4 mtrs. and sold by weight.
When ordering, please specify the following points.
1. Working pressure 2. Outside diameter 3. Thickness

How to order: CODE

Pipe, carbon steel, OST - 2, OUTSIDE DIAM mm, THICKNESS mm, LENGTH mtr

OST-2 Standard Length 4 mtrs

Unit Per Lgh

CODE	Outside Dia. mm	Thickness mm	CODE	Outside Dia. mm	Thickness mm
71 07 01	4	1.0	**71 07 19**	16	1.5
02	6	1.0	**20**	16	2.0
03	6	1.5	**21**	18	1.5
04	8	1.0	**22**	18	2.0
05	8	1.5	**23**	18	2.5
71 07 06	8	2.0	**71 07 24**	20	2.0
07	10	1.0	**25**	20	2.5
08	10	1.2	**26**	20	3.0
09	10	1.5	**27**	22	2.0
10	10	2.0	**28**	22	3.0
71 07 11	12	1.0	**71 07 29**	25	2.0
12	12	1.2	**30**	25	2.5
13	12	1.5	**31**	25	3.0
14	12	2.0	**32**	28	2.5
15	15	1.2	**33**	30	2.5
71 07 16	15	1.5	**71 07 34**	35	2.5
17	15	2.0	**35**	35	4.0
18	15	2.5	**36**	42	4.0

Available size range normally produced are as follows.

Wall thickness (mm)	Standard dimension	0.5	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0
	Tolerance	±15%				±10%									
Outside diameter (mm)															
Standard dimension	Tolerance														
4.0	±0.10	o Δ	o ◊												
6.0		Δ	o ◊		o ◊										
8.0		Δ	o ◊		o ◊										
10.0		Δ	o ◊		o ◊	o ◊									
12.0			o ◊		o ◊		o ◊								
13.8															
15.0					o		o								
16.0					◊	◊		◊							
17.3															
18.0					o		o	o							
20.0					◊	◊			◊						
21.7															
22.0						o		o		o					
25.0						o		o			o				
27.2	±0.15														
28.0						o	o		o			o			
30.0						◊	◊		◊				◊		
34.0															
35.0						o	o				o				
38.0									◊						◊

Notes: 1) Boxed columns ▭ indicates range of dimensions of tubes normally manufactured.
2) Mark o standard dimensions specified in Japan Oil Hydraulic Association Standards (OST).
3) Mark ◊ standard dimensions specified in Japanese Industrial Standards (JIS B STPS).
4) Mark Δ standard dimensions of soft iron tubes.

Stainless Steel Pipes

Standard length: 4 mtrs.

Ref. JIS-G-3459 (SUS 304 TP) standard industrial quality. SUS TP denotes Steel Use Stainless Tube Piping. Equal quality of ASTM A312, BS3605.

Used for corrosion proof, heat-resistance and high temperature service.

SUS-TP-8P

Hydraulic Test Pressure

Schedule No.	5	10	20	40	80	160
MPa	1.5	2.0	3.5	6.0	12	20
kgf/cm²	15	20	35	60	120	200
Bar	15	20	34	59	118	196

How to order: CODE

Stainless steel pipe, SCHEDULE NO., NOMINAL SIZE, LENGTH mtr

Unit Per Lgh

Schedule-5
Standard Length 4 mtrs

CODE	Nominal Size A	Nominal Size B	Size mm O.D.	Size mm Wall T	Kgs Per Mtr
71 10 01	6A	1/8	10.5	1.0	0.237
02	8A	1/4	13.8	1.2	0.377
03	10A	3/8	17.3	1.2	0.481
04	15A	1/2	21.7	1.65	0.824
05	20A	3/4	27.2	1.65	1.05
71 10 06	25A	1	34.0	1.65	1.33
07	32A	1-1/4	42.7	1.65	1.69
08	40A	1-1/2	48.6	1.65	1.93
09	50A	2	60.5	1.65	2.42
10	65A	2-1/2	76.3	2.1	3.88
71 10 11	80A	3	89.1	2.1	4.55
12	90A	3-1/2	101.6	2.1	5.20
13	100A	4	114.3	2.1	5.87
14	125A	5	139.8	2.8	9.56
15	150A	6	165.2	2.8	11.3
71 10 16	200A	8	216.3	2.8	14.9
17	250A	10	267.4	3.4	22.4
18	300A	12	318.5	4.0	31.3

Schedule-10
Standard Length 4 mtrs

71 10 26	6A	1/8	10.5	1.2	0.278
27	8A	1/4	13.8	1.65	0.499
28	10A	3/8	17.3	1.65	0.643
29	15A	1/2	21.7	2.1	1.03
30	20A	3/4	27.2	2.1	1.31

(to be continued)

Unit Per Lgh

Schedule-10
Standard Length 4 mtrs

CODE	Nominal Size A	Nominal Size B	Size mm O.D.	Size mm Wall T	Kgs Per Mtr
71 10 31	25A	1	34.0	2.8	2.18
32	32A	1-1/4	42.7	2.8	2.78
33	40A	1-1/2	48.6	2.8	3.19
34	50A	2	60.5	2.8	4.02
35	65A	2-1/2	76.3	3.0	5.48
71 10 36	80A	3	89.1	3.0	6.43
37	90A	3-1/2	101.6	3.0	7.37
38	100A	4	114.3	3.0	8.32
39	125A	5	139.8	3.4	11.6
40	150A	6	165.2	3.4	13.7
71 10 41	200A	8	216.3	4.0	21.2
42	250A	10	267.4	4.0	26.2
43	300A	12	318.5	4.5	35.2

Schedule-20
Standard Length 4 mtrs

71 10 51	6A	1/8	10.5	1.5	0.336
52	8A	1/4	13.8	2.0	0.588
53	10A	3/8	17.3	2.0	0.762
54	15A	1/2	21.7	2.5	1.20
55	20A	3/4	27.2	2.5	1.54
71 10 56	25A	1	34.0	3.0	2.32
57	32A	1-1/4	42.7	3.0	2.97
58	40A	1-1/2	48.6	3.0	3.41
59	50A	2	60.5	3.5	4.97
60	65A	2-1/2	76.3	3.5	6.35
71 10 61	80A	3	89.1	4.0	8.48
62	90A	3-1/2	101.6	4.0	9.72
63	100A	4	114.3	4.0	11.0
64	125A	5	139.8	5.0	16.8
65	150A	6	165.2	5.0	20.0
71 10 66	200A	8	216.3	6.5	34.0
67	250A	10	267.4	6.5	42.2
68	300A	12	318.5	6.5	50.5

Schedule-40
Standard Length 4 mtrs

71 10 76	6A	1/8	10.5	1.7	0.373
77	8A	1/4	13.8	2.2	0.636
78	10A	3/8	17.3	2.3	0.859
79	15A	1/2	21.7	2.8	1.32
80	20A	3/4	27.2	2.9	1.76
71 10 81	25A	1	34.0	3.4	2.59
82	32A	1-1/4	42.7	3.6	3.51
83	40A	1-1/2	48.6	3.7	4.14
84	50A	2	60.5	3.9	5.50
85	65A	2-1/2	76.3	5.2	9.21
71 10 86	80A	3	89.1	5.5	11.5
87	90A	3-1/2	101.6	5.7	13.6
88	100A	4	114.3	6.0	16.2
89	125A	5	139.8	6.6	21.9
90	150A	6	165.2	7.1	28.0
71 10 91	200A	8	216.3	8.2	42.5
92	250A	10	267.4	9.3	59.8
93	300A	12	318.5	10.3	79.1

Schedule-80
Standard Length 4 mtrs

71 11 01	6A	1/8	10.5	2.4	0.484
02	8A	1/4	13.8	3.0	0.807
03	10A	3/8	17.3	3.2	1.12
04	15A	1/2	21.7	3.7	1.66
05	20A	3/4	27.2	3.9	2.26
71 11 06	25A	1	34.0	4.5	3.31
07	32A	1-1/4	42.7	4.9	4.61
08	40A	1-1/2	48.6	5.1	5.53
09	50A	2	60.5	5.5	7.54
10	65A	2-1/2	76.3	7.0	12.1
71 11 11	80A	3	89.1	7.6	15.4
12	90A	3-1/2	101.6	8.1	18.9
13	100A	4	114.3	8.6	22.6
14	125A	5	139.8	9.5	30.8
15	150A	6	165.2	11.0	42.3
71 11 16	200A	8	216.3	12.7	64.4
17	250A	10	267.4	15.1	94.9
18	300A	12	318.5	17.4	131

Schedule-120
Standard Length 4 mtrs

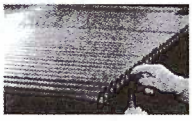
71 11 26	100A	4	114.3	11.1	28.5
27	125A	5	139.8	12.7	40.2
28	150A	6	165.2	14.3	53.8
29	200A	8	216.3	18.2	89.8
30	250A	10	267.4	21.4	131
71 11 31	300A	12	318.5	25.4	185

Schedule-160
Standard Length 4 mtrs

71 11 51	15A	1/2	21.7	4.7	1.99
52	20A	3/4	27.2	5.5	2.97
53	25A	1	34.0	6.4	4.40
54	32A	1-1/4	42.7	6.4	5.79
55	40A	1-1/2	48.6	7.1	7.34
71 11 56	50A	2	60.5	8.7	11.2
57	75A	2-1/2	76.3	9.5	15.8
58	80A	3	89.1	11.1	21.6
59	90A	3-1/2	101.6	12.7	28.1
60	100A	4	114.3	13.5	33.9
71 11 61	125A	5	139.8	15.9	49.1
62	150A	6	165.2	18.2	66.6
63	200A	8	216.3	23.0	111
64	250A	10	267.4	28.6	170
65	300A	12	318.5	33.3	237

Stainless Steel Seamless Tubes

Seamless stainless steel tube of SUS 304 TPS-C. For use in general services and tube fittings. Sold by weight at random lengths.



How to order: CODE

Stainless steel tube, seamless, OUTER DIAM mm, THICKNESS mm, LENGTH mtr

Unit Per Kgs

CODE Unit in kgs	CODE Unit in mtr	O.D. mm	Thickness mm	Wt. Kgs Per Meter
71 12 01	71 12 21	6	1	0.125
02	22		1.5	0.168
03	23	8	1	0.174
04	24		1.5	0.243
05	25	10	1	0.224
71 12 06	71 12 26		1.5	0.318
07	27	12	1	0.274
08	28		1.5	0.392
09	29	15	1	0.349
10	30		1.5	0.504
71 12 11	71 12 31	16	1	0.374
12	32		1.5	0.542
13	33	18	1	0.423
14	34		1.5	0.617

(to be continued)

(to be continued)

Unit Per Kgs

CODE		O.D. mm	Thickness mm	Wt. Kgs Per Meter
Unit in kgs	Unit in mtr			
71 12 15	71 12 35	20	1	0.473
16	36		1.5	0.691
17	37	22	1	0.523
18	38		1.5	0.766
19	39	25	1	0.598
20	40		1.5	0.878

Copper Tubes, Seamless

Standard length: 5 mtrs.

Ref. JIS-H-3300 (C 1220) standard industrial quality. Drawn from solid copper and used for general plumbing, steam piping, etc. Furnished in straight 5 mtr length.

How to order: CODE

Copper tube, seamless, OUTER DIAM mm, THICKNESS mm, LENGTH mtr

Unit Per Lgh

CODE	Size mm		Kgs Per Mtr
	O.D.	T	
71 14 01	5	0.6	0.0737
71 14 02	6	0.6	0.0905
03		0.8	0.116
04		1	0.140
71 14 05	6.4	0.6	0.0972
06		0.8	0.125
07		1	0.151
71 14 08	8	0.6	0.124
09		0.8	0.161
10		1	0.196
11		1.2	0.228
71 14 12	9.5	0.8	0.194
13		1	0.237
14		1.2	0.278
71 14 15	10	0.8	0.206
16		1	0.251
17		1.2	0.295
71 14 18	12	0.8	0.250
19		1	0.307
20		1.2	0.362
21		1.5	0.440
71 14 22	12.7	0.8	0.266
23		1	0.327
24		1.2	0.385
25		1.5	0.469
71 14 26	14	0.8	0.295
27		1	0.363
28		1.2	0.429
71 14 29	15	0.8	0.317
30		1	0.391
31		1.2	0.463
32		1.5	0.566
71 14 33	15.9	0.8	0.317
34		1	0.391
35		1.2	0.463
36		1.5	0.566
71 14 37	16	0.8	0.340
38		1	0.419
39		1.2	0.496

CODE	Size mm		Kgs Per Mtr
	O.D.	T	
71 14 40	18	0.8	0.384
41		1	0.475
42		1.2	0.563
71 14 43	19	0.8	0.407
44		1	0.503
45		1.2	0.597
46		1.5	0.733
47		2	0.950
71 14 48	20	1	0.531
49		1.2	0.630
71 14 50	22	1	0.587
51		1.2	0.697
52		1.5	0.859
71 14 53	22.2	1	0.592
54		1.2	0.704
55		1.5	0.867
71 14 56	25	1	0.670
57		1.2	0.798
58		2	1.28
71 14 59	25.4	1	0.681
60		1.2	0.811
61		1.5	1.00
62		2	1.31
71 14 63	28	1	0.754
64		1.2	0.898
71 14 65	31.8	1	0.860
66		1.2	1.03
67		1.5	1.27
71 14 68	32	1	0.866
69		1.2	1.03
71 14 70	35	1	0.950
71 14 71	38.1	1	1.04
72		1.2	1.24
71 14 73	45	2	2.40
74	50	2	2.68
75	50.8	2	2.73

Copper Tubes, Annealed Seamless
(for Piping Refrigerating Systems)

Standard length: 10 or 20 mtrs.

Seamless and flexible tubes. Can be bent, coiled or shaped as required for installation. Tube ends can be flanged and fitted easily for any requirement.

How to order: CODE

Copper tube, annealed, OUTER DIAM mm, THICKNESS mm, LENGTH mtr

Unit Per Mtr

CODE	Out Diameter		Wall Thickness mm	Kgs Per Mtr
	mm	in		
71 15 01	5		1.0	0.12
02	6		1.0	0.14
03	6.35	1/4	1.0	0.15
04	8		1.0	0.2
05	9.52	3/8	1.0	0.24
71 15 06	10		1.0	0.26
07	12		1.0	0.31
08	12.7	1/2	1.0	0.33
09	15.87	5/8	1.0	0.42
10	19.05	3/4	1.0	0.51

Aluminium Tubes, Welded

Standard length: 5 mtrs.

Ref. JIS-H-4090 (1050) standard industrial quality. There are for the same tube diameter several different wall thicknesses available.

How to order: CODE

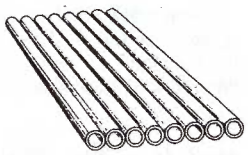
Aluminium tube, welded, OUTER DIAM mm, THICKNESS mm, LENGTH mtr

Unit Per Lgh

CODE	Out Diam mm	Thick-ness mm	Kgs Per Mtr
71 16 01	6	1.0	0.043
71 16 02	8	1.0	0.060
03		1.6	0.088
71 16 04	10	1.0	0.077
05		1.6	0.114
06		2.0	0.136
71 16 07	12	1.0	0.094
08		1.6	0.142
09		2.0	0.171
71 16 10	14	1.0	0.111
11		1.6	0.170
12		2.0	0.205
71 16 13	15	1.0	0.120
14		1.6	0.183
15		2.0	0.221
71 16 16	16	1.0	0.128
17		1.6	0.196
18		2.0	0.238
19		2.5	0.287

CODE	Out Diam mm	Thick-ness mm	Kgs Per Mtr
71 16 20	18	1.0	0.145
21		1.6	0.223
22		2.0	0.272
23		2.5	0.330
71 16 24	20	1.0	0.162
25		1.6	0.251
26		2.0	0.307
27		2.5	0.372
71 16 28	22	1.0	0.179
29		1.6	0.278
30		2.0	0.340
31		2.5	0.415
71 16 32	25	1.0	0.204
33		1.6	0.319
34		2.0	0.392
35		2.5	0.478
71 16 36	30	1.0	0.247
37		1.6	0.387
38		2.0	0.476
39		2.5	0.586
40		3.0	0.690

Aluminium Brass Tubes
for Condensers and Heat Exchangers
(Ref. JIS H 3300 C6872T)



Newly developed high corrosion resistant aluminium brass material for use in condenser and heat exchanger tubes.

"ALUMIBRASS" added Ni to the ordinary contents of the so-called standard alumi brass. These tubes are used most often for various equipment in marine service including not only condensers, various heat exchangers and the heating coils, but also seawater conduits. In the case of ships, as seawater is used for cooling water, most tubes are made of alumi brass because of the very good results.

The standard sizes of the tubes are shown below. Specify size when ordering. These tubes are sold by weight.

Maximum Length & Weight

Class	Outside Diameter			
	< 20ø	20 - 60ø	60.1 -90ø	> 90ø
Length	40 m Max	25 m Max	10 m Max	6 m Max
Weight	60 kgs "	60 kgs "	50 kgs "	80 kgs "

How to order: CODE
Alumi brass tube, NOMINAL SIZE, OUT DIAM mm, THICKNESS mm, LENGTH mtr

Metric Size

Unit Per Kgs

CODE		Nominal Size A	O.D. mm	Thickness mm	Kgs Per Mtr
Unit in kgs	Unit in mtr				
71 17 01	**71 17 21**	15	20	1.0	0.50
02	**22**	20	25	1.5	0.98
03	**23**	25	30	1.5	1.12
04	**24**	32	38	1.5	1.43
05	**25**	40	44.5	1.5	1.69
71 17 06	**71 17 26**	50	57	1.5	2.18

Inch Converted Metric Size

Unit Per Kgs

CODE		Nominal Size A	O.D. mm	Thickness mm	Kgs Per Mtr
Unit in kgs	Unit in mtr				
71 17 11	**71 17 31**	15	15.13	1.21	0.45
12	**32**	20	21.48	1.21	0.65
13	**33**	25	28.24	1.42	1.00
14	**34**	32	34.59	1.42	1.24
15	**35**	40	40.94	1.42	1.48
71 17 16	**71 17 36**	50	54.05	1.62	2.24

Remark: 1. For delivery, please allow extra time.
2. Besides above, other sizes are also available.

PVC Plastic Tubes

Standard length: 4 mtrs.

Used for interior plumbing and also for soil, waste and vent lines and drainage systems. Applicable also for chemical liquids. Ref. JIS K-6741 (VP) standard industrial quality.

How to order: CODE
Tube, PVC plastic, OUTER DIAM mm, INSIDE DIAM mm, LENGTH mtr

Unit Per Lgh

CODE	Size mm	Diameter mm		Thickness mm	Kgs Per 4 Mtrs
		O.D.	I.D.		
71 18 01	13	18	13	2.2	0.70
02	16	22	16	2.7	1.02
03	20	26	20	2.7	1.24
04	25	32	25	3.1	1.79
05	30	38	31	3.1	2.17
71 18 06	40	48	40	3.6	3.16
07	50	60	51	4.1	4.49
08	75	89	77.4	5.5	8.81
09	100	114	100	6.6	13.64

Symbol	Abbreviation
SGP	S: Steel G: Gas P: Piping
SGPW	S: Steel G: Gas P: Piping W: Water
STB	S: Steel T: Tube B: Boiler
STBA	S: Steel T: Tube B: Boiler A: Alloy
STBL	S: Steel T: Tube B: Boiler L: Low Temperature
STH	S: Steel T: Tube H: High Pressure
STK	S: Steel T: Tube K:
STKM	S: Steel T: Tube K: M: Machine
STKS	S: Steel T: Tube K: S: Special
STKR	S: Steel T: Tube K: R: Rectangular
STL	S: Steel T: Tube L: Locomotive
STM	S: Steel T: Tube M: Mining
	C: Core or Casing R: Boring Rod
STO	S: Steel T: Tube O: Oil
STPA	S: Steel T: Tube P: Piping A: Alloy
STPG	S: Steel T: Tube P: Piping G: General
STPL	S: Steel T: Tube P: Piping L: Low
STPT	S: Steel T: Tube P: Piping T: Temperature
STPY	S: Steel T: Tube P: Piping Y:
STS	S: Steel T: Tube S: Special
SUS-TP	S: Steel U: Use S: Stainless T: Tube P: Piping
SUS-TB	S: Steel U: Use S: Stainless T: Tube B: Boiler

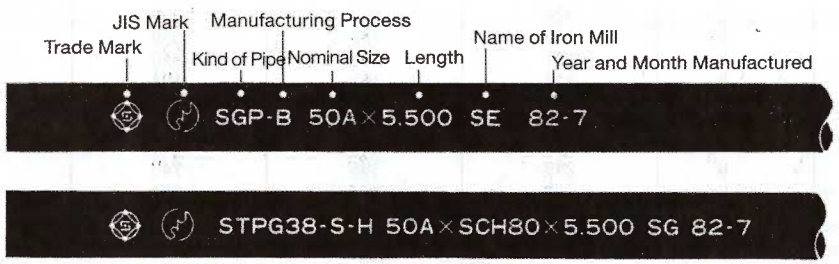
Dimensions of Welded and Seamless Steel Pipe (ANSI/ASME B36.10M)

Nominal Pipe Size	Outside Diameter inch	Schedule 40		Schedule 80		Schedule 120		Schedule 160	
		inch	mm	inch	mm	inch	mm	inch	mm
1/8	0.405	0.068	1.7	0.095	2.4	...	...	...	...
1/4	0.540	0.088	2.2	0.119	3.0	...	...	...	...
3/8	0.675	0.091	2.3	0.126	3.2	...	...	...	...
1/2	0.840	0.109	2.8	0.147	3.7	...	...	0.188	4.8
3/4	1.050	0.113	2.9	0.154	3.9	...	...	0.219	5.6
1	1.315	0.133	3.4	0.179	4.5	...	...	0.250	6.4
1-1/4	1.660	0.140	3.6	0.191	4.9	...	...	0.250	6.4
1-1/2	1.900	0.145	3.7	0.200	5.1	...	...	0.281	7.1
2	2.375	0.154	3.9	0.218	5.5	...	...	0.344	8.7
2-1/2	2.875	0.203	5.2	0.276	7.0	...	...	0.375	9.5
3	3.500	0.216	5.5	0.300	7.6	...	...	0.438	11.1
3-1/2	4.000	0.226	5.7	0.318	8.1	...	...	...	...
4	4.500	0.237	6.0	0.337	8.6	0.438	11.1	0.531	13.5
5	5.563	0.258	6.6	0.375	9.5	0.500	12.7	0.625	15.9
6	6.625	0.280	7.1	0.432	11.0	0.562	14.3	0.719	18.3
8	8.625	0.322	8.2	0.500	12.7	0.719	18.3	0.906	23.0
10	10.750	0.365	9.3	0.594	15.1	0.844	21.4	1.125	28.6
12	12.750	0.406	10.3	0.688	17.5	1.000	25.4	1.312	33.3
14	14.000	0.438	11.1	0.750	19.1	1.094	27.8	1.406	35.7
16	16.000	0.500	12.7	0.844	21.4	1.219	31.0	1.594	40.5
18	18.000	0.562	14.3	0.938	...	1.375	...	1.781	...

JIS ASTM Carbon Steel Pipe Outside Diameter Comparison and Actual Wall Thickness by Schedule Number

Nom. Size		Actual OD mm		Actual Wall Thickness by Schedule Numbers mm.									
A	B	JIS	ASTM	10	20	30	40	60	80	100	120	140	160
6	1/8	10.5	10.3				1.7	2.2	2.4				
8	1/4	13.8	13.7				2.2	2.4	3.0				
10	3/8	17.3	17.1				2.3	2.8	3.2				
15	1/2	21.7	21.3				2.8	3.2	3.7				4.7
20	3/4	27.2	26.7				2.9	3.4	3.9				5.5
25	1	34.0	33.4				3.4	3.9	4.5				6.4
32	1-1/4	42.7	42.2				3.6	4.5	4.9				6.4
40	1-1/2	48.6	48.3				3.7	4.5	5.1				7.1
50	2	60.5	60.3		3.2		3.9	4.9	5.5				8.7
65	2-1/2	76.3	73.0		4.5		5.2	6.0	7.0				9.5
80	3	89.1	88.9		4.5		5.5	6.6	7.6				11.1
90	3-1/2	101.6	101.6		4.5		5.7	7.0	8.1				12.7
100	4	114.3	114.3		4.9		6.0	7.1	8.6		11.1		13.5
125	5	139.8	141.3		5.1		6.6	8.1	9.5		12.7		15.9
150	6	165.2	168.3		5.5		7.1	9.3	11.0		14.3		18.2
200	8	216.3	219.1		6.4	7.0	8.2	10.3	12.7	15.1	18.2	20.6	23.0
250	10	267.4	273.1		6.4	7.8	9.3	12.7	15.1	18.2	21.4	25.4	28.6
300	12	318.5	323.9		6.4	8.4	10.3	14.3	17.4	21.4	25.4	28.6	33.3
350	14	355.6	355.6	6.4	7.9	9.5	11.1	15.1	19.0	23.8	27.8	31.8	35.7
400	16	406.4	406.4	6.4	7.9	9.5	12.7	16.7	21.4	26.2	30.9	36.5	40.5
450	18	457.2	457.2	6.4	7.9	11.1	14.3	19.0	23.8	29.4	34.9	39.7	45.2
500	20	508.0		6.4	9.5	12.7	15.1	20.6	26.2	32.5	38.1	44.4	50.0

Steel Pipe Indication



Metric Carbon Steel Tubing for Hydraulic and Pneumatic Applications

DIN 2391

O.D. mm	Wall Thick mm	Working Pressure Bar*	Proof Pressure Bar*	Burst Pressure Bar*	Kgs per Meter
6	1	377	558	1,320	0.12
	1.5	564	792	1,584	0.17
	2	644	966	1,932	0.19
8	1	282	430	953	0.17
	1.5	424	619	1,514	0.24
	2	565	792	2,145	0.30
10	1	239	370	746	0.22
	1.5	359	538	1,170	0.31
	2	479	694	1,634	0.39
12	1	199	308	612	0.27
	1.5	299	455	953	0.39
	2	399	591	1,320	0.49
14	1.5	256	394	804	0.46
	2	342	514	1,107	0.58
	2.5	403	604	1,209	0.71
15	1	129	194	388	0.35
	1.5	239	370	746	0.50
	2	319	483	1,024	0.64
	2.5	376	564	1,128	0.78
16	1	121	182	363	0.36
	1.5	224	347	695	0.54
	2	299	455	953	0.69
	2.5	374	558	1,225	0.83
	3	449	656	1,514	0.96
18	1	107	161	321	0.41
	1.5	199	308	612	0.61
	2	266	408	837	0.79
	2.5	313	469	939	0.96
	3	399	591	1,320	1.11
20	1.5	179	277	547	0.68
	2	239	370	746	0.89
	2.5	299	455	953	1.08
	3	359	538	1,170	1.26
	4	479	694	1,634	1.58
22	1.5	163	252	495	0.76
	2	217	336	673	0.99
	2.5	272	417	858	1.20
	3	326	493	1,050	1.41
25	2	191	296	586	1.13
	2.5	239	370	746	1.39
	3	287	438	911	1.63
	4	399	595	1,259	2.07
28	1.5	128	198	384	0.98
	2	171	264	520	1.28
	2.5	201	301	603	1.57
	3	256	394	804	1.85
	4	302	453	906	2.37
30	2	159	246	483	1.38
	2.5	199	308	612	1.70
	3	239	370	746	2.00
	4	333	504	1,024	2.57
	5	416	617	1,320	3.08
35	2	142	220	411	1.63
	2.5	178	275	520	2.00
	3	214	331	631	2.37
	4	322	463	966	3.06
	5	403	604	1,209	3.70
38	2.5	164	254	476	2.19
	3	197	305	578	2.59
	4	263	405	789	3.35
	5	328	498	1,009	4.07
42	2	119	183	339	1.97
	3	171	264	520	2.89
	4	238	367	707	3.75
	5	297	454	903	4.56
50	5	249	386	746	5.55
	6	299	457	911	6.51
60	6	249	386	746	7.99
	8	333	504	1,024	10.26

Note : *Admissible working pressure according to DIN 2413
Type : Seamless cold drawn high pressure steel tubes
Material : Steel ST 35.4 DIN 2391

Metric Stainless Steel Tubing

ASTM A269

O.D. mm	Wall Thick mm	Working Pressure Bar*	Kgs per 100 Meter	Kgs per Meter
6	1	470	12.30	0.12
	1.5	705	16.70	0.16
8	1	352	17.30	0.17
	1.5	529	24.00	0.24
	2	705	29.60	0.29
10	1	282	22.20	0.22
	1.5	423	31.40	0.31
	2	564	39.50	0.40
12	1	235	27.10	0.27
	1.5	352	38.90	0.39
	2	470	49.30	0.49
14	1.5	294	46.20	0.46
	2	388	59.20	0.59
15	1.5	282	49.90	0.50
	2	376	64.10	0.64
16	1.5	264	53.60	0.54
	2	352	69.10	0.69
	2.5	440	84.50	0.85
18	1.5	235	61.00	0.61
	2	313	78.90	0.79
	2.5	333	96.70	0.97
20	2	282	88.80	0.89
	2.5	352	107.90	1.08
22	1.5	192	75.80	0.76
	2	256	98.60	0.98
25	2	235	115.20	1.15
	2.5	282	138.70	1.39
	3	338	163.00	1.63
28	2	201	128.20	1.28
	2.5	263	159.40	1.59
	3	302	185.00	1.85
30	2	194	152.00	1.52
	3	282	200.00	2.00
35	2	161	163.00	1.63
	3	241	237.00	2.37
38	2	144	204.00	2.04
	3	222	259.00	2.59
	4	297	335.00	3.35
	5	318	594.00	5.94
42	2	134	197.00	1.97
	3	201	289.00	2.89
	4	280	380.00	3.80

Note : *Admissible working pressure according to DIN 2413
Type : Seamless stainless steel high pressure steel tubes
Material : Stainless steel Type 316L Material No. 1.4404

Conversion Table

Length

	m	km	in	ft	yd	mile
m	1	1×10^{-3}	39.37	3.28	1.093	6.214×10^{-4}
km	1×10^{3}	1	3.937×10^{4}	3,280	1,093	0.621
in	0.0254	2.54×10^{-5}	1	1/12	1/36	1.58×10^{-5}
ft	0.305	3.048×10^{-4}	12	1	1/3	1.894×10^{-4}
yd	0.914	9.144×10^{-4}	36	3	1	5.682×10^{-4}
mile	1,609	1.609	63,360	5,280	1,760	1

Mass (Weight)

	g	kg	t	lb	oz
g	1	1×10^{-3}	1×10^{-6}	2.204×10^{-3}	0.0352
kg	1×10^{3}	1	1×10^{-3}	2.204	35.27
t	1×10^{6}	1×10^{3}	1	2,204	35,270
lb	453.6	0.4536	4.536×10^{-4}	1	16
oz	28.35	0.02835	2.835×10^{-5}	1/16	1

Volume

	cm^3 (cc or ml)	m^3	l	in^3	qt	pt	fl-oz	ft^3	gal
cm^3 (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m^3	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in^3	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
Ft^3	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

Pressure

	bar	kgf/cm^2	lbf/cm^2	mmHg (0°C)	Pa (SI)
bar	1	1.020	14.50	750.1	100,000
kgf/cm^2	0.9807	1	14.22	753.6	98,066
lbf/cm^2	0.0689	0.0703	1	51.72	6,895
mmHg (0°C)	0.00133	0.0013	0.0193	1	133.3
Pa (SI)	1×10^{-5}	1.02×10^{-5}	1.45×10^{-4}	10.2×10^{-4}	1

Stress

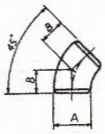
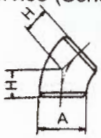
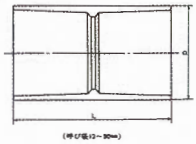
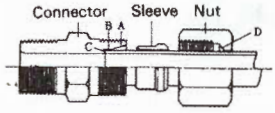
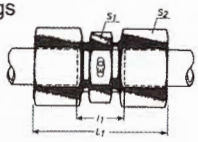
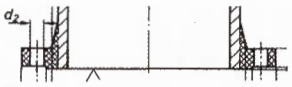
	Pa (SI)	MPa	kgf/mm^2	kgf/cm^2
Pa (SI)	1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
MPa	1×10^{6}	1	1.01972×10^{-1}	1.01972×10
kgf/mm^2	9.80665×10^{6}	9.80665	1	1×10^{2}
kgf/cm^2	9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

Force

	kW	kgf · m/sec	HP
kW	1	102.0	1.341
kgf · m/sec	0.009807	1	0.01315
HP	0.7457	76.04	1

73

PIPE & TUBE FITTINGS

Malleable Cast Iron Pipe Fittings P. 73-1 ~ 3	Steel Butt-Welding Pipe Fittings for Ordinary Pipe (FSGP)  P. 73-3 ~ 5	Steel Butt-Welding Pipe Fittings for Pressure Service and High Pressure Service (Schedule)  P. 73-5 ~ 6
Steel High Pressure Pipe Fittings Threaded Type P. 73-7 ~ 8	Brass Pipe Fittings Threaded Type P. 73-8 ~ 10	Stainless Steel Pipe Fittings Threaded Type P. 73-10 ~ 11
PVC Plastic Pipe Fittings for Drain P. 73-11 ~ 12	PVC Plastic Pipe Fittings for Water Supply  P. 73-12 ~ 14	Steel Compression Tube Fittings for High Pressure Service  P. 73-14 ~ 17
Brass Flared Tube Fittings P. 73-17 ~ 19	Brass Flareless Compression Tube Fittings P. 73-19 ~ 21	Stainless Steel Flareless Tube Fittings P. 73-21 ~ 22
Ermeto High Pressure Steel Couplings  P. 73-22 ~ 23	Flanges  P. 73-23 ~ 29	Flexible Pipe Couplings P. 73-29 ~ 33

Screwed Type Malleable
Cast Iron Pipe Fittings

Standard malleable cast iron fittings used for low pressure water, oil, steam, air and gas line fabrication.

Pressure Rating

Fluid Condition	Maximum Working Pressure
Steam, air, gas, and oil of 300°C or less	1.0 MPa (10.2 kgf/cm²)
Steam, air, gas, oil and pulsation water of 220°C or less	1.4 MPa (14.3 kgf/cm²)
Non shock water of 120°C or less	1.0 MPa (20.4 kgf/cm²)

The screw thread for these fittings conforms to the Taper Pipe Threads of JIS B 0203 equal to the ISO 7/1 (Pipe Thread where pressure tight joints are made on the threads), details are shown in the following table.

Screw Thread Table

Nominal Pipe Size		Nominal Thread Size	Threads Per 25.4 mm	Pitch	Male Thread O.D.	Applicable Carbon Steel Pipe	
A	B					O.D.	Thick
6A	1/8	PT(R)1/8	28	0.9071	9.728	10.5	2.0
8A	1/4	" 1/4	19	1.3368	13.157	13.8	2.3
10A	3/8	" 3/8	19	1.3368	16.662	17.3	2.3
15A	1/2	" 1/2	14	1.8143	20.955	21.7	2.8
20A	3/4	" 3/4	14	1.8143	26.441	27.2	2.8
25A	1	" 1	11	2.3091	33.249	34.0	3.2
32A	1-1/4	" 1-1/4	11	2.3091	41.910	42.7	3.5
40A	1-1/2	" 1-1/2	11	2.3091	47.803	48.6	3.5
50A	2	" 2	11	2.3091	59.614	60.5	3.8
65A	2-1/2	" 2-1/2	11	2.3091	75.184	76.3	4.2
80A	3	" 3	11	2.3091	87.884	89.1	4.2

Available in galvanized or black (ungalvanized), when ordering specify which type is required.

Elbows, 45°
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Nom. Size	Black CODE	Galv. CODE	Nom. Size	Black CODE
73 01 01	1/8	73 01 16	73 01 07	1-1/4	73 01 22
02	1/4	17	08	1-1/2	23
03	3/8	18	09	2	24
04	1/2	19	10	2-1/2	25
05	3/4	20	11	3	26
73 01 06	1	73 01 21			

Street Elbows, Male & Female 45°
Malleable Cast Iron

The thread size is the same for male and female pieces.

Unit Per Pc.

Galv. CODE	Nom. Size	Black CODE	Galv. CODE	Nom. Size	Black CODE
73 01 31	1/8	73 01 46	73 01 37	1-1/4	73 01 52
32	1/4	47	38	1-1/2	53
33	3/8	48	39	2	54
34	1/2	49	40	2-1/2	55
35	3/4	50	41	3	56
73 01 36	1	73 01 51			

Elbows, 90°
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Nom. Size	Black CODE	Galv. CODE	Nom. Size	Black CODE
73 01 61	1/8	73 01 76	73 01 67	1-1/4	73 01 82
62	1/4	77	68	1-1/2	83
63	3/8	78	69	2	84
64	1/2	79	70	2-1/2	85
65	3/4	80	71	3	86
73 01 66	1	73 01 81			

Reducing Elbows, 90°
Malleable Cast Iron

The sizes of the reducing elbows below are listed with the size of the larger opening first and the smaller opening second.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 02 01	1/4×1/8	73 02 16	73 02 06	1-1/4×1	73 02 21
02	3/8×1/4	17	07	1-1/2×1-1/4	22
03	1/2×3/8	18	08	2×1-1/2	23
04	3/4×1/2	19	09	2-1/2×2	24
05	1×3/4	20	10	3×2-1/2	25

Street Elbows, Male & Female 90°
Malleable Cast Iron

The thread sizes are the same for both male and female elbows.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 02 31	1/8	73 02 46	73 02 37	1-1/4	73 02 52
32	1/4	47	38	1-1/2	53
33	3/8	48	39	2	54
34	1/2	49	40	2-1/2	55
35	3/4	50	41	3	56
73 02 36	1	73 02 51			

Tees
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 03 01	1/8	73 03 16	73 03 07	1-1/4	73 03 22
02	1/4	17	08	1-1/2	23
03	3/8	18	09	2	24
04	1/2	19	10	2-1/2	25
05	3/4	20	11	3	26
73 03 06	1	73 03 21			

Service Tees, Male & Female
Malleable Cast Iron

The thread sizes are the same for both male and female service tees.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 03 31	1/8	73 03 46	73 03 37	1-1/4	73 03 52
32	1/4	47	38	1-1/2	53
33	3/8	48	39	2	54
34	1/2	49	40	2-1/2	55
35	3/4	50	41	3	56
73 03 36	1	73 03 51			

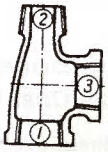
Reducing Tees
Malleable Cast Iron

The sizes of the reducing tees are listed below in the order of the left side opening size, the right hand opening size, and the center opening size.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 03 61	1/4×1/4×1/8	73 03 76	73 03 66	1-1/4×1-1/4×1	73 03 81
62	3/8×3/8×1/4	77	67	1-1/2×1-1/2×1-1/4	82
63	1/2×1/2×3/8	78	68	2×2×1-1/2	83
64	3/4×3/4×1/2	79	69	2-1/2×2-1/2×2	84
65	1×1×3/4	80	70	3×3×2-1/2	85

Reducing Service Tees Male & Female
Malleable Cast Iron



When referring to the sizes, please list them as they are shown in the illustration and as they are listed in the table below.

Unit Per Pc.

Galv. CODE	Size (1)×(2)×(3)	Black CODE	Galv. CODE	Size (1)×(2)×(3)	Black CODE
73 04 01	3/4×1/2×3/4	73 04 16	73 04 08	2×3/4×2	73 04 23
02	1×1/2×1	17	09	2×1-1/4×2	24
03	1×3/4×1	18	10	2×1-1/2×2	25
04	1-1/4×3/4×1-1/4	19	11	2-1/2×1×2-1/2	26
05	1-1/4×1×1-1/4	20	12	2-1/2×2×2-1/2	27
73 04 06	1-1/2×1×1-1/2	73 04 21	73 04 13	3×2×3	73 04 28
07	1-1/2×1-1/4×1-1/2	22			

Crosses
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 04 31	1/8	73 04 46	73 04 37	1-1/4	73 04 52
32	1/4	47	38	1-1/2	53
33	3/8	48	39	2	54
34	1/2	49	40	2-1/2	55
35	3/4	50	41	3	56
73 04 36	1	73 04 51			

Caps
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 05 01	1/8	73 05 16	73 05 07	1-1/4	73 05 22
02	1/4	17	08	1-1/2	23
03	3/8	18	09	2	24
04	1/2	19	10	2-1/2	25
05	3/4	20	11	3	26
73 05 06	1	73 05 21			

Sockets
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 05 31	1/8	73 05 46	73 05 37	1-1/4	73 05 52
32	1/4	47	38	1-1/2	53
33	3/8	48	39	2	54
34	1/2	49	40	2-1/2	55
35	3/4	50	41	3	56
73 05 36	1	73 05 51			

Reducing Sockets
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 05 61	1/4×1/8	73 05 76	73 05 66	1-1/4×1	73 05 81
62	3/8×1/4	77	67	1-1/2×1-1/4	82
63	1/2×3/8	78	68	2×1-1/2	83
64	3/4×1/2	79	69	2-1/2×2	84
65	1 ×3/4	80	70	3×2-1/2	85

Hexagon Bushings
Malleable Cast Iron

If bushes of a dimension different from those below are required, please specify the necessary data.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 06 01	1/4×1/8	73 06 16	73 06 06	1-1/4×1	73 06 21
02	3/8×1/4	17	07	1-1/2×1-1/4	22
03	1/2×3/8	18	08	2×1-1/2	23
04	3/4×1/2	19	09	2-1/2×2	24
05	1 ×3/4	20	10	3×2-1/2	25

Square Head Plugs
Malleable Cast Iron

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 06 31	1/8	73 06 46	73 06 37	1-1/4	73 06 52
32	1/4	47	38	1-1/2	53
33	3/8	48	39	2	54
34	1/2	49	40	2-1/2	55
35	3/4	50	41	3	56
73 06 36	1	73 06 51			

Lock Nuts
Malleable Cast Iron

Galvanized or black malleable cast iron lock nuts.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 06 61	1/4	73 06 76	73 06 66	1-1/4	73 06 81
62	3/8	77	67	1-1/2	82
63	1/2	78	68	2	83
64	3/4	79	69	2-1/2	84
65	1	80	70	3	85

Unions
Malleable Cast Iron

Galvanized and black malleable cast iron unions.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 07 01	1/8	73 07 16	73 07 07	1-1/4	73 07 22
02	1/4	17	08	1-1/2	23
03	3/8	18	09	2	24
04	1/2	19	10	2-1/2	25
05	3/4	20	11	3	26
73 07 06	1	73 07 21			

Short Nipples
Carbon Steel

Galvanized and black carbon steel short nipples.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 07 71	1/8	73 07 86	73 07 77	1-1/4	73 07 92
72	1/4	87	78	1-1/2	93
73	3/8	88	79	2	94
74	1/2	89	80	2-1/2	95
75	3/4	90	81	3	96
73 07 76	1	73 07 91			

Long Nipples
Carbon Steel

When ordering, specify the required length. Available from 2 to 6 inches.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 08 01	1/8×2"	73 08 51	73 08 21	1×2-1/2"	73 08 71
02	3"	52	22	3"	72
03	4"	53	23	4"	73
04	6"	54	24	6"	74
73 08 05	1/4×2"	73 08 55	73 08 25	1-1/4×3"	73 08 75
06	3"	56	26	4"	76
07	4"	57	27	6"	77
08	6"	58	73 08 28	1-1/2×3"	73 08 78
73 08 09	3/8×2"	73 08 59	29	4"	79
10	3"	60	30	6"	80
11	4"	61	73 08 31	2×3"	73 08 81
12	6"	62	32	4"	82
73 08 13	1/2×2"	73 08 63	33	6"	83
14	3"	64	73 08 34	2-1/2×3"	73 08 84
15	4"	65	35	4"	85
16	6"	66	36	6"	86
73 08 17	3/4×2"	73 08 67	73 08 37	3×3"	73 08 87
18	3"	68	38	4"	88
19	4"	69	39	6"	89
20	6"	70			

Hexagon Nipples
Malleable Cast Iron

Galvanized and black malleable cast iron hexagon nipples.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 09 01	1/8	73 09 16	73 09 07	1-1/4	73 09 22
02	1/4	17	08	1-1/2	23
03	3/8	18	09	2	24
04	1/2	19	10	2-1/2	25
05	3/4	20	11	3	26
73 09 06	1	73 09 21			

Reducing Hexagon Nipples
Malleable Cast Iron

Galvanized and black malleable cast iron reducing hexagon nipples.

Sizes listed with the large opening first and the small opening second.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 09 31	3/8×1/4	73 09 41	73 09 36	1-1/2×1-1/4	73 09 46
32	1/2×3/8	42	37	2×1-1/2	47
33	3/4×1/2	43	38	2-1/2×2	48
34	1×3/4	44	39	3×2-1/2	49
35	1-1/4×1	45			

Flanges
Malleable Cast Iron

Galvanized and black malleable cast iron flanges.

Unit Per Pc.

Galv. CODE	Size	Black CODE	Galv. CODE	Size	Black CODE
73 09 51	1/2	73 09 61	73 09 55	1-1/2	73 09 65
52	3/4	62	56	2	66
53	1	63	57	2-1/2	67
54	1-1/4	64	58	3	68

Steel Butt-Welding Pipe Fittings
For Ordinary Use

Butt-Welding Pipe Fittings used for the fabrication of ordinary carbon steel pipe (SGP) of comparatively low pressure steam, water, oil, gas and air. Ends are machine faced and bevelled.

Available in galvanized or black (ungalvanized) but usually black ones are supplied unless otherwise specified. Their maximum working pressure is 2.5 MPa (25 kgf/cm²).

General Specification of Fittings (FSGP)

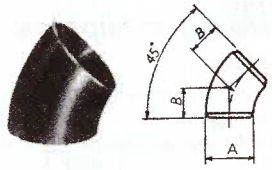
Nominal Size A	Nominal Size B	Outside Diam. mm	Inside Diam. mm	Wall Thickness mm
15A	1/2	21.7	16.1	2.8
20A	3/4	27.2	21.6	2.8
25A	1	34	27.6	3.2
32A	1-1/4	42.7	35.7	3.5
40A	1-1/2	48.6	41.6	3.5
50A	2	60.5	52.9	3.8
65A	2-1/2	76.3	67.9	4.2
80A	3	89.1	80.7	4.2
90A	3-1/2	101.6	93.2	4.2
100A	4	114.3	105.3	4.5

(to be continued)

Nominal Size A	Nominal Size B	Outside Diam. mm	Inside Diam. mm	Wall Thickness mm
125A	5	139.8	130.8	4.5
150A	6	165.2	155.2	5
200A	8	216.3	204.7	5.8
250A	10	267.4	254.2	6.6
300A	12	318.5	304.7	6.9

Specified sizes are up to 300A but larger sizes are also available on request.

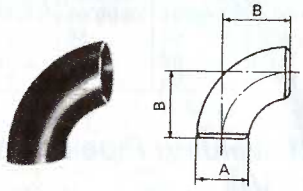
Steel Butt-Welding Elbows
45° Long Radius for Ordinary Pipe



Unit Per Pc.

CODE	Nominal Size A	Distance Center to End mm (B)	CODE	Nominal Size A	Distance Center to End mm (B)
73 11 01	15	15.8	**73 11 09**	90	55.3
02	20	15.8	**10**	100	63.1
03	25	15.8	**11**	125	78.9
04	32	19.7	**12**	150	94.7
05	40	23.7	**13**	200	126.3
73 11 06	50	31.6	**73 11 14**	250	157.8
07	65	39.5	**15**	300	189.4
08	80	47.3			

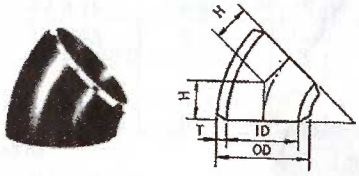
Steel Butt-Welding Elbows
90° Long Radius for Ordinary Pipe



Unit Per Pc.

CODE	Nominal Size A	Distance Center to End mm (B)	CODE	Nominal Size A	Distance Center to End mm (B)
73 11 21	15	38.1	**73 11 29**	90	133.4
22	20	38.1	**30**	100	152.4
23	25	38.1	**31**	125	190.5
24	32	47.6	**32**	150	228.6
25	40	57.2	**33**	200	304.8
73 11 26	50	76.2	**73 11 34**	250	381
27	65	95.3	**35**	300	457.2
28	80	114.3			

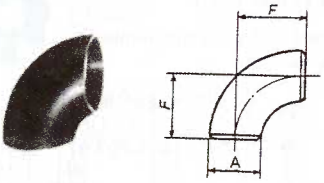
Steel Butt-Welding Elbows
45° Short Radius for Ordinary Pipe



Unit Per Pc.

CODE	Nominal Size A	Distance Center to End mm (B)	CODE	Nominal Size A	Distance Center to End mm (B)
73 11 16	32	13.2	**73 11 37**	100	42.1
17	40	15.8	**38**	125	52.6
18	50	21.0	**39**	150	63.1
19	65	26.3	**40**	200	84.2
20	80	31.6	**54**	250	105.2
73 11 36	90	36.8	**73 11 55**	300	126.2

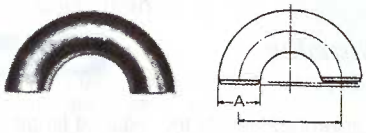
Steel Butt-Welding Elbows
90° Short Radius for Ordinary Pipe



Unit Per Pc.

CODE	Nominal Size A	Distance Center to End mm (B)	CODE	Nominal Size A	Distance Center to End mm (B)
73 11 41	25	25.4	**73 11 48**	100	101.6
42	32	31.8	**49**	125	127
43	40	38.1	**50**	150	152.4
44	50	50.8	**51**	200	203.2
45	65	63.5	**52**	250	254
73 11 46	80	76.2	**73 11 53**	300	304.8
47	90	88.9			

Steel Butt-Welding Return Bends
180° Radius for Ordinary Pipe

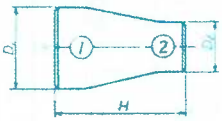


Unit Per Pc.

CODE	Nominal Size A	Distance Center to End mm (B)	CODE	Nominal Size A	Distance Center to End mm (B)
180° Long Radius					
73 11 61	15	76.2	**73 11 69**	90	266.8
62	20	76.2	**70**	100	304.8
63	25	76.2	**71**	125	381
64	32	95.2	**72**	150	457.2
65	40	114.4	**73**	200	609.6
73 11 66	50	152.4	**73 11 74**	250	762
67	65	190,6	**75**	300	914.4
68	80	228.6			
180° Short Radius					
73 11 81	25	50.8	**73 11 88**	100	203.2
82	32	63.6	**89**	125	254
83	40	76.2	**90**	150	304.8
84	50	101.6	**91**	200	406.4
85	65	127	**92**	250	508
73 11 86	80	152.4	**73 11 93**	300	609.6
87	90	177.8			

Steel Butt-Welding Concentric Radius Reducers

for Ordinary Pipe

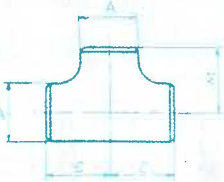


Unit Per Pc.

CODE	Nominal Size A (D1×D2)	Length Overall mm (H)	CODE	Nominal Size A (D1×D2)	Length Overall mm (H)
73 12 01	20 × 15	38.1	73 12 28	40	
73 12 02	25 × 15		29	50	
03	20		30	100 × 65	101.6
73 12 04	15	50.8	31	80	
05	32 × 20		32	90	
06	25		73 12 33	50	
73 12 07	15		34	65	
08	20		35	125 × 80	139.8
09	40 × 25	63.5	36	90	
10	32		37	100	
73 12 11	20		73 12 38	65	
12	25		39	80	
13	50 × 32	76.2	40	150 × 90	165.2
14	40		41	100	
73 12 15	25		42	125	
16	32		73 12 43	90	
17	65 × 40		44	200 × 100	216.3
18	50	88.9	45	125	
73 12 19	32		46	150	
20	40		73 12 47	100	
21	80 × 50		48	250 × 125	267.4
22	65		49	150	
73 12 23	32		50	200	
24	40		73 12 51	125	
25	90 × 50	101 6	52	150	
26	65		53	300 × 200	318.5
27	80		54	250	

Steel Butt-Welding Tees

for Ordinary Pipe



Unit Per Pc.

CODE	Nominal Size A	Distance Center to End mm (C)	CODE	Nominal Size A	Distance Center to End mm (C)
73 12 61	15	25.4	73 12 69	90	95.3
62	20	28.6	70	100	104.8
63	25	38.1	71	125	123 8
64	32	47.6	72	150	142.9
65	40	57.2	73	200	177.8
73 12 66	50	63.5	73 12 74	250	215.9
67	65	76.2	75	300	254
68	80	85.7			

Besides above list Reducing Tees are also available on request.

Steel Butt-Welding Pipe Fittings

For Pressure Service & High Pressure Service

Steel Butt-Welding ungalvanized (Black) Pipe Fittings used for the fabrication of

1. Carbon Steel Pipe for Pressure Service (STPG).
2. Carbon Steel Pipe for High Pressure Service (STS).
3. Carbon Steel Pipe for High Temperature Service (STPT).
4. Steel Pipe for Low Temperature Service (STPL).

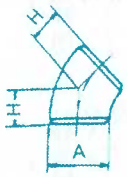
General Specifications of Fittings

Nominal Size		Outside Diam. mm	Schedule 40		Schedule 80	
A	B		ID	T	ID	T
15	1/2	21.7	16.1	2.8	14.3	3.7
20	3/4	27.2	21.4	2.9	19.4	3.9
25	1	34	27.2	3.4	25	4.5
32	1-1/4	42.7	35.5	3.6	32.9	4.9
40	1-1/2	48.6	41.2	3.7	38.4	5.1
50	2	60.5	52.7	3.9	49.5	5.5
65	2-1/2	76.3	65.9	5.2	62.3	7
80	3	89.1	78.1	5.5	73.9	7.6
90	3-1/2	101.6	90.2	5.7	85.4	8.1
100	4	114.3	102.3	6	97.1	8.6
125	5	139.8	126.6	6.6	120.8	9.5
150	6	165.2	151	7.1	143.2	11
200	8	216.3	199.9	8.2	190.9	12.7
250	10	267.4	248.8	9.3	237.2	15.1
300	12	318.5	297.9	10.3	283.7	17.4

Schedule 120 and 160 pipe fittings and fittings of sizes larger than 300A are also available upon request.

Steel Butt-Welding Elbows

45° Long Radius for HP Service Pipe



How to order: CODE

Steel butt-welding elbow, 45° long radius, for high pressure service pipe, SCHEDULE NO., NOMINAL SIZE

Unit Per Pc.

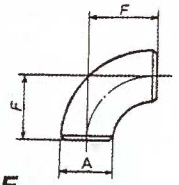
Sched. 40 CODE	Sched. 80 CODE	Nominal Size A	Distance Center to End mm (H)
45°Long Radius			
73 14 01	73 14 21	15	15.8
02	22	20	15.8
03	23	25	15.8
04	24	32	19.7
05	25	40	23.7
73 14 06	73 14 26	50	31.6
07	27	65	39.5
08	28	80	47.3
09	29	90	55.3
10	30	100	63.1
73 14 11	73 14 31	125	78.9
12	32	150	94.7
13	33	200	126.3
14	34	250	157.8
15	35	300	189.4
45°Short Radius			
73 14 16	73 14 43	32	13.2
17	44	40	15.8
18	45	50	21.0
19	46	65	26.3
20	47	80	31.6

(to be continued)

Unit Per Pc.

Sched. 40 CODE	Sched. 80 CODE	Nominal Size A	Distance Center to End mm (H)
73 14 36	73 14 48	90	36.8
37	49	100	42.1
38	50	125	52.6
39	66	150	63.1
40	67	200	84.2
73 14 41	73 14 68	250	105.2
42	69	300	126.2

Steel Butt-Welding Elbows 90°
for HP Service Pipe



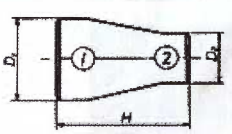
How to order: CODE

Steel butt-welding elbow, 90° long radius, for high pressure service pipe, SCHEDULE NO., NOMINAL SIZE

Unit Per Pc.

Sched. 40 CODE	Sched. 80 CODE	Nominal Size A	Distance Center to End mm (F)
90° Long Radius			
73 14 51	73 14 71	15	38.1
52	72	20	38.1
53	73	25	38.1
54	74	32	47.6
55	75	40	57.2
73 14 56	73 14 76	50	76.2
57	77	65	95.3
58	78	80	114.3
59	79	90	133.4
60	80	100	152.4
73 14 61	73 14 81	125	190.5
62	82	150	228.6
63	83	200	304.8
64	84	250	381
65	85	300	457.2
90° Short Radius			
73 15 01	73 15 16	25	25.4
02	17	32	31.8
03	18	40	38.1
04	19	50	50.8
05	20	65	63.5
73 15 06	73 15 21	80	76.2
07	22	90	88.9
08	23	100	101.6
09	24	125	127
10	25	150	152.4
73 15 11	73 15 26	200	203.2
12	27	250	254
13	28	300	304.8

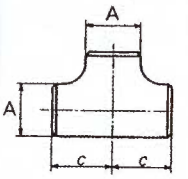
Steel Butt-Welding Concentric Radius Reducers
for HP Service Pipe



Unit Per Pc.

Sched. 40 CODE	Sched. 80 CODE	Nominal Size A (D1×D2)	Length Overall mm (H)	Sched. 40 CODE	Sched. 80 CODE	Nominal Size A (D1×D2)	Length Overall mm (H)
73 15 14	73 16 11	20×15	38.1	73 15 69	73 16 38	40	
73 15 15	73 16 12	25×15		70	39	50	
29	13	25×20		86	40	100×65	101.6
73 15 30	73 16 14	15	50.8	87	41	80	
31	15	32×20		88	42	90	
32	16	25		73 15 89	73 16 43	50	
73 15 33	73 16 17	15		90	44	65	
34	18	40×20	63.5	91	45	125×80	127.0
35	19	40×25		92	46	90	
36	20	32		93	47	100	
73 15 37	73 16 21	20		73 15 94	73 16 48	65	
38	22	50×25	76.2	95	49	80	
39	23	50×32		96	50	150×90	139.7
40	24	40		97	51	100	
73 15 41	73 16 25	25		98	52	125	
42	26	65×32		73 15 99	73 16 53	90	
43	27	65×40		73 16 00	54	100	
44	28	50	88.9	01	55	200×125	152.4
73 15 45	73 16 29	32		02	56	150	
46	30	80×40		73 16 03	73 16 57	100	
47	31	80×50		04	58	250×125	177.8
48	32	65		05	59	150	
73 15 49	73 16 33	32		06	60	200	
50	34	40		73 16 07	73 16 61	125	
66	35	90×50	101.6	08	62	300×150	203.2
67	36	65		09	63	200	
68	37	80		10	64	250	

Steel Butt-Welding Tees
for HP Service Pipe



How to order: CODE

Steel butt-welding tee, for high pressure service pipe, SCHEDULE NO., NOMINAL SIZE

Unit Per Pc.

Sched. 40 CODE	Sched.80 CODE	Nominal Size A	Distance Center to End mm (C)
73 15 51	73 15 71	15	25.4
52	72	20	28.6
53	73	25	38.1
54	74	32	47.6
55	75	40	57.2
73 15 56	73 15 76	50	63.5
57	77	65	76.2
58	78	80	85.7
59	79	90	95.3
60	80	100	104.8
73 15 61	73 15 81	125	123.8
62	82	150	142.9
63	83	200	177.8
64	84	250	215.9
65	85	300	254

* Besides the above enumerated fittings, the following items are also available: Return Bends, Cap, Concentric Reducer, Eccentric Reducer, Reducing Tee, etc. Please specify separately what kind of part you require along with the necessary nominal size.

Steel High Pressure Pipe Fittings
Threaded Type

High pressure, drop forged steel, ungalvanized (black) pipe fittings with a pressure rating of 210 kgf/cm² at 120°C.

Threads conform to the Taper Pipe Threads standards of JIS B 0203 and the ISO 7/1. Larger sizes and types of fittings not listed below are also available.

Steel Threaded Elbows, 45°
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 17 01	1/8	**73 17 05**	3/4	**73 17 09**	2
02	1/4	**06**	1	**10**	2-1/2
03	3/8	**07**	1-1/4	**11**	3
04	1/2	**08**	1-1/2		

Steel Threaded Elbows, 90°
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 17 16	1/8	**73 17 20**	3/4	**73 17 24**	2
17	1/4	**21**	1	**25**	2-1/2
18	3/8	**22**	1-1/4	**26**	3
19	1/2	**23**	1-1/2		

Steel Threaded Street Elbows, 90°
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 17 31	1/8	**73 17 34**	1/2	**73 17 37**	1-1/4
32	1/4	**35**	3/4	**38**	1-1/2
33	3/8	**36**	1	**39**	2

Steel Threaded Tees
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 17 46	1/8	**73 17 50**	3/4	**73 17 54**	2
47	1/4	**51**	1	**55**	2-1/2
48	3/8	**52**	1-1/4	**56**	3
49	1/2	**53**	1-1/2		

Steel Threaded Crosses
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 17 61	1/8	**73 17 65**	3/4	**73 17 69**	2
62	1/4	**66**	1	**70**	2-1/2
63	3/8	**67**	1-1/4	**71**	3
64	1/2	**68**	1-1/2		

Square Head Steel Threaded Plugs
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 17 76	1/8	**73 17 80**	3/4	**73 17 84**	2
77	1/4	**81**	1	**85**	2-1/2
78	3/8	**82**	1-1/4	**86**	3
79	1/2	**83**	1-1/2		

Steel Threaded Hexagon Bushings
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size
73 18 01	1/4 x 1/8	**73 18 13**	1-1/4 x 1
02	3/8 x 1/4	**14**	1-1/2 x 1/2
03	1/2 x 1/4	**15**	1-1/2 x 3/4
04	1/2 x 3/8	**16**	1-1/2 x 1
05	3/4 x 1/4	**17**	1-1/2 x 1-1/4
73 18 06	3/4 x 3/8	**73 18 18**	2 x 3/4
07	3/4 x 1/2	**19**	2 x 1
08	1 x 3/8	**20**	2 x 1-1/4
09	1 x 1/2	**21**	2 x 1-1/2
10	1 x 3/4	**22**	2-1/2 x 2
73 18 11	1-1/4 x 1/2	**73 18 23**	3 x 2-1/2
12	1-1/4 x 3/4		

Steel Threaded Unions
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 18 26	1/8	**73 18 30**	3/4	**73 18 34**	2
27	1/4	**31**	1	**35**	2-1/2
28	3/8	**32**	1-1/4	**36**	3
29	1/2	**33**	1-1/2		

Steel Threaded Sockets
for High Pressure Pipe Fitting

Unit Per Pc

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 18 41	1/8	73 18 45	3/4	73 18 49	2
42	1/4	46	1	50	2-1/2
43	3/8	47	1-1/4	51	3
44	1/2	48	1-1/2		

Steel Threaded Reducing Sockets
for High Pressure Pipe Fitting

Unit Per Pc

CODE	Nom. Size	CODE	Nom. Size
73 18 56	1/4 x 1/8	73 18 63	1 x 3/4
57	3/8 x 1/4	64	1-1/4 x 3/4
58	1/2 x 1/4	65	1-1/4 x 1
59	1/2 x 3/8	66	1-1/2 x 1
60	3/4 x 3/8	67	1-1/2 x 1-1/4
73 18 61	3/4 x 1/2	73 18 68	2 x 1-1/4
62	1 x 1/2	69	2 x 1-1/2

Steel Threaded Long Nipples
for High Pressure Pipe Fitting

When ordering, specify the required length. Available in 2, 4, or 6" lengths.

Unit Per Pc

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 18 71	1/8 x 2"	73 18 79	3/4 x 2"	73 18 87	2 x 4"
72	4"	80	4"	88	6"
73 18 73	1/4 x 2"	73 18 81	1 x 2"	73 18 89	2-1/2x4"
74	4"	82	4"	90	6"
73 18 75	3/8 x 2"	73 18 83	1-1/4x4"	73 18 91	3 x 4"
76	4"	84	6"	92	6"
73 18 77	1/2 x 2"	73 18 85	1-1/2x4"		
78	4"	86	6"		

Steel Threaded Hexagon Nipples
for High Pressure Pipe Fitting

Unit Per Pc.

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 19 01	1/8	73 19 04	1/2	73 19 07	1-1/4
02	1/4	05	3/4	08	1-1/2
03	3/8	06	1	09	2

Steel Threaded Hexagon Reducing Nipples
for High Pressure Pipe Fitting

Unit Per Pc

CODE	Nom. Size	CODE	Nom. Size
73 19 21	1/4 x 1/8	73 19 31	1-1/4 x 1/2
22	3/8 x 1/4	32	1-1/4 x 3/4
23	1/2 x 1/4	33	1-1/4 x 1
24	1/2 x 3/8	34	1-1/2 x 3/4
25	3/4 x 1/4	35	1-1/2 x 1

(to be continued)

73 19 26	3/4 x 3/8	73 19 36	1-1/2 x 1-1/4
27	3/4 x 1/2	37	2 x 3/4
28	1 x 3/8	38	2 x 1
29	1 x 1/2	39	2 x 1-1/4
30	1 x 3/4	40	2 x 1-1/2

Brass Pipe Fittings
Threaded Type

Made from high quality seamless brass tubing for use with the fabrication of copper or brass tubes.

The threads conform to the Taper Pipe Threads of JIS B 0203 and the ISO 7/1.

Larger sized fittings and types other than those listed below are also available upon request.

Brass Threaded Elbows, 45°

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 21 01	1/8	73 21 04	1/2	73 21 07	1-1/4
02	1/4	05	3/4	08	1-1/2
03	3/8	06	1	09	2

Brass Threaded Elbows, 90°

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 21 16	1/8	73 21 19	1/2	73 21 22	1-1/4
17	1/4	20	3/4	23	1-1/2
18	3/8	21	1	24	2

Brass Threaded Tees

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 21 31	1/8	73 21 34	1/2	73 21 37	1-1/4
32	1/4	35	3/4	38	1-1/2
33	3/8	36	1	39	2

Brass Threaded Reducing Tees

Unit Per Pc

CODE	Size	CODE	Size
73 21 46	1/4 x 1/8	73 21 50	1 x 3/4
47	3/8 x 1/4	51	1-1/4 x 1
48	1/2 x 3/8	52	1-1/2 x 1-1/4
49	3/4 x 1/2	53	2 x 1-1/2

Brass Threaded Crosses

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 21 61	1/8	73 21 64	1/2	73 21 67	1-1/4
62	1/4	65	3/4	68	1-1/2
63	3/8	66	1	69	2

Brass Threaded Caps

Unit Per Pc.

CODE	Size	CODE	Size
73 21 76	1/8	73 21 81	1
77	1/4	82	1-1/4
78	3/8	83	1-1/2
79	1/2	84	2
80	3/4	85	2-1/2

Brass Threaded Sockets

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 21 91	1/8	73 21 94	1/2	73 21 97	1-1/4
92	1/4	95	3/4	98	1-1/2
93	3/8	96	1	99	2

Brass Threaded Reducing Sockets

Unit Per Pc.

CODE	Size	CODE	Size
73 22 01	1/4 x 1/8	73 22 05	1 x 3/4
02	3/8 x 1/4	06	1-1/4 x 1
03	1/2 x 3/8	07	1-1/2 x 1-1/4
04	3/4 x 1/2	08	2 x 1-1/2

Brass Threaded Hexagon Bushings

Unit Per Pc.

CODE	Size	CODE	Size
73 22 16	1/4 x 1/8	73 22 21	1-1/4 x 1
17	3/8 x 1/4	22	1-1/2 x 1-1/4
18	1/2 x 3/8	24	2 x 1-1/4
19	3/4 x 1/2	23	2 x 1-1/2
20	1 x 3/4		

Brass Threaded Square Head Plugs

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 22 31	1/8	73 22 34	1/2	73 22 37	1-1/4
32	1/4	35	3/4	38	1-1/2
33	3/8	36	1	39	2

Brass Threaded Lock Nuts

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 22 46	1/8	73 22 49	1/2	73 22 52	1-1/4
47	1/4	50	3/4	53	1-1/2
48	3/8	51	1	54	2

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Brass Threaded Unions

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 22 61	1/8	73 22 64	1/2	73 22 67	1-1/4
62	1/4	65	3/4	68	1-1/2
63	3/8	66	1	69	2

Brass Threaded Short Nipples

Unit Per Pc

CODE	Size	CODE	Size	CODE	Size
73 22 76	1/8	73 22 79	1/2	73 22 82	1-1/4
77	1/4	80	3/4	83	1-1/2
78	3/8	81	1	84	2

Brass Threaded Long Nipples

When ordering, specify the required length. Available in lengths of 2 – 6 inches.

Unit Per Pc

CODE	Nom. Size	CODE	Nom. Size	CODE	Nom. Size
73 23 01	2"	73 23 14	3"	73 23 27	1-1/4 x 3"
02	3"	15	1/2 x 4"	73 23 28	3"
03	1/8 x 4"	16	6"	29	1-1/2 x 4"
04	6"	73 23 17	2"	30	6"
73 23 05	2"	18	3'	73 23 31	3"
06	3"	19	3/4 x 4"	32	2 x 4"
07	1/4 x 4"	20	6"	33	6"
08	6"	73 23 21	2"	73 23 34	3"
73 23 09	2"	22	3"	35	2-1/2 x 4"
10	3"	23	1 x 4"	36	6"
11	3/8 x 4"	24	6"	73 23 37	3"
12	6"	73 23 25	1-1/4x3"	38	3 x 4"
73 23 13	1/2 x 2"	26	1-1/4x4"	39	6"

Brass Threaded Hexagon Nipples

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 23 51	1/8	**73 23 54**	1/2	**73 23 57**	1-1/4
52	1/4	**55**	3/4	**58**	1-1/2
53	3/8	**56**	1	**59**	2

Brass Threaded Reducing Hexagon Nipples

Unit Per Pc.

CODE	Size	CODE	Size
73 23 66	1/4 x 1/8	**73 23 70**	1 x 3/4
67	3/8 x 1/4	**71**	1-1/4 x 1
68	1/2 x 3/8	**72**	1-1/2 x 1-1/4
69	3/4 x 1/2	**73**	2 x 1-1/2

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73

Brass Threaded Reducing Nipples
Female and Male End

Unit Per Pc.

CODE	Size BSP	CODE	Size BSP
73 23 76	1/2" (Female) x 3/8" (Male)	**73 23 77**	3/4" (Female) x 1/2" (Male)

Stainless Steel Pipe Fittings
Threaded Type

Stainless steel SUS 304 conforms to a working pressure of 10 kgf/cm² in saturated steam. These fittings have high corrosion and thermal resistance and are mainly used in the petroleum refinery, petrochemical, thermal and nuclear power industries. They are all threaded for use in general service lines.

The threads for these fittings are Taper Pipe Thread Standards (JIS B 0203) compliant with ISO 7/1 standards. Other types of fittings, and sizes larger than those listed below are also available upon request.

Stainless Steel Threaded Elbows, 90°

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 25 01	1/8	**73 25 04**	1/2	**73 25 07**	1-1/4
02	1/4	**05**	3/4	**08**	1-1/2
03	3/8	**06**	1	**09**	2

Stainless Steel Threaded Tees

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 25 21	1/8	**73 25 24**	1/2	**73 25 27**	1-1/4
22	1/4	**25**	3/4	**28**	1-1/2
23	3/8	**26**	1	**29**	2

Stainless Steel Threaded Round Caps

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 25 36	1/8	**73 25 39**	1/2	**73 25 42**	1-1/4
37	1/4	**40**	3/4	**43**	1-1/2
38	3/8	**41**	1	**44**	2

Stainless Steel Threaded Hexagon Caps

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 25 51	1/8	**73 25 54**	1/2	**73 25 57**	1-1/4
52	1/4	**55**	3/4	**58**	1-1/2
53	3/8	**56**	1	**59**	2

Stainless Steel Threaded Sockets

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 25 66	1/8	**73 25 69**	1/2	**73 25 72**	1-1/4
67	1/4	**70**	3/4	**73**	1-1/2
68	3/8	**71**	1	**74**	2

Stainless Steel Threaded Reducing Sockets

73 25 76	Socket, reducing, threaded, Stainless steel, 2 x 1-1/2	Pc.

Stainless Steel Threaded Hexagon Bushings

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 25 81	1/4x1/8	**73 25 84**	3/4x1/2	**73 25 87**	1-1/2x1-1/4
82	3/8x1/4	**85**	1 x3/4	**88**	2 x1-1/2
83	1/2x3/8	**86**	1-1/4x 1		

Stainless Steel Threaded Square Head Plugs

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 26 01	1/8	**73 26 04**	1/2	**73 26 07**	1-1/4
02	1/4	**05**	3/4	**08**	1-1/2
03	3/8	**06**	1	**09**	2

Stainless Steel Threaded Unions

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 26 16	1/8	**73 26 19**	1/2	**73 26 22**	1-1/4
17	1/4	**20**	3/4	**23**	1-1/2
18	3/8	**21**	1	**24**	2

Stainless Steel Threaded Round Nipples

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 26 31	1/8	**73 26 34**	1/2	**73 26 37**	1-1/4
32	1/4	**35**	3/4	**38**	1-1/2
33	3/8	**36**	1	**39**	2

Stainless Steel Threaded Hexagon Nipples

Unit Per Pc.

CODE	Size	CODE	Size	CODE	Size
73 26 46	1/8	**73 26 49**	1/2	**73 26 52**	1-1/4
47	1/4	**50**	3/4	**53**	1-1/2
48	3/8	**51**	1	**54**	2

Stainless Steel Threaded Reducing Nipples

Unit Per Pc.

CODE	Size	CODE	Size
73 26 56	3/8 × 1/4	**73 26 60**	1-1/4 × 1
57	1/2 × 3/8	**61**	1-1/2 × 1-1/4
58	3/4 × 1/2	**62**	2 × 1-1/2
59	1 × 3/4		

PVC Plastic Pipe Fittings for Drain

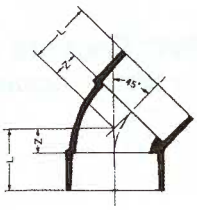
These PVC plastic fittings are used for the fabrication of PVC plastic drain pipes.

General Specifications of Fittings

Nominal Size	Diameter mm		Wall Thickness mm	Applicable Pipe O.D. mm
	O.D.	I.D.		
30	44	38.25	2.7	38
40	54	48.30	2.7	48
50	67	60.35	3.1	60
65	83	76.40	3.1	76
75	97	89.45	3.6	89
100	124	114.55	4.9	114

Sizes larger and smaller than those listed below are also available upon request.

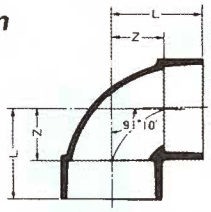
PVC Elbows, 45° for Drain



Unit Per Pc.

CODE	Nom. Size	Size mm		CODE	Nom. Size	Size mm	
		Z	L			Z	L
73 28 01	30	12	30	**73 28 04**	65	22	57
02	40	14	36	**05**	75	25	65
03	50	18	43	**06**	100	30	80

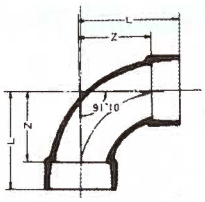
PVC Elbows, 90° Short Radius for Drain



Unit Per Pc.

CODE	Nom. Size	Size mm		CODE	Nom. Size	Size mm	
		Z	L			Z	L
73 28 11	30	22	40	**73 28 14**	65	42	77
12	40	27	49	**15**	75	48	88
13	50	33	58	**16**	100	62	112

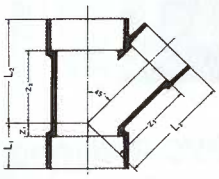
PVC Elbows, 90° Long Radius for Drain



Unit Per Pc.

CODE	Nom. Size	Size mm		CODE	Nom. Size	Size mm	
		Z	L			Z	L
73 28 21	30	37	55	**73 28 24**	65	90	125
22	40	52	74	**25**	75	100	140
23	50	66	91	**26**	100	128	178

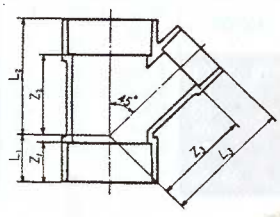
PVC Y-Pieces, 45° for Drain



Unit Per Pc.

CODE	Nom. Size	Size mm		CODE	Nom. Size	Size mm	
		L_1	L_2			L_1	L_2
73 28 31	30	30	63	**73 28 34**	65	55	127
32	40	34	80	**35**	75	66	146
33	50	45	97	**36**	100	82	184

PVC Reducing Y-Pieces, 45° for Drain



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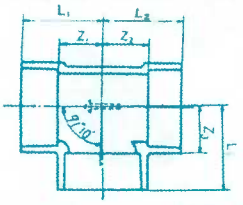
73

Unit Per Pc

CODE	Nom. Size	Size mm L_1	Size mm L_2	CODE	Nom. Size	Size mm L_1	Size mm L_2
73 28 41	40x30	28	72	73 28 47	75x50	43	126
42	50x30	25	81	48	75x65	54	138
43	50x40	33	87	49	100x40	36	146
44	65x40	34	107	50	100x50	42	148
45	65x50	43	115	51	100x65	53	160
73 28 46	75x40	34	118	73 28 52	100x75	69	168

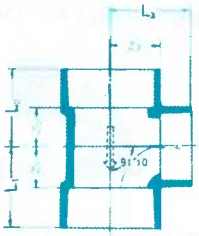
PVC Tees
for Drain



Unit Per Pc

CODE	Nom Size	Size mm L_1	Size mm L_2	CODE	Nom. Size	Size mm L_1	Size mm L_2
73 28 61	30	40	40	73 28 64	65	77	77
62	40	49	49	65	75	88	88
63	50	59	59	66	100	112	112

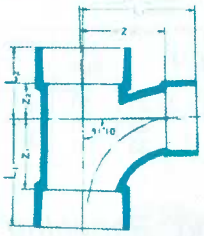
PVC Reducing Tees
for Drain



Unit Per Pc

CODE	Nom. Size	Size mm L	Size mm L_2	CODE	Nom. Size	Size mm L	Size mm L_2
73 28 71	40x30	44	45	73 28 79	75x50	74	73
72	50x30	47	51	80	75x65	82	83
73	50x40	52	55	81	100x30	72	80
74	65x30	57	60	82	100x40	77	84
75	65x40	62	64	83	100x50	84	87
73 28 76	65x50	69	67	73 28 84	100x65	92	97
77	75x30	62	66	85	100x75	98	102
78	75x40	67	70				

PVC Reducing Y-Pieces, 90°
Long Radius for Drain



Unit Per Pc

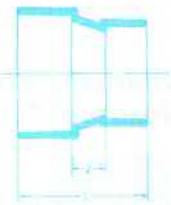
CODE	Nom. Size	Size mm L	Size mm L_2	CODE	Nom. Size	Size mm L_1	Size mm L_2
73 29 01	40x30	59	42	73 29 07	75x50	106	69
02	50x30	62	46	08	75x65	130	72
03	50x40	77	48	09	100x40	102	78
04	65x40	87	59	10	100x50	116	82
05	65x50	101	62	11	100x65	140	86
73 29 06	75x40	92	65	73 29 12	100x75	150	83

PVC Sockets
for Drain

Unit Per Pc.

CODE	Nom. Size	Size mm Z	Size mm L	CODE	Nom Size	Size mm Z	Size mm L
73 29 21	30	3	39	73 29 24	65	3	73
22	40	3	47	25	75	4	84
23	50	3	53	26	100	4	104

PVC Increasers
for Drain

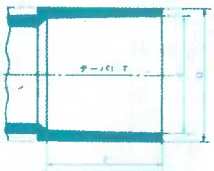


Unit Per Pc

CODE	Nom. Size	Size mm Z	Size mm L	CODE	Nom Size	Size mm Z	Size mm L
73 29 31	40x30	20	60	73 29 37	75x50	25	90
32	50x30	20	63	38	75x65	25	100
33	50x40	20	67	39	100x40	30	102
34	65x40	20	77	40	100x50	30	105
35	65x50	20	80	41	100x65	30	115
73 29 36	75x40	25	87	73 29 42	100x75	30	120

PVC Plastic Pipe Fittings
for Water Supply

PVC pipe fittings for normal water pressure and temperature. Not recommended using for compressed air or gas system.



General Specification of Fitting Sizes

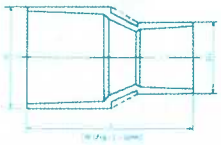
Nominal Size	Size mm D	Size mm d	Size mm l
13	24	18.40	26
16	29	22.40	30
20	33	26.45	35
25	40	32.55	40
30	46	38.60	44
40	57	48.70	55
50	70	60.80	63
65	87	76.60	61
75	102	89.60	64
100	130	114.70	84
125	157	140.85	104
150	186	166.00	132

PVC Sockets
for Water Supply

Unit Per Pc

CODE	Nom. Size	Size mm D	Size mm L
73 29 51	13	24	57
52	16	29	67
53	20	33	77
54	25	40	87
55	30	46	95
73 29 56	40	57	117
57	50	70	133
58	65	87	145
59	75	102	155
60	100	130	200
73 29 61	125	157	231
62	150	186	300

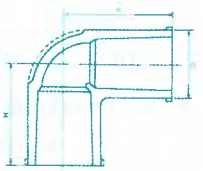
PVC Reducing Sockets
for Water Supply



Unit Per Pc.

CODE	Nom. Size	Size mm D	Size mm D1	Size mm L
73 29 71	16 x 13	29	24	61
72	20 x 13	33	24	68
73	20 x 16	33	29	71
74	25 x 13	40	24	86
75	25 x 16	40	29	85
73 29 76	25 x 20	40	33	84
77	30 x 20	46	33	93
78	30 x 25	46	40	93
79	40 x 20	57	33	113
80	40 x 25	57	40	114
73 29 81	40 x 30	57	46	114
82	50 x 25	70	40	140
83	50 x 30	70	46	136
84	50 x 40	70	57	136
85	65 x 50	87	70	149
73 29 86	75 x 50	102	70	165
87	75 x 65	102	87	159
88	100 x 75	130	102	190
89	125 x 100	157	130	229
90	150 x 100	186	130	295
73 29 91	150 x 125	186	157	272

PVC Elbows, 90°
for Water Supply

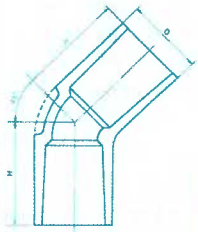


Unit Per Pc.

CODE	Nom Size	Size mm D	Size mm H
73 30 01	13	24	36
02	16	29	43
03	20	33	50
04	25	40	58
05	30	46	65
73 30 06	40	57	82
07	50	70	96
08	65	87	110
09	75	102	120
10	100	130	155
73 30 11	125	157	187
12	150	186	230

(to be continued)

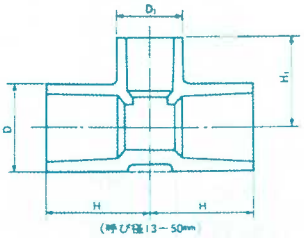
PVC Elbows, 45°
for Water Supply



Unit Per Pc.

CODE	Nom. Size	Size mm D	Size mm H
73 30 15	13	24	33
16	20	33	44

PVC Tees
for Water Supply



Unit Per Pc

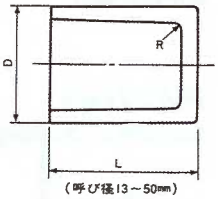
CODE	Nom. Size	Size mm D	Size mm H	Size mm D1	Size mm H1
73 30 21	13 x 13	24	36	24	36
22	16 x 13	29	41	24	38
23	16 x 16	29	43	29	43
24	20 x 13	33	46	24	40
25	20 x 16	33	48	29	45
73 30 26	20 x 20	33	50	33	50
27	25 x 13	40	51	24	43
28	25 x 16	40	53	29	48
29	25 x 20	40	55	33	53
30	25 x 25	40	58	40	58
73 30 31	30 x 13	46	55	24	46
32	30 x 16	46	57	29	51
33	30 x 20	46	59	33	56
34	30 x 25	46	62	40	61
35	30 x 30	46	65	46	65
73 30 36	40 x 13	57	66	24	52
37	40 x 16	57	68	29	57
38	40 x 20	57	70	33	62
39	40 x 25	57	73	40	67
40	40 x 30	57	76	46	71
73 30 41	40 x 40	57	82	57	82
42	50 x 13	70	74	24	58
43	50 x 16	70	76	29	63
44	50 x 20	70	78	33	68
45	50 x 25	70	81	40	73

(to be continued)

Unit Per Pc.

CODE	Nom. Size	Size mm D	H	D1	H1
73 30 46	50 x 30	70	84	46	77
47	50 x 40	70	90	57	88
48	50 x 50	70	96	70	96
49	65 x 50	87	101	70	104
50	65 x 65	87	110	87	110
73 30 51	75 x 25	102	81	40	88
52	75 x 40	102	100	57	102
53	75 x 50	102	105	70	110
54	75 x 65	102	113	87	117
55	75 x 75	102	120	102	120
73 30 56	100 x 50	130	125	70	122
57	100 x 75	130	140	102	132
58	100 x 100	130	152	130	152
59	125 x 75	157	160	102	147
60	125 x 100	157	173	130	167
73 30 61	125 x 125	157	187	157	187
62	150 x 75	186	195	102	158
63	150 x 100	186	208	130	182
64	150 x 125	186	217	157	201
65	150 x 150	186	230	186	230

PVC Caps
for Water Supply



Unit Per Pc.

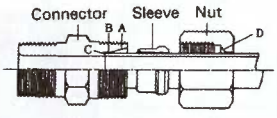
CODE	Nom. Size	Size mm D	L
73 30 71	13	24	29.0
72	16	29	33.5
73	20	33	38.5
74	25	40	44.0
75	30	46	48.0
73 30 76	40	57	59.5
77	50	70	68.0
78	75	102	105.0
79	100	130	138.0
80	125	157	171.0
73 30 81	150	186	205.0

Steel Compression Tube Fittings
For High Pressure Service
250 kgf/cm² – 400 kgf/cm²

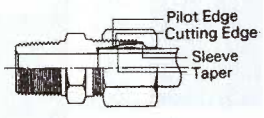
These fittings are used for pneumatic, chemical and most other fluids without flaring-welding.

Threads of these pipe fittings conform to the Taper Pipe Threads of JIS B 0203 and ISO 7/1 standards.

Types with a rated pressure of 100 kgf/cm² are also available upon request.

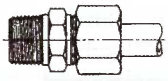


Before Assembly



After Assembly

Steel Compression Connectors



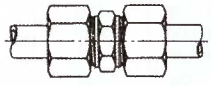
How to order: CODE

Steel compression connector, RATED PRESSURE, TUBE O.D. mm, THREAD END SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Thread End PT	CODE	Tube O.D. mm	Thread End PT
Rated Pressure 400 kgf/cm²					
For Millimeter Size Tube O.D.					
73 31 01	4	1/8	**73 31 11**	15	1/2
02	6	1/8	**12**	16	3/8
03	6	1/4	**13**	16	1/2
04	8	1/8	**14**	18	3/8
05	8	1/4	**15**	18	1/2
73 31 06	10	1/4	**73 31 16**	20	1/2
07	10	3/8	**17**	20	3/4
08	12	1/4	**18**	22	1/2
09	12	3/8	**19**	22	3/4
10	15	3/8			
For Inch Size Tube O.D.					
73 31 21	10.5	1/8	**73 31 25**	17.3	3/8
22	10.5	1/4	**26**	17.3	1/2
23	13.8	1/4	**27**	21.7	1/2
24	13.8	3/8	**28**	21.7	3/4
Rated Pressure 350 kgf/cm²					
For Millimeter Size Tube O.D.					
73 31 31	25	1	**73 31 32**	28	1
For Inch Size Tube O.D.					
73 31 36	27.2	3/4	**73 31 37**	27.2	1
Rated Pressure 250 kgf/cm²					
For Millimeter Size Tube O.D.					
73 31 41	30	1-1/4	**73 31 43**	38	1-1/2
42	35	1-1/4	**44**	42	1-1/2
For Inch Size Tube O.D.					
73 31 46	34	1	**73 31 48**	42.7	1-1/4
47	34	1-1/4	**49**	42.7	1-1/2

Steel Compression Unions



How to order: CODE

Steel compression union, RATED PRESSURE, TUBE O.D. mm

Unit Per Pc.

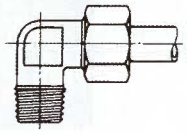
CODE	Tube O.D. mm	CODE	Tube O.D. mm
Rated Pressure 400 kgf/cm²			
For Millimeter Size Tube O.D.			
73 31 51	4	**73 31 56**	15
52	6	**57**	16
53	8	**58**	18
54	10	**59**	20
55	12	**60**	22
For Inch Size Tube O.D.			
73 31 66	10.5	**73 31 68**	17.3
67	13.8	**69**	21.7

(to be continued)

Unit Per Pc.

CODE	Tube O.D. mm	CODE	Tube O.D. mm
Rated Pressure 350 kgf/cm²			
For Millimeter Size Tube O.D.			
73 31 71	25	**73 31 72**	28
For Inch Size Tube O.D.			
73 31 76	27.2		
Rated Pressure 250 kgf/cm²			
For Millimeter Size Tube O.D.			
73 31 81 **82**	30 35	**73 31 83** **84**	38 42
For Inch Size Tube O.D.			
73 31 86	34	**73 31 87**	42.7

Steel Compression Elbows with Male End



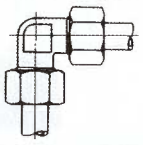
How to order: CODE

Steel compression elbow with male end, RATED PRESSURE, TUBE O.D. mm, THREAD END SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Thread End PT	CODE	Tube O.D. mm	Thread End PT
Rated Pressure 400 kgf/cm²					
For Millimeter Size Tube O.D.					
73 32 01	4	1/8	**73 32 11**	15	1/2
02	6	1/8	**12**	16	3/8
03	6	1/4	**13**	16	1/2
04	8	1/8	**14**	18	3/8
05	8	1/4	**15**	18	1/2
73 32 06	10	1/4	**73 32 16**	20	1/2
07	10	3/8	**17**	20	3/4
08	12	1/4	**18**	22	1/2
09	12	3/8	**19**	22	3/4
10	15	3/8			
For Inch Size Tube O.D.					
73 32 21	10.5	1/8	**73 32 25**	17.3	3/8
22	10.5	1/4	**26**	17.3	1/2
23	13.8	1/4	**27**	21.7	1/2
24	13.8	3/8	**28**	21.7	3/4
Rated Pressure 350 kgf/cm²					
For Millimeter Size Tube O.D.					
73 32 31	25	1	**73 32 32**	28	1
For Inch Size Tube O.D.					
73 32 36	27.2	3/4	**73 32 37**	27.2	1
Rated Pressure 250 kgf/cm²					
For Millimeter Size Tube O.D.					
73 32 41	30	1-1/4	**73 32 43**	38	1-1/2
42	35	1-1/4	**44**	42	1-1/2
For Inch Size Tube O.D.					
73 32 46	34	1	**73 32 48**	42.7	1-1/4
47	34	1-1/4	**49**	42.7	1-1/2

Steel Compression Elbows



How to order: CODE

Steel compression elbow, RATED PRESSURE, TUBE O.D. mm

Unit Per Pc.

CODE	Tube O.D. mm	CODE	Tube O.D. mm
Rated Pressure 400 kgf/cm²			
For Millimeter Size Tube O.D.			
73 32 51	4	**73 32 56**	15
52	6	**57**	16
53	8	**58**	18
54	10	**59**	20
55	12	**60**	22
For Inch Size Tube O.D.			
73 32 66	10.5	**73 32 68**	17.3
67	13.8	**69**	21.7
Rated Pressure 350 kgf/cm²			
For Millimeter Size Tube O.D.			
73 32 71	25	**73 32 72**	28
For Inch Size Tube O.D.			
73 32 76	27.2		
Rated Pressure 250 kgf/cm²			
For Millimeter Size Tube O.D.			
73 32 81 **82**	30 35	**73 32 83** **84**	38 42
For Inch Size Tube O.D.			
73 32 86	34.0	**73 32 87**	42.7

Steel Compression Male Branch Tees

How to order: CODE

Steel compression male branch tee, RATED PRESSURE, TUBE O.D. mm, THREAD END SIZE

Unit Per Pc.

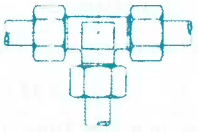
CODE	Tube O.D. mm	Thread End PT	CODE	Tube O.D. mm	Thread End PT
Rated Pressure 400 kgf/cm²					
For Millimeter Size Tube O.D.					
73 33 01	4	1/8	**73 33 09**	12	3/8
02	6	1/8	**10**	15	3/8
03	6	1/4	**11**	15	1/2
04	8	1/8	**12**	16	1/2
05	8	1/4	**13**	18	1/2
73 33 06	10	1/4	**73 33 14**	20	3/4
07	10	3/8	**15**	22	3/4
08	12	1/4			

(to be continued)

Unit Per Pc

CODE	Tube O.D. mm	Thread End PT	CODE	Tube O.D. mm	Thread End PT
For Inch Size Tube O.D.					
73 33 21	10.5	1/4	73 33 24	17.3	1/2
22	13.8	3/8	25	21.7	1/2
23	17.3	3/8	26	21.7	3/4
Rated Pressure 350 kgf/cm²					
For Millimeter Size Tube O.D.					
73 33 31	25	1	73 33 32	28	1
For Inch Size Tube O.D.					
73 33 36	27.2	3/4	73 33 37	27.2	1
Rated Pressure 250 kgf/cm²					
For Millimeter Size Tube O.D.					
73 33 41	30	1-1/4	73 33 43	38	1-1/2
42	35	1-1/4	44	42	1-1/2
For Inch Size Tube O.D.					
73 33 46	34	1	73 33 48	42.7	1-1/2
47	34	1-1/4			

Steel Compression Tees



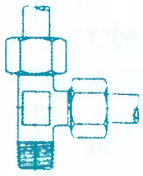
How to order: CODE

Steel compression tee, RATED PRESSURE, TUBE O.D.mm

Unit Per Pc

CODE	Tube O.D. mm	CODE	Tube O.D. mm
Rated Pressure 400 kgf/cm²			
For Millimeter Size Tube O.D.			
73 33 51	4	73 33 56	15
52	6	57	16
53	8	58	18
54	10	59	20
55	12	60	22
For Inch Size Tube O.D.			
73 33 66	10.5	73 33 68	17.3
67	13.8	69	21.7
Rated Pressure 350 kgf/cm²			
For Millimeter Size Tube O.D.			
73 33 71	25	73 33 72	28
For Inch Size Tube O.D.			
73 33 76	27.2		
Rated Pressure 250 kgf/cm²			
For Millimeter Size Tube O.D.			
73 33 81	30	73 33 83	38
82	35	84	42
For Inch Size Tube O.D.			
73 33 86	34	73 33 87	42.7

Steel Compression Male Run Tees



How to order: CODE

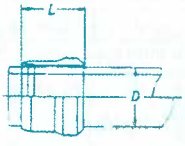
Steel compression male run tee, RATED PRESSURE, TUBE O.D. mm, THREAD END SIZE

Unit Per Pc

CODE	Tube O.D. mm	Thread End PT	CODE	Tube O.D. mm	Thread End PT
Rated Pressure 400 kgf/cm²					
For Millimeter Size Tube O.D.					
73 34 01	4	1/8	73 34 09	12	3/8
02	6	1/8	10	15	3/8
03	6	1/4	11	15	1/2
04	8	1/8	12	16	1/2
05	8	1/4	13	18	1/2
73 34 06	10	1/4	73 34 14	20	3/4
07	10	3/8	15	22	3/4
08	12	1/4			
For Inch Size Tube O.D.					
73 34 21	10.5	1/4	73 34 24	17.3	1/2
22	13.8	3/8	25	21.7	1/2
23	17.3	3/8	26	21.7	3/4
Rated Pressure 350 kgf/cm²					
For Millimeter Size Tube O.D.					
73 34 31	25	1	73 34 32	28	1
For Inch Size Tube O.D.					
73 34 36	27.2	3/4	73 34 37	27.2	1
Rated Pressure 250 kgf/cm²					
For Millimeter Size Tube O.D.					
73 34 41	30	1-1/4	73 34 43	38	1-1/2
42	35	1-1/4	44	42	1-1/2
For Inch Size Tube O.D.					
73 34 46	34	1	73 34 48	42.7	1-1/2
47	34	1-1/4			

Steel Sleeves

For Steel Compression Tube Fitting



How to order: CODE

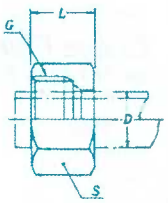
Steel sleeve for compression tube fitting, RATED PRESSURE, TUBE O.D. mm

Unit Per Pc

CODE	Tube O.D. mm	L mm	CODE	Tube O.D. mm	L mm
Rated Pressure 400 kgf/cm²					
For Millimeter Size Tube O.D.					
73 34 51	4	8	73 34 56	15	10
52	6	9.5	57	16	10.5
53	8	9.5	58	18	10.5
54	10	10	59	20	11.5
55	12	10	60	22	11.5
For Inch Size Tube O.D.					
73 34 66	10.5	10	73 34 68	17.3	10.5
67	13.8	10	69	21.7	11.5
Rated Pressure 350 kgf/cm²					
For Millimeter Size Tube O.D.					
73 34 71	25	12	73 34 72	28	12
For Inch Size Tube O.D.					
73 34 76	27.2	12			
Rated Pressure 250 kgf/cm²					
For Millimeter Size Tube O.D.					
73 34 81	30	13	73 34 83	38	13.5
82	35	13	84	42	13.5
For Inch Size Tube O.D.					
73 34 86	34.0	13	73 34 87	42.7	14

Steel Nuts
For Steel Compression Fitting

The threads conform with the metric fine series outlined by JIS B 0207 standards. The pitch sizes are listed as follows.



How to order: CODE

Steel nut for compression tube fitting, RATED PRESSURE, TUBE O.D. mm

Unit Per Pc.

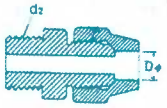
CODE	Tube O.D. mm	Thread MF I.D. Pitch	CODE	Tube O.D. mm	Thread MF I.D. Pitch
Rated Pressure 400 kgf/cm²					
For Millimeter Size Tube O.D.					
73 35 01	4	M10X1.25	73 35 06	15	M22X1.5
02	6	M10X1.5	07	16	M24X1.5
03	8	M14X1.5	08	18	M26X1.5
04	10	M16X1.5	09	20	M28X1.5
05	12	M18X1.5	10	22	M30X1.5
For Inch Size Tube O.D.					
73 35 16	10.5	M16X1.5	73 35 18	17.3	M26X1.5
17	13.8	M20X1.5	19	21.7	M30X1.5
Rated Pressure 350 kgf/cm²					
For Millimeter Size Tube O.D.					
73 35 21	25	M34X1.5	73 35 22	28	M36X1.5
For Inch Size Tube O.D.					
73 35 26	27.2	M36X1.5			
Rated Pressure 250 kgf/cm²					
For Millimeter Size Tube O.D.					
73 35 31	30	M40X1.5	73 35 33	38	M48X1.5
32	35	M45X1.5	34	42	M52X 2
For Inch Size Tube O.D.					
73 35 36	34.0	M45X1.5	73 35 37	42.7	M56X 2

Brass 45° Flared Tube Fittings

For use with copper, brass, aluminium and steel tubings. Working Temperature: –20°C - 150°C.

Tube Size O.D. mm	Working Pressure: Rated Pressure	Working Pressure: Bursting Pressure
6	250 kgf/cm²	1,000 kgf/cm² & Over
8	250 "	1,000 "
10	180 "	700 "
12	150 "	650 "

Brass Flared Half Unions
Straight Thread End



How to order: CODE

Brass flared half union, straight thread end, TUBE O.D. mm, THREAD END SIZE

Unit Per Pc.

For Millimeter Size Tube O.D.			For Inch Size Tube O.D.		
CODE	Tube O.D. D mm	Thread End d_2 PF	CODE	Tube O.D. D Inch	Thread End d_2 PF
73 36 01	6	1/8	73 36 16	1/4	1/8
02		1/4	17		1/4
03		3/8	18		3/8
73 36 04	8	1/8	73 36 19	3/8	1/4
05		1/4	20		3/8
06		3/8	21		1/2
73 36 07	10	1/4	73 36 22	1/2	3/8
08		3/8	23		1/2
09		1/2			
73 36 10	12	3/8	73 36 24	5/8	1/2
11		1/2			

Brass Flared Half Unions
Taper Thread End

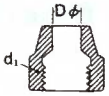
How to order: CODE

Brass flared half union, taper thread end, TUBE O.D. mm, THREAD END SIZE

Unit Per Pc.

For Millimeter Size Tube O.D.			For Inch Size Tube O.D.		
CODE	Tube O.D. D mm	Thread End d PT	CODE	Tube O.D. D inch	Thread End d PT
73 36 31	6	1/8	73 36 46	1/4	1/8
32		1/4	47		1/4
33		3/8	48		3/8
73 36 34	8	1/8	73 36 49	3/8	1/4
35		1/4	50		3/8
36		3/8	51		1/2
73 36 37	10	1/4	73 36 52	1/2	3/8
38		3/8	53		1/2
39		1/2	73 36 54	5/8	1/2
73 36 40	12	3/8			
41		1/2			

Brass Flared Nuts



How to order: CODE

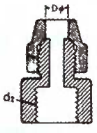
Brass flared nut, TUBE O.D. mm, THREAD SIZE

Unit Per Pc.

For Millimeter Size Tube O.D.			For Inch Size Tube O.D.		
CODE	Tube O.D. D mm	Unf Thread SizexNos. d_1	CODE	Tube O.D. D Inch	Unf Thread SizexNos. d_1
73 36 61	6	7/16 x 20s	**73 36 71**	1/4	7/16 x 20s
62		1/2 x 20s	**72**		1/2 x 20s
73 36 63	8	1/2 x 20s	**73 36 73**	3/8	5/8 x 18s
64		5/8 x 18s	**74**		3/4 x 16s
73 36 65	10	5/8 x 18s	**73 36 75**	1/2	3/4 x 16s
66		3/4 x 16s			
73 36 67	12	3/4 x 16s	**73 36 76**	5/8	7/8 x 14s

7TH
73

Brass Flared Reducing Unions



How to order: CODE

Brass flared reducing union, TUBE O.D. mm, or inch

Unit Per Pc.

For Millimeter Size Tube O.D.			For Inch Size Tube O.D.		
CODE	Tube O.D. D mm	Thread Female d_2 PF	CODE	Tube O.D. D Inch	Thread Female d_2 PF
73 36 91	6	1/4	**73 36 96**	1/4	1/4
92	8	1/4	**97**	3/8	3/8
93	10	3/8	**98**	1/2	1/2
94	12	1/2			

Brass Flared Union Couplings

How to order: CODE

Brass flared union coupling, TUBE O.D. mm, or inch

Unit Per Pc.

For Millimeter Size Tube O.D.		For Inch Size Tube O.D.	
CODE	Tube O.D. D mm	CODE	Tube O.D. D Inch
73 37 01	6 x 6	**73 37 06**	1/4 x 1/4
02	8 x 8	**07**	3/8 x 3/8
03	10 x 10	**08**	1/2 x 1/2
04	12 x 12	**09**	5/8 x 5/8

Brass Flared Reducing Union Couplings

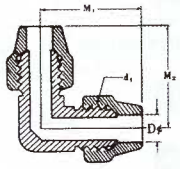
How to order: CODE

Brass flared reducing union coupling, TUBE O.D. mm, or inch

Unit Per Pc.

CODE	Tube O.D. D mm	Tube O.D. D' Inch	CODE	Tube O.D. D Inch	Tube O.D. D' Inch
73 37 11	6	3/8	**73 37 15**	1/4	3/8
12		10 mm	**16**		10 mm
13		12 mm	**17**		12 mm
14		1/2	**18**		1/2

Brass Flared Elbows, 90°



How to order: CODE

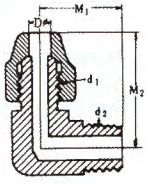
Brass flared elbow 90°, TUBE O.D.

Unit Per Pc.

For Millimeter Size Tube O.D.		For Inch Size Tube O.D.	
CODE	Tube O.D. D mm	CODE	Tube O.D. D Inch
73 37 41	6 x 6	**73 37 46**	1/4 x 1/4
42	8 x 8	**47**	3/8 x 3/8
43	10 x 10	**48**	1/2 x 1/2
44	12 x 12	**49**	5/8 x 5/8

Brass Flared Elbows, 90° with Male End

Tapered pipe thread on male end.



How to order: CODE

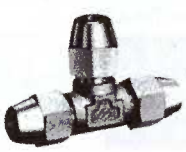
Brass flared elbow, 90° with male end, TUBE O.D., MALE THREAD SIZE

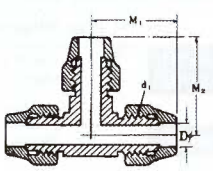
Unit Per Pc.

CODE	Tube O.D. D Inch	Male Thread d_2PT	CODE	Tube O.D. D Inch	Male Thread d_2PT
73 37 51	6 mm	1/8	**73 37 58**	10 mm	1/4
52		1/4	**59**		3/8
73 37 53	1/4	1/8	**73 37 60**	12 mm	3/8
54		1/4	**61**		1/2
73 37 55	8 mm	1/4	**73 37 62**	1/2	3/8
73 37 56	3/8	1/4	**63**		1/2
57		3/8	**73 37 64**	5/8	1/2

Brass Flared Tees

Equal O.D. tube size tees.





How to order: CODE

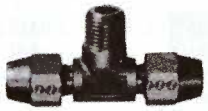
Brass flared tee, TUBE O.D.

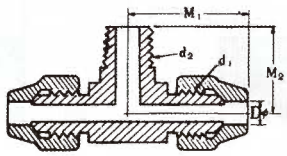
Unit Per Pc.

For Millimeter Size Tube O.D.		For Inch Size Tube O.D.	
CODE	Tube O.D. D mm	CODE	Tube O.D. D Inch
73 37 71	6	**73 37 76**	1/4
72	8	**77**	3/8
73	10	**78**	1/2
74	12	**79**	5/8

Brass Flared Tees with Male Thread End

The male end has tapered pipe thread.





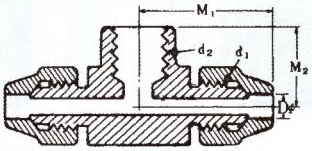
How to order: CODE

Brass flared tee with male thread end, TUBE O.D., MALE THREAD SIZE

Unit Per Pc.

For Millimeter Size Tube O.D.			For Inch Size Tube O.D.		
CODE	Tube O.D. D mm	Male Thread d_2PT	CODE	Tube O.D. D Inch	Male Thread d_2PT
73 37 81	6	1/8	**73 37 91**	1/4	1/8
82		1/4	**92**		1/4
73 37 83	8	1/4	**73 37 93**	3/8	1/4
73 37 84	10	1/4	**94**		3/8
85		3/8	**73 37 95**	1/2	3/8
73 37 86	12	3/8	**96**		1/2
87		1/2			

Brass Flared Tees with Female Thread End



How to order: CODE

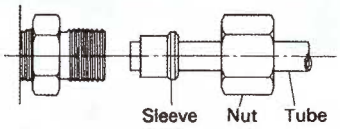
Brass flared tee with female thread end, TUBE O.D. mm, MALE THREAD SIZE

Unit Per Pc.

For Millimeter Size Tube O.D.			For Inch Size Tube O.D.		
CODE	Tube O.D. D mm	Male Thread d_2PT	CODE	Tube O.D. D Inch	Male Thread d_2PT
73 38 01	6	1/8	**73 38 11**	1/4	1/8
02		1/4	**12**		1/4
73 38 03	8	1/4	**73 38 13**	3/8	1/4
73 38 04	10	1/4	**14**		3/8
05		3/8	**73 38 15**	1/2	3/8
73 38 06	12	3/8	**16**		1/2
07		1/2			

Brass Flareless Compression Tube Fittings

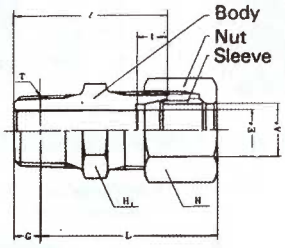
Used for connecting copper tubing. No soldering or flaring is required. Pipes and fittings are tightly connected by sleeves as illustrated.



Working Pressure

Copper Tube O.D. mm	Rated Pressure kgf/cm²
4 - 15	140
20, 25	105

Brass Flareless Male Connectors



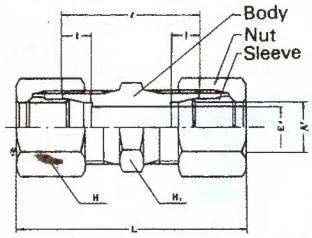
How to order: CODE

Brass flareless male connector, TUBE O.D., THREAD END SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Thread End PT	CODE	Tube O.D. mm	Thread End PT
73 40 01	4	1/8	**73 40 09**	12	3/8
02	6	1/8	**10**	15	3/8
03	6	1/4	**11**	15	1/2
04	8	1/8	**12**	20	1/2
05	8	1/4	**13**	20	3/4
73 40 06	10	1/4	**73 40 14**	25	3/4
07	10	3/8	**15**	25	1
08	12	1/4			

Brass Flareless Unions



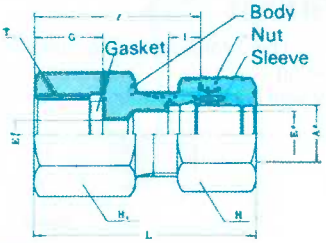
How to order: CODE

Brass flareless union, TUBE O.D.

Unit Per Pc.

CODE	Tube O.D. mm	Thread End PF	CODE	Tube O.D. mm	Thread End PF
73 40 21	4	1/8	**73 40 25**	12	1/2
22	6	1/4	**26**	15	5/8
23	8	1/4	**27**	20	3/4
24	10	3/8	**28**	25	1

Brass Flareless Female Couplings



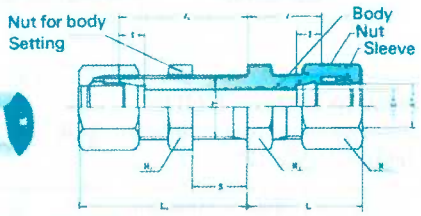
How to order : CODE

Brass flareless female coupling, TUBE O.D., FEMALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Thread Female PT	CODE	Tube O.D. mm	Thread Female PT
73 40 31	4	1/4	73 40 38	8	1/2
32		3/8	73 40 39	10	1/4
73 40 33	6	1/4	40		3/8
34		3/8	41		1/2
35		1/2	73 40 42	12	1/4
73 40 36	8	1/4	43		3/8
37		3/8	44		1/2

Brass Flareless Bulkhead Unions



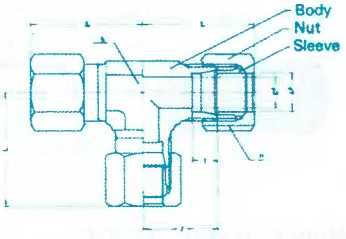
How to order: CODE

Brass flareless bulkhead union, TUBE O.D., NUT THREAD SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Nut Thread PF	CODE	Tube O.D. mm	Nut Thread PF
73 40 51	4	1/8	73 40 55	12	1/2
52	6	1/4	56	15	5/8
53	8	1/4	57	20	3/4
54	10	3/8	58	25	1

Brass Flareless Union Tees



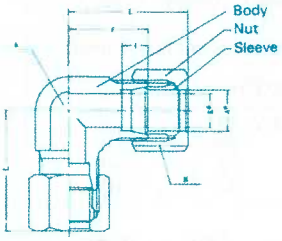
How to orde: CODE

Brass flareless union tee, TUBE O.D., NUT THREAD SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Nut Thread PF	CODE	Tube O.D. mm	Nut Thread PF
73 40 61	4	1/8	73 40 65	12	1/2
62	6	1/4	66	15	5/8
63	8	1/4	67	20	3/4
64	10	3/8	68	25	1

Brass Flareless Union Elbows



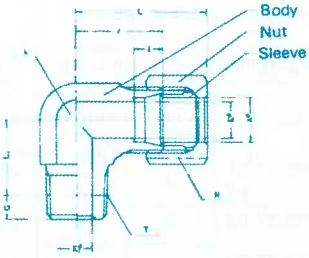
How to order: CODE

Brass flareless union elbow, TUBE O.D., NUT THREAD SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Nut Thread PT	CODE	Tube O.D. mm	Nut Thread PT
73 40 71	4	1/8	73 40 75	12	1/2
72	6	1/4	76	15	5/8
73	8	1/4	77	20	3/4
74	10	3/8	78	25	1

Brass Flareless Male Elbows



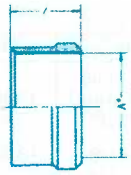
How to order: CODE

Brass flareless male elbow, TUBE O.D., THREAD END SIZE

Unit Per Pc.

CODE	Tube O.D. mm	Thread End PT	CODE	Tube O.D. mm	Thread End PT
73 40 81	4	1/8	73 40 89	12	3/8
82	6	1/8	90	15	3/8
83	6	1/4	91	15	1/2
84	8	1/8	92	20	1/2
85	8	1/4	93	20	3/4
73 40 86	10	1/4	73 40 94	25	3/4
87	10	3/8	95	25	1
88	12	1/4			

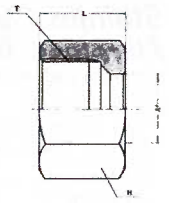
Brass Sleeves for Flareless Tube Fitting



Unit Per Pc.

CODE	Tube O.D. mm	Length mm	CODE	Tube O.D. mm	Length mm
73 41 01	4	7	73 41 05	12	10
02	6	9	06	15	10
03	8	9	07	20	10
04	10	10	08	25	11

Brass Nuts for Flareless Tube Fitting



Unit Per Pc.

CODE	Tube O.D. mm	Nut Thread	CODE	Tube O.D. mm	Nut Thread
73 41 11	4	M10×1.25	**73 41 15**	12	M18×1.5
12	6	M12×1.5	**16**	15	M22×1.5
13	8	M14×1.5	**17**	20	M28×1.5
14	10	M16×1.5	**18**	25	M34×1.5

Stainless Steel Flareless Tube Fittings

These stainless steel flareless tube fittings have the following characteristics and specifications.

1. Applicable for extreme high and low temperatures.
2. Applicable for high pressure.
3. May be used for vacuum lines.
4. May be used for gas analyzer lines when high accuracy is required.

How to assemble

Specifications

Material	Stainless Steel SUS 316
Test Pressure	850 Kgf/cm^2
Working Pressure	210 "
Thread	JIS PT (Taper Pipe Thread) and JIS PF for union of pressure gauge

Stainless Steel Flareless Male Connectors

How to order: CODE

Stainless steel flareless male connector, TUBE O.D., MALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D.	Thread Male End	CODE	Tube O.D.	Thread Male End
73 43 01	6 mm	PT 1/8	**73 43 09**	10 mm	PT 1/4
02		" 1/4	**10**		" 3/8
03		" 3/8	**11**		" 1/2
04		" 1/2			
73 43 05	8 mm	PT 1/8	**73 43 12**	12 mm	PT 1/4
06		" 1/4	**13**		" 3/8
07		" 3/8	**14**		" 1/2
08		" 1/2			

Stainless Steel Flareless Male Elbows

How to order: CODE

Stainless steel flareless male elbow, TUBE O.D., MALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D.	Thread Male End	CODE	Tube O.D.	Thread Male End
73 43 21	6 mm	PT 1/8	**73 43 29**	10 mm	PT 1/4
22		" 1/4	**30**		" 3/8
23		" 3/8	**31**		" 1/2
24		" 1/2			
73 43 25	8 mm	PT 1/8	**73 43 32**	12 mm	PT 1/4
26		" 1/4	**33**		" 3/8
27		" 3/8	**34**		" 1/2
28		" 1/2			

Stainless Steel Flareless Bulkhead Male Connectors

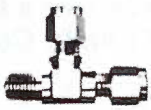
How to order: CODE

Stainless steel flareless bulkhead male connector, TUBE O.D., MALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D.	Thread Male End	CODE	Tube O.D.	Thread Male End
73 43 41	6 mm	PT 1/8	**73 43 44**	10 mm	PT 1/4
42		" 1/4			
73 43 43	8 mm	PT 1/4	**73 43 45**	12 mm	PT 3/8

Stainless Steel Flareless Male Run Tees



How to order: CODE

Stainless steel flareless male run tee, TUBE O.D., MALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D.	Thread Male End	CODE	Tube O.D.	Thread Male End
73 43 51	6 mm	PT 1/8	**73 43 54**	8 mm	PT 1/4
52		" 1/4	**73 43 55**	10 mm	" 1/4
73 43 53	8 mm	PT 1/8	**73 43 56**	12 mm	PT 3/8

Stainless Steel Flareless Male Branch Tees

How to order: CODE

Stainless steel flareless male branch tee, TUBE O.D., MALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D.	Thread Male End	CODE	Tube O.D.	Thread Male End
73 43 61	6 mm	PT 1/8	**73 43 64**	8 mm	PT 1/4
62		" 1/4	**73 43 65**	10 mm	" 1/4
73 43 63	8 mm	PT 1/8	**73 43 66**	12 mm	PT 3/8

Stainless Steel Flareless Female Connectors

How to order: CODE

Stainless steel flareless female connector, TUBE O.D., FEMALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D.	Thread Female End	CODE	Tube O.D.	Thread Female End
73 43 71	6 mm	PF 1/8	**73 43 78**	10 mm	PF 1/4
72		" 1/4	**79**		" 3/8
73		" 3/8	**80**		" 1/2
74		" 1/2			
73 43 75	8 mm	PF 1/4	**73 43 81**	12 mm	PF 1/4
76		" 3/8	**82**		" 3/8
77		" 1/2	**83**		" 1/2

Only this type thread is PF.

Stainless Steel Flareless Female Branch Tees

How to order: CODE

Stainless steel flareless female branch tee, TUBE O.D., FEMALE THREAD SIZE

Unit Per Pc.

CODE	Tube O.D.	Thread Female End	CODE	Tube O.D.	Thread Female End
73 43 86	6 mm	PT 1/8	**73 43 89**	10 mm	PT 1/4
87		" 1/4			
73 43 88	8 mm	PT 1/4	**73 43 90**	12 mm	PT 3/8

Stainless Steel Flareless Bulkhead Female Connectors

Unit Per Pc.

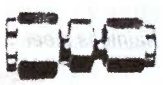
CODE	Tube O.D.	Thread Female End	CODE	Tube O.D.	Thread Female End
73 43 94	6 mm	PT 1/8	**73 43 97**	10 mm	PT 1/4
95		" 1/4			
73 43 96	8 mm	PT 1/4	**73 43 98**	12 mm	PT 3/8

Stainless Steel Flareless Unions

Unit Per Pc.

CODE	Tube O.D.	CODE	Tube O.D.
73 44 01	6 mm	**73 44 03**	10 mm
02	8 mm	**04**	12 mm

Stainless Steel Flareless Reducing Unions



Unit Per Pc.

CODE	Tube O.D.	CODE	Tube O.D.
73 44 06	6 × 8 mm	**73 44 08**	10 × 12 mm
07	8 × 10 mm		

Stainless Steel Flareless Bulkhead Unions

Unit Per Pc.

CODE	Tube O.D.	CODE	Tube O.D.
73 44 11	6 mm	**73 44 13**	10 mm
12	8 mm	**14**	12 mm

Stainless Steel Flareless Tee Unions

Unit Per Pc.

CODE	Tube O.D.	CODE	Tube O.D.
73 44 16	6 mm	**73 44 18**	10 mm
17	8 mm	**19**	12 mm

Stainless Steel Flareless Elbow Unions

Unit Per Pc.

CODE	Tube O.D.	CODE	Tube O.D.
73 44 21	6 mm	**73 44 23**	10 mm
22	8 mm	**24**	12 mm

Tube Fitting Accessories
for Stainless Steel Flareless Tube Fittings

Following items are for use with the tube fittings.

Stainless Steel Nut, Ferrule Front & Rear

		Stainless steel nut for tube O.D.		
	73 44 31		6 mm	Pc.
	32	"	8 mm	"
	33	"	10 mm	"
	34	"	12 mm	"
		Stainless steel ferrule front for tube		
	73 44 36	O.D.	6 mm	Pc.
	37	"	8 mm	"
	38	"	10 mm	"
	39	"	12 mm	"
		Stainless steel ferrule rear for tube		
	73 44 41	O.D.	6 mm	Pc.
	42	"	8 mm	"
	43	"	10 mm	"
	44	"	12 mm	"

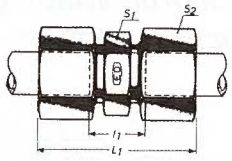
Ermeto High Pressure Steel Couplings

Ermeto high pressure steel couplings are available in steel, stainless steel, and brass with working temperature ranges varying based upon the material of the cast. When ordering, specify the type of material the coupling should be supplied in. Unless specified otherwise, steel couplings will be provided.

Steel Unions

How to order: CODE

Ermeto steel union, NOMINAL PRESSURE, TUBE O.D., PART NO.



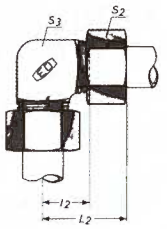
Unit Per Pc.

CODE	Tube O.D.	Pressure Rating	Part No.	Length L1
Nominal Pressure: 100 kgf/cm²				
73 44 51	4 mm	PN 100	G4 - LL	31 mm
52	6		G6 - LL	32
53	8		G8 - LL	35
54	10		G10 - LL	35
55	12		G12 - LL	35
Nominal Pressure: 315 kgf/cm²				
73 44 56	6 mm	PN 315	G6 - PL	39 mm
57	8		G8 - PL	40
58	10		G10 - PL	42
59	12		G12 - PL	43
60	15		G15 - PL	46
61	18		G18 - PL	48

Steel Elbows

How to order: CODE

Ermeto steel elbow, NOMINAL PRESSURE, TUBE O.D., PART NO.



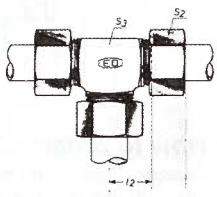
Unit Per Pc.

CODE	Tube O.D.	Pressure Rating	Part No.	Length L2
Nominal Pressure : 100 kgf/cm²				
73 44 65	4 mm	PN 100	W4 - LL	21 mm
66	6		W6 - LL	21
67	8		W8 - LL	23
68	10		W10 - LL	24
69	12		W12 - LL	25
Nominal Pressure : 315 kgf/cm²				
73 44 71	6 mm	PN 315	W6 - PL	27 mm
72	8		W8 - PL	29
73	10		W10 - PL	30
74	12		W12 - PL	32
75	15		W15 - PL	36
76	18		W18 - PL	40

Steel Tees

How to order: CODE

Ermeto steel tee, NOMINAL PRESSURE, TUBE O.D., PART NO.



Unit Per Pc.

CODE	Tube O.D.	Pressure Rating	Part No.	Length L2
Nominal Pressure : 100 kgf/cm²				
73 44 81	4 mm	PN 100	T4 - LL	21 mm
82	6		T6 - LL	21
83	8		T8 - LL	23
84	10		T10 - LL	24
85	12		T12 - LL	25
Nominal Pressure : 315 kgf/cm²				
73 44 86	6 mm	PN 315	T6 - PL	27 mm
87	8		T8 - PL	29
88	10		T10 - PL	30
89	12		T12 - PL	32
90	15		T15 - PL	36
91	18		T18 - PL	40

7TH
73

Flanges

Many types of flanges are produced according to various standards. The most common types are listed below.

DIN 2531 / 2532 / 2533 – Cast Iron Flanges

Nominal Pressure	DIN No.	Raised Face Type (Nominal size)
6.0 kgf/cm²	DIN 2531	10 - 3,600 mm
10.0 kgf/cm²	DIN 2532	10 - 3,000 mm
16.0 kgf/cm²	DIN 2533	10 - 1,000 mm

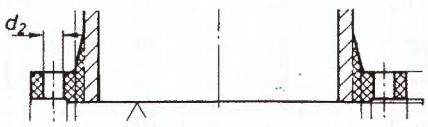
JIS B 2220 (1990) – Steel Welding Pipe Flanges

Nominal Pressure		Slip on Welding Type Flange		
		Plate Flange	Hub Flange	
		Flat Face	Without Groove on Hub Side	
			Flat Face	Large Raised Face
5 kgf/cm²		10 -400 mm	450-1,000 mm	-
10 kgf/cm²	Thin Type	10 -350 mm	400 mm	-
	Ordinary Type	10 -225 mm	250-1,000 mm	-
16 kgf/cm²		-	10- 600 mm	600-1,200mm

ANSI B16.5

Nominal Pressure	Flange Type	
	Slip on	Socket welding
Class 150	1/2 - 24"	1/2 - 24"
Class 300	1/2 - 24"	1/2 - 24"

DIN 2531 / 2532 / 2533 – Raised Face Type Cast Iron Flanges



How to order: CODE

Flange, cast iron, raised face, DIN NO., NOMINAL PRESSURE, NOMINAL DIAM

DIN 2531 – Cast Iron Flanges, Nominal pressure 6 kgf/cm²

Unit Per Pc.

CODE	Nominal Diam mm	Size mm			Bolt Hole Size mm		
		O.D.	Thick	P.C.D.	No.	Thread	Diam.
73 45 01	10	75	12	50	4	M10	11
02	15	80	12	55	4	M10	11
03	20	90	14	65	4	M10	11
04	25	100	14	75	4	M10	11
05	32	120	16	90	4	M12	14
73 45 06	40	130	16	100	4	M12	14
07	50	140	16	110	4	M12	14
08	65	160	16	130	4	M12	14
09	80	190	18	150	4	M16	18
10	100	210	18	170	4	M16	18
73 45 11	125	240	20	200	8	M16	18
12	150	265	20	225	8	M16	18
13	200	320	22	280	8	M16	18
14	250	375	24	335	12	M16	18
15	300	440	24	395	12	M20	22

DIN 2532 – Cast Iron Flanges, Nominal pressure 10 kgf/cm²

Unit Per Pc.

CODE	Nominal Diam mm	Size mm			Bolt Hole Size mm		
		O.D.	Thick	P.C.D.	No.	Thread	Diam.
73 45 21	10	90	14	60	4	M12	14
22	15	95	14	65	4	M12	14
23	20	105	16	75	4	M12	14
24	25	115	16	85	4	M12	14
25	32	140	18	100	4	M16	18
73 45 26	40	150	18	110	4	M16	18
27	50	165	20	125	4	M16	18
28	65	185	20	145	4	M16	18
29	80	200	22	160	8	M16	18
30	100	220	24	180	8	M16	18
73 45 31	125	250	26	210	8	M16	18
32	150	285	26	240	8	M20	22
33	175	315	28	270	8	M20	22
34	200	340	26	295	8	M20	22
35	250	395	28	350	12	M20	22
73 45 36	300	445	28	400	12	M20	22

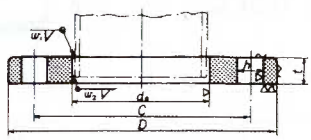
DIN 2533 – Cast Iron Flanges, Nominal pressure 16 kgf/cm²

Unit Per Pc.

CODE	Nominal Diam mm	Size mm			Bolt Hole Size mm		
		O.D.	Thick	P.C.D.	No.	Thread	Diam.
73 45 41	10	90	14	60	4	M12	14
42	15	95	14	65	4	M12	14
43	20	105	16	75	4	M12	14
44	25	115	16	85	4	M12	14
45	32	140	18	100	4	M16	18
73 45 46	40	150	18	110	4	M16	18
47	50	165	20	125	4	M16	18
48	65	185	20	145	4	M16	18
49	80	200	22	160	8	M16	18
50	100	220	24	180	8	M16	18
73 45 51	125	250	26	210	8	M16	18
52	150	285	26	240	8	M20	22
53	175	315	28	270	8	M20	22
54	200	340	30	295	12	M20	22
55	250	405	32	355	12	M24	26
73 45 56	300	460	32	410	12	M24	26

Slip-on Welding Steel Pipe Flanges

(Ref. JIS B 2220 – 90)



How to order: CODE

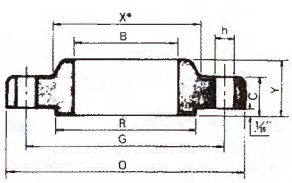
Flange, steel, slip-on welding, JIS B 2220, PRESSURE, NOMINAL SIZE

Unit Per Pc.

CODE	Nominal Size		Pipe O.D. mm	Flange Size mm					
				Bore do	O.D. D	Thick t	Pitch C	Bolt Hole	
	A	B						No.	hø
5 kgf/cm² Ref. JIS B 2220									
73 46 01	10	3/8	17.3	17.8	75	9	55	4	12
02	15	1/2	21.7	22.2	80	9	60	4	12
03	20	3/4	27.2	27.7	85	10	65	4	12
04	25	1	34	34.5	95	10	75	4	12
05	32	1-1/4	42.7	43.2	115	12	90	4	15
73 46 06	40	1-1/2	48.6	49.1	120	12	95	4	15
07	50	2	60.5	61.1	130	14	105	4	15
08	65	2-1/2	76.3	77.1	155	14	130	4	15
09	80	3	89.1	90	180	14	145	4	19
10	100	4	114.3	115.4	200	16	165	8	19
73 46 11	125	5	139.8	141.2	235	16	200	8	19
12	150	6	165.2	166.6	265	18	230	8	19
13	200	8	216.3	218	320	20	280	8	23
14	250	10	267.4	269.5	385	22	345	12	23
15	300	12	318.5	321	430	22	390	12	23
10 kgf/cm² Ref. JIS B 2220									
73 46 21	10	3/8	17.3	17.8	90	12	65	4	15
22	15	1/2	21.7	22.2	95	12	70	4	15
23	20	3/4	27.2	27.7	100	14	75	4	15
24	25	1	34	34.5	125	14	90	4	19
25	32	1-1/4	42.7	43.2	135	16	100	4	19
73 46 26	40	1-1/2	48.6	49.1	140	16	105	4	19
27	50	2	60.5	61.1	155	16	120	4	19
28	65	2-1/2	76.3	77.1	175	18	140	4	19
29	80	3	89.1	90	185	18	150	8	19
30	100	4	114.3	115.4	210	18	175	8	19
73 46 31	125	5	139.8	141.2	250	20	210	8	23
32	150	6	165.2	166.6	280	22	240	8	23
33	200	8	216.3	218	330	22	290	12	23
34	250	10	267.4	269.5	400	24	355	12	25
35	300	12	318.5	321	445	24	400	16	25

Slip-on Welding Steel Pipe Flanges

(Ref. ASME / ANSI B 16.5 - 1988)



How to order: CODE

Flange, steel , slip-on welding, ASME/ANSI B16.5, PRESSURE, NOMINAL SIZE

Unit Per Pc.

CODE	Nominal Size A	Nominal Size B	Flange Size Inch O.D.	Flange Size Inch I.D.	Flange Size Inch Thick	Bolt Hole Inch Dia	Bolt Hole Inch No.	Bolt Hole Inch Circle
Nominal Pressure 150 lbs								
73 46 51	15	1/2	3.50	0.88	0.44	0.62	4	2.38
52	20	3/4	3.88	1.09	0.50	0.62	4	2.75
53	25	1	4.25	1.36	0.56	0.62	4	3.12
54	32	1-1/4	4.62	1.70	0.62	0.62	4	3.50
55	40	1-1/2	5.00	1.95	0.69	0.62	4	3.88
73 46 56	50	2	6.00	2.44	0.75	0.75	4	4.75
57	65	2-1/2	7.00	2.94	0.88	0.75	4	5.50
58	80	3	7.50	3.57	0.94	0.75	4	6.00
59	90	3-1/2	8.50	4.07	0.94	0.75	8	7.00
60	100	4	9.00	4.57	0.94	0.75	8	7.50
73 46 61	125	5	10.00	5.66	0.94	0.88	8	8.50
62	150	6	11.00	6.72	1.00	0.88	8	9.50
63	200	8	13.50	8.72	1.12	0.88	8	11.75
64	250	10	16.00	10.88	1.19	1.00	12	14.25
65	300	12	19.00	12.88	1.25	1.00	12	17.00
Nominal Pressure 300 lbs								
73 46 71	15	1/2	3.75	0.88	0.56	0.62	4	2.62
72	20	3/4	4.62	1.09	0.62	0.75	4	3.25
73	25	1	4.88	1.36	0.69	0.75	4	3.50
74	32	1-1/4	5.25	1.70	0.75	0.75	4	3.88
75	40	1-1/2	6.12	1.95	0.81	0.88	4	4.50
73 46 76	50	2	6.50	2.44	0.88	0.75	8	5.00
77	65	2-1/2	7.50	2.94	1.00	0.88	8	5.88
78	80	3	8.25	3.57	1.12	0.88	8	6.62
79	90	3-1/2	9.00	4.07	1.19	0.88	8	7.25
80	100	4	10.00	4.57	1.25	0.88	8	7.88
73 46 81	125	5	11.00	5.66	1.38	0.88	8	9.25
82	150	6	12.50	6.72	1.44	0.88	12	10.62
83	200	8	15.00	8.72	1.62	1.00	12	13.00
84	250	10	17.50	10.88	1.88	1.12	16	15.25
85	300	12	20.50	12.88	2.00	1.25	16	17.75

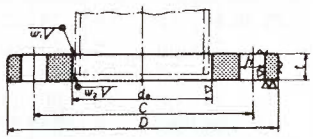
Stainless Steel Flanges

Made of forged stainless steel SUS 304 with high corrosion and thermal resistance. Mainly used in petroleum, petro-chemical, thermal and nuclear power industries.

Many types of flanges are produced according to various standards. The most common types are listed below.

Slip-on Welding Stainless Steel Pipe Flanges

(Ref. JIS B 2220 – 90)



How to order: CODE

Flange, stainless steel, slip-on welding, JIS B 2220, PRESSURE, NOMINAL SIZE

Unit Per Pc.

JIS 5 kgf/cm² Forged Stainless Steel Size : mm

CODE	Nominal Size mm (A)	Nominal Size inch (B)	Flange Size O.D.	Flange Size I.D.	Flange Size Thick.	Bolt Size Dia.	Bolt Size Nos.	Bolt Size Circle
73 47 01	10	3/8	75	17.8	9	12	4	55
02	15	1/2	80	22.2	9	12	4	60
03	20	3/4	85	27.7	10	12	4	65
04	25	1	95	34.5	10	12	4	75
05	32	1-1/4	115	43.2	12	15	4	90
73 47 06	40	1-1/2	120	49.1	12	15	4	95
07	50	2	130	61.1	14	15	4	105
08	65	2-1/2	155	77.1	14	15	4	130
09	80	3	180	90.0	14	19	4	145
10	100	4	200	115.4	16	19	8	165
73 47 11	125	5	235	141.2	16	19	8	200
12	150	6	265	166.6	18	19	8	230
13	200	8	320	218.0	20	23	8	280
14	250	10	385	269.5	22	23	12	345
15	300	12	430	321.0	22	23	12	390

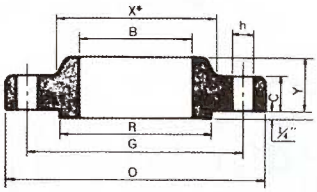
(to be continued)

JIS 10 kgf/cm² Forged Stainless Steel

73 47 16	10	3/8	90	17.8	12	15	4	65
17	15	1/2	95	22.2	12	15	4	70
18	20	3/4	100	27.7	14	15	4	75
19	25	1	125	34.5	14	19	4	90
20	32	1-1/4	135	43.2	16	19	4	100
73 47 21	40	1-1/2	140	49.1	16	19	4	105
22	50	2	155	61.1	16	19	4	120
23	65	2-1/2	175	77.1	18	19	4	140
24	80	3	185	90.0	18	19	8	150
25	100	4	210	115.4	18	19	8	175
73 47 26	125	5	250	141.2	20	23	8	210
27	150	6	280	166.6	22	23	8	240
28	200	8	330	218.0	22	23	12	290
29	250	10	400	269.5	24	25	12	355
30	300	12	445	321.0	24	25	16	400

Slip-on Welding Stainless Steel Pipe Flanges

(Ref. ASME / ANSI B16.5 – 1988)



How to order: CODE

Flange, stainless steel, slip-on welding, ASME/ANSI B16.5 PRESSURE, NOMINAL SIZE

Unit Per Pc.

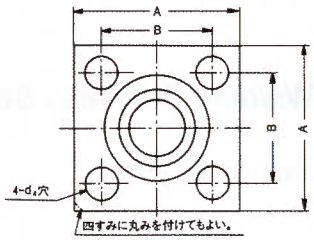
CODE	Nominal Size A	Nominal Size B	Flange Size Inch O.D.	Flange Size Inch I.D.	Flange Size Inch Thick	Bolt Hole Inch Dia	Bolt Hole Inch No.	Bolt Hole Inch Circle
Nominal Pressure 150 lbs								
73 47 51	15	1/2	3.50	0.88	0.44	0.62	4	2.38
52	20	3/4	3.88	1.09	0.50	0.62	4	2.75
53	25	1	4.25	1.36	0.56	0.62	4	3.12
54	32	1-1/4	4.62	1.70	0.62	0.62	4	3.50
55	40	1-1/2	5.00	1.95	0.69	0.62	4	3.88
73 47 56	50	2	6.00	2.44	0.75	0.75	4	4.75
57	65	2-1/2	7.00	2.94	0.88	0.75	4	5.50
58	80	3	7.50	3.57	0.94	0.75	4	6.00
59	90	3-1/2	8.50	4.07	0.94	0.75	8	7.00
60	100	4	9.00	4.57	0.94	0.75	8	7.50
73 47 61	125	5	10.00	5.66	0.94	0.88	8	8.50
62	150	6	11.00	6.72	1.00	0.88	8	9.50
63	200	8	13.50	8.72	1.12	0.88	8	11.75
64	250	10	16.00	10.88	1.19	1.00	12	14.25
65	300	12	19.00	12.88	1.25	1.00	12	17.00
Nominal Pressure 300 lbs								
73 47 66	15	1/2	3.75	0.88	0.56	0.62	4	2.62
67	20	3/4	4.62	1.09	0.62	0.75	4	3.25
68	25	1	4.88	1.36	0.69	0.75	4	3.50
69	32	1-1/4	5.25	1.70	0.75	0.75	4	3.88
70	40	1-1/2	6.12	1.95	0.81	0.88	4	4.50
73 47 71	50	2	6.50	2.44	0.88	0.75	8	5.00
72	65	2-1/2	7.50	2.94	1.00	0.88	8	5.88
73	80	3	8.25	3.57	1.12	0.88	8	6.62
74	90	3-1/2	9.00	4.07	1.19	0.88	8	7.25
75	100	4	10.00	4.57	1.25	0.88	8	7.88
73 47 76	125	5	11.00	5.66	1.38	0.88	8	9.25
77	150	6	12.50	6.72	1.44	0.88	12	10.62
78	200	8	15.00	8.72	1.62	1.00	12	13.00
79	250	10	17.50	10.88	1.88	1.12	16	15.25
80	300	12	20.50	12.88	2.00	1.25	16	17.75

Slip-on Welding Square Pipe Flanges

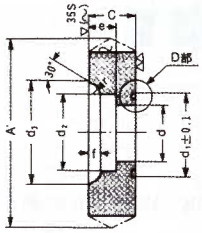
21 MPa for Hydraulic Use

Square flanges suitable for hydraulic use welding pipe. Made of carbon steel.

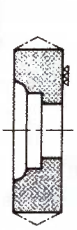
Model	Bolt	Groove for O ring
SHA	Hexagon bolt	Yes
SHB		No
SSA	Hexagon socket hed cap screw	Yes
SSB		No

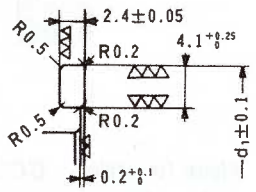


SHA



SHB





SHA (Hexagon Bolt with Groove for O ring)

Unit Per Pc.

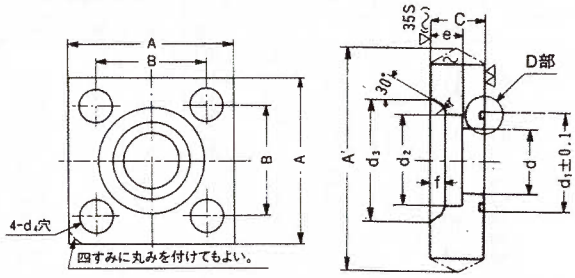
CODE	Nom Size	A	B	C	d	d_1	d_2	e	f
73 48 01	15	63	40	22	16.0	30	22.2	11	3.5
02	20	68	45	22	20.0	35	27.7	12	4.0
03	25	80	53	28	25.0	40	34.5	14	4.0
04	32	90	63	28	31.5	45	43.2	16	6.0
05	40	100	70	36	37.5	55	49.1	18	7.0
73 48 06	50	112	80	36	47.5	65	61.1	20	7.0
07	65	140	100	45	60.0	80	77.1	22	9.5
08	80	155	112	45	71.0	90	90.0	25	11.0

SHB (Hexagon Bolt without Groove)

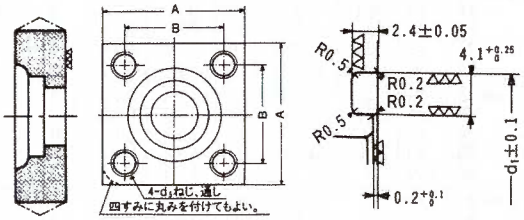
Unit Per Pc.

CODE	Nom Size	A	B	C	d	d_1	d_2	e	f
73 48 11	15	63	40	22	16.0	30	22.2	11	3.5
12	20	68	45	22	20.0	35	27.7	12	4.0
13	25	80	53	28	25.0	40	34.5	14	4.0
14	32	90	63	28	31.5	45	43.2	16	6.0
15	40	100	70	36	37.5	55	49.1	18	7.0
73 48 16	50	112	80	36	47.5	65	61.1	20	7.0
17	65	140	100	45	60.0	80	77.1	22	9.5
18	80	155	112	45	71.0	90	90.0	25	11.0

SSA



SSB



SSA (Hexagon Socket Head Cap Screw with groove for O ring)

Unit Per Pc.

CODE	Nom Size	A	B	C	d	d_1	d_2	e	f
73 48 21	15	54	36	22	16.0	30	22.2	11	3.5
22	20	58	40	22	20.0	35	27.7	12	4.0
23	25	68	48	28	25.0	40	34.5	14	4.0
24	32	76	56	28	31.5	45	43.2	16	6.0
25	40	92	65	36	37.5	55	49.1	18	7.0
73 48 26	50	100	73	36	47.5	65	61.1	20	7.0
27	65	128	92	45	60.0	80	77.1	22	9.5
28	80	140	103	45	71.0	90	90.0	25	11.0

SSB (Hexagon Socket Head Cap Screw without groove)

Unit Per Pc.

CODE	Nom Size	A	B	C	d	d_1	d_2	e	f
73 48 31	15	54	36	22	16.0	30	22.2	11	3.5
32	20	58	40	22	20.0	35	27.7	12	4.0
33	25	68	48	28	25.0	40	34.5	14	4.0
34	32	76	56	28	31.5	45	43.2	16	6.0
35	40	92	65	36	37.5	55	49.1	18	7.0
73 48 36	50	100	73	36	47.5	65	61.1	20	7.0
37	65	128	92	45	60.0	80	77.1	22	9.5
38	80	140	103	45	71.0	90	90.0	25	11.0

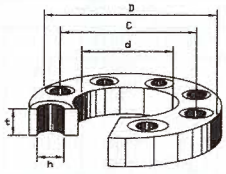
JIS Steel Blind Flanges

A blind Flange is which has no bore, and is used to close ends of piping systems. Made from rolled steel (SS-400).

Unit Per Pc.

CODE	Nom Size A	Nom Size B	For Pipe OD mm	Flange Size mm O.D.	Thick	Pitch	Bolt Hole No.	Bolt Hole Dia.
5 kgf/cm² Ref. JIS B 2220								
73 48 41	10	3/8	17.3	75	9	55	4	12
42	15	1/2	21.7	80	9	60	4	12
43	20	3/4	27.2	85	10	65	4	12
44	25	1	34	95	10	75	4	12
45	32	1-1/4	42.7	115	12	90	4	15
73 48 46	40	1-1/2	48.6	120	12	95	4	15
47	50	2	60.5	130	14	105	4	15
48	65	2-1/2	76.3	155	14	130	4	15
49	80	3	89.1	180	14	145	4	19
50	100	4	114.3	200	16	165	8	19
73 48 51	125	5	139.8	235	16	200	8	19
52	150	6	165.2	265	18	230	8	19
53	200	8	216.3	320	20	280	8	23
54	250	10	267.4	385	22	345	12	23
55	300	12	318.5	430	22	390	12	23
10 kgf/cm² Ref. JIS B 2220								
73 48 61	10	3/8	17.3	90	12	65	4	15
62	15	1/2	21.7	95	12	70	4	15
63	20	3/4	27.2	100	14	75	4	15
64	25	1	34	125	14	90	4	19
65	32	1-1/4	42.7	135	16	100	4	19
73 48 66	40	1-1/2	48.6	140	16	105	4	19
67	50	2	60.5	155	16	120	4	19
68	65	2-1/2	76.3	175	18	140	4	19
69	80	3	89.1	185	18	150	8	19
70	100	4	114.3	210	18	175	8	19
73 48 71	125	5	139.8	250	20	210	8	23
72	150	6	165.2	280	22	240	8	23
73	200	8	216.3	330	22	290	12	23
74	250	10	267.4	400	24	355	12	25
75	300	12	318.5	445	24	400	16	25

DIN Carbon Steel Slip-on Flanges



DIN 2573 Slip-on Flanges PN6

Unit Per Pc.

CODE	Nominal Diam mm	Size mm d	D	C	t	Bolt Hole No.	h mm	Weight kgs
73 55 01	10	17.7	75	50	12	4	14	0.27
02	15	22.2	80	55	12	4	14	0.30
03	20	27.6	90	65	14	4	14	0.37
04	25	34.4	100	75	14	4	14	0.45
05	32	43.1	120	90	16	4	14	0.78
73 55 06	40	49	130	100	16	4	14	0.83
07	50	61.1	140	110	16	4	14	1.07
08	65	77.1	160	130	16	4	14	1.49
09	80	90.3	190	150	18	4	18	1.99
10	100	115.9	210	170	18	4	18	2.39

(to be continued)

Unit Per Pc.

CODE	Nominal Diam mm	Size mm d	D	C	t	Bolt Hole No.	h mm	Weight kgs
73 55 11	125	141.6	240	200	20	8	18	3.23
12	150	170.5	265	225	20	8	18	4.41
13	200	221.8	320	280	22	8	18	6.33
14	250	276.2	375	335	24	12	18	9.45
15	300	327.6	440	395	24	12	22	10.30
73 55 16	350	359.7	490	445	26	12	22	14.00
17	400	423.7	540	495	28	16	22	16.90
18	450	462.3	595	550	30	16	22	21.60
19	500	513.6	645	600	30	20	22	23.10

DIN 2576 Slip-on Flanges PN10

Unit Per Pc.

CODE	Nominal Diam mm	Size mm d	D	C	t	Bolt Hole No.	h mm	Weight kgs
73 55 21	10	17.7	90	60	14	4	14	0.52
22	15	22.2	95	65	14	4	14	0.57
23	20	27.6	105	75	16	4	14	0.73
24	25	34.4	115	85	16	4	14	1.13
25	32	43.1	140	100	16	4	18	1.48
73 55 26	40	49	150	110	16	4	18	1.56
27	50	61.1	165	125	18	4	18	1.88
28	65	77.1	185	145	18	4	18	2.60
29	80	90.3	200	160	20	4	18	2.61
30	100	115.9	220	180	20	8	18	3.14
73 55 31	125	141.6	250	210	22	8	18	4.77
32	150	170.5	285	240	22	8	22	6.34
33	175	196.1	315	270	24	8	22	6.82
34	200	221.8	340	295	24	8	22	7.53
35	250	276.2	395	350	26	12	22	11.80
73 55 36	300	327.6	445	400	26	12	22	13.50
37	350	359.7	505	460	28	16	22	16.40
38	400	423.7	565	515	32	16	26	23.00
39	450	462.3	615	565	38	20	26	29.50
40	500	513.6	670	620	38	20	26	33.50

DIN 2576 (PN16) Slip-on Flanges PN16

Unit Per Pc.

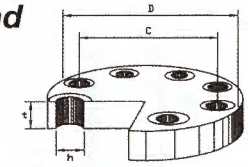
CODE	Nominal Diam mm	Size mm d	D	C	t	Bolt Hole No.	h mm	Weight kgs
73 55 51	10	17.7	90	60	14	4	14	0.51
52	15	22.2	95	65	14	4	14	0.56
53	20	27.6	105	75	16	4	14	0.72
54	25	34.4	115	85	16	4	14	1.13
55	32	43.1	140	100	16	4	18	1.46
73 55 56	40	49	150	110	16	4	18	1.56
57	50	61.1	165	125	18	4	18	1.70
58	65	77.1	185	145	18	4	18	2.40
59	80	90.3	200	160	20	8	18	3.50
60	100	115.9	220	180	20	8	18	4.50
73 55 61	125	141.6	250	210	22	8	18	6.50
62	150	170.5	285	240	22	8	22	8.70
63	175	196.1	315	270	24	8	22	8.95
64	200	221.8	340	295	24	12	22	10.90
65	250	276.2	405	355	26	12	26	18.00
73 55 66	300	327.6	460	410	28	12	26	21.50
67	350	359.7	520	470	30	16	26	30.80
68	400	423.7	580	525	32	16	30	42.80
69	450	462.3	640	585	34	20	30	55.10
70	500	513.6	715	650	34	20	33	65.10

DIN 2576 (PN40) Slip-on Flanges PN40

Unit Per Pc.

CODE	Nominal Diam mm	Size mm				Bolt Hole		Weight kgs
		d	D	C	t	No.	h mm	
73 55 71	10	17.7	90	60	14	4	14	0.60
72	15	22.2	95	65	16	4	14	0.70
73	20	27.6	105	75	18	4	14	0.80
74	25	34.4	115	85	18	4	14	1.30
75	32	43.1	140	100	18	4	18	1.60
73 55 76	40	49	150	110	18	4	18	1.70
77	50	61.1	165	125	20	4	18	1.90
78	65	77.1	185	145	22	8	18	2.60
79	80	90.3	200	160	24	8	18	3.80
80	100	115.9	235	190	24	8	22	4.90
73 55 81	125	141.6	270	220	26	8	26	7.80
82	150	170.5	300	250	28	8	26	10.10
83	175	196.1	350	295	28	12	30	11.35
84	200	221.8	375	320	30	12	30	12.60
85	250	276.2	450	385	32	12	33	21.90
73 55 86	300	327.6	515	450	34	16	33	25.80
87	350	359.7	580	510	38	16	36	36.20
88	400	423.7	660	585	40	16	39	51.70
89	450	462.3	685	610	42	20	39	66.10
90	500	513.6	755	670	44	20	42	77.40

DIN Carbon Steel Blind Flanges



DIN 2527 Blind Flanges PN6

Unit Per Pc.

CODE	Nominal Diam mm	Size mm			Bolt Hole		Weight kgs
		D	C	t	No.	h mm	
73 56 01	10	75	50	12	4	14	0.30
02	15	80	55	12	4	14	0.40
03	20	90	65	14	4	14	0.50
04	25	100	75	14	4	14	0.60
05	32	120	90	16	4	14	0.90
73 56 06	40	130	100	16	4	14	1.00
07	50	140	110	16	4	14	1.40
08	65	160	130	16	4	14	2.00
09	80	190	150	18	4	18	2.70
10	100	210	170	18	4	18	3.70
73 56 11	125	240	200	20	8	18	5.20
12	150	265	225	20	8	18	7.50
13	200	320	280	22	8	18	12.20
14	250	375	335	24	12	18	19.30
15	300	440	395	24	12	22	24.30
73 56 16	350	490	445	26	12	22	33.20
17	400	540	495	28	16	22	41.90
18	450	595	550	30	16	22	53.00
19	500	645	600	30	20	22	61.90

DIN 2527 Blind Flanges PN10

Unit Per Pc.

CODE	Nominal Diam mm	Size mm			Bolt Hole		Weight kgs
		D	C	t	No.	h mm	
73 56 21	10	90	60	14	4	14	0.54
22	15	95	65	14	4	14	0.61
23	20	105	75	16	4	14	0.79
24	25	115	85	16	4	14	1.24
25	32	140	100	16	4	18	1.66

(to be continued)

Unit Per Pc.

CODE	Nominal Diam mm	Size mm			Bolt Hole		Weight kgs
		D	C	t	No.	h mm	
73 56 26	40	150	110	16	4	18	1.81
27	50	165	125	18	4	18	2.23
28	65	185	145	18	4	18	3.24
29	80	200	160	20	4	18	3.50
30	100	220	180	20	8	18	4.60
73 56 31	125	250	210	22	8	18	7.30
32	150	285	240	22	8	22	10.10
33	175	315	270	24	8	22	11.80
34	200	340	295	24	8	22	14.00
35	250	395	350	26	12	22	22.70
73 56 36	300	445	400	26	12	22	29.50
37	350	505	460	28	16	22	37.10
38	400	565	515	32	16	26	52.50
39	450	615	565	38	20	26	68.80
40	500	670	620	38	20	26	82.10

DIN 2527 Blind Flanges PN16

Unit Per Pc.

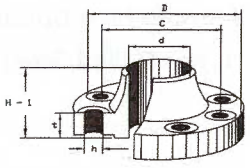
CODE	Nominal Diam mm	Size mm			Bolt Hole		Weight kgs
		D	C	t	No.	h mm	
73 56 51	10	90	60	14	4	14	0.53
52	15	95	65	14	4	14	0.60
53	20	105	75	16	4	14	0.79
54	25	115	85	16	4	14	1.23
55	32	140	100	16	4	18	1.66
73 56 56	40	150	110	16	4	18	1.81
57	50	165	125	18	4	18	2.10
58	65	185	145	18	4	18	3.10
59	80	200	160	20	8	18	4.50
60	100	220	180	20	8	18	6.30
73 56 61	125	250	210	22	8	18	9.20
62	150	285	240	22	8	22	12.80
63	175	315	270	24	8	22	13.15
64	200	340	295	24	12	22	18.60
65	250	405	355	26	12	26	30.60
73 56 66	300	460	410	28	12	26	40.70
67	350	520	470	30	16	26	57.80
68	400	580	525	32	16	30	82.20
69	450	640	585	34	20	30	107.60
70	500	715	650	34	20	33	133.10

DIN 2527 Blind Flanges PN40

Unit Per Pc.

CODE	Nominal Diam mm	Size mm			Bolt Hole		Weight kgs
		D	C	t	No.	h mm	
73 56 71	10	90	60	14	4	14	0.60
72	15	95	65	16	4	14	0.70
73	20	105	75	18	4	14	0.90
74	25	115	85	18	4	14	1.50
75	32	140	100	18	4	18	1.80
73 56 76	40	150	110	18	4	18	2.00
77	50	165	125	20	4	18	2.40
78	65	185	145	22	8	18	3.40
79	80	200	160	24	8	18	4.90
80	100	235	190	24	8	22	6.90
73 56 81	125	270	220	26	8	26	11.00
82	150	300	250	28	8	26	14.90
83	175	350	295	28	12	30	16.45
84	200	375	320	30	12	30	21.40
85	250	450	385	32	12	33	37.20
73 56 86	300	515	450	34	16	33	48.80
87	350	580	510	38	16	36	68.00
88	400	660	585	40	16	39	99.40
89	450	685	610	42	20	39	129.10
90	500	755	670	44	20	42	158.40

DIN Carbon Steel Weld-Neck Flanges



DIN 2633 Weld Neck Flanges PN16

Unit Per Pc.

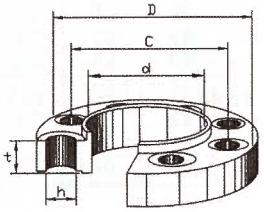
CODE	Nominal Diam mm	Size mm					Bolt Hole		Weight kgs
		d	D	C	t	H-1	No.	h mm	
73 57 01	10	17.2	90	60	14	35	4	14	0.58
02	15	21.3	95	65	14	35	4	14	0.65
03	20	26.9	105	75	16	38	4	14	0.95
04	25	33.7	115	85	16	38	4	14	1.14
05	32	42.4	140	100	16	40	4	18	1.69
73 57 06	40	48.3	150	110	16	42	4	18	1.86
07	50	60.3	165	125	18	45	4	18	2.53
08	65	76.1	185	145	18	45	4	18	3.06
09	80	88.9	200	160	20	50	8	18	3.70
10	100	114.3	220	180	20	52	8	18	4.62
73 57 11	125	139.7	250	210	22	55	8	18	6.30
12	150	168.3	285	240	22	55	8	22	7.75
13	175	193.7	315	270	24	60	8	22	9.85
14	200	219.1	340	295	24	62	12	22	11.00
15	250	273.0	405	355	26	70	12	26	15.60
73 57 16	300	323.9	460	410	28	78	12	26	22.00
17	350	355.6	520	470	30	82	16	26	31.20
18	400	406.4	580	525	32	85	16	30	39.30
19	500	508.0	715	650	34	90	20	33	61.00

DIN 2635 Weld Neck Flanges PN40

Unit Per Pc.

CODE	Nominal Diam mm	Size mm					Bolt Hole		Weight kgs
		d	D	C	t	H-1	No.	h mm	
73 57 21	10	17.2	90	60	16	35	4	14	0.66
22	15	21.3	95	65	16	38	4	14	0.75
23	20	26.9	105	75	18	40	4	14	1.06
24	25	33.7	115	85	18	40	4	14	1.29
25	32	42.4	140	100	18	42	4	18	1.88
73 57 26	40	48.3	150	110	18	45	4	18	2.33
27	50	60.3	165	125	20	48	4	18	2.82
28	65	76.1	185	145	22	52	8	18	3.74
29	80	88.9	200	160	24	58	8	18	4.75
30	100	114.3	235	190	24	65	8	22	6.52
73 57 31	125	139.7	270	220	26	68	8	26	9.07
32	150	168.3	300	250	28	75	8	26	11.80
33	175	193.7	350	295	32	82	12	30	18.20
34	200	219.1	375	320	34	88	12	30	21.50
35	250	273.0	450	385	38	105	12	33	34.90
73 57 36	300	323.9	515	450	42	115	16	33	49.70
37	350	355.6	580	510	46	125	16	33	68.10
38	400	406.4	660	585	50	135	16	39	96.50
39	500	508.0	755	670	52	140	20	42	117.00

DIN Carbon Steel Slip-on Raised Face Flanges



DIN 86029 Slip-on Raised Face Flanges PN10

Unit Per Pc.

CODE	Nominal Diam mm	Size mm					Bolt Hole		Weight kgs
		d	D	C	t	H-1	No.	h mm	
73 57 51	10	17.7	90	60	14	20	4	14	0.56
52	15	22.0	95	65	14	20	4	14	0.64
53	20	27.6	105	75	16	24	4	14	0.98
54	25	34.4	115	85	16	24	4	14	1.12
55	32	43.1	140	100	16	26	4	18	1.58
73 57 56	40	49.0	150	110	16	26	4	18	1.77
57	50	61.1	165	125	18	28	4	18	2.40
58	65	77.1	185	145	18	32	4	18	3.10
59	80	90.3	200	160	20	34	8	18	3.80
60	100	115.9	220	180	20	38	8	18	4.30
73 57 61	125	141.6	250	210	22	40	8	18	5.80
62	150	170.5	285	240	22	44	8	22	7.10
63	175	196.1	315	270	24	44	8	22	9.10
64	200	222.0	340	295	24	44	8	22	9.90
65	250	276.0	395	350	26	46	12	22	12.70
73 57 66	300	327.0	445	400	26	46	12	22	14.40
67	350	359.0	505	460	26	53	16	22	22.30
68	400	410.0	565	515	26	57	16	26	26.70
69	500	512.0	670	620	28	67	20	26	37.30

DIN 86030 Slip-on Raised Face Flanges PN16

Unit Per Pc.

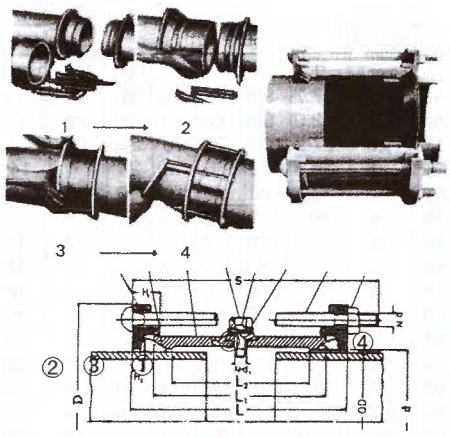
CODE	Nominal Diam mm	Size mm					Bolt Hole		Weight kgs
		d	D	C	t	H-1	No.	h mm	
73 57 71	10	17.7	90	60	14	20	4	14	0.56
72	15	22.0	95	65	14	20	4	14	0.64
73	20	27.6	105	75	16	24	4	14	0.98
74	25	34.4	115	85	16	24	4	14	1.12
75	32	43.1	140	100	16	26	4	18	1.58
73 57 76	40	49.0	150	110	16	26	4	18	1.77
77	50	61.1	165	125	18	28	4	18	2.40
78	65	77.1	185	145	18	32	4	18	3.10
79	80	90.3	200	160	20	34	8	18	3.80
80	100	115.9	220	180	20	38	8	18	4.30
73 57 81	125	141.6	250	210	22	40	8	18	5.80
82	150	170.5	285	240	22	44	8	22	7.10
83	175	196.1	315	270	24	44	8	22	9.10
84	200	222.0	340	295	24	44	12	22	9.70
85	250	276.0	405	355	26	46	12	26	13.40
73 57 86	300	327.0	460	410	28	46	12	26	17.30
87	350	359.0	520	470	30	57	16	26	27.60
88	400	410.0	580	525	32	63	16	30	36.00
89	500	512.0	715	650	34	73	20	33	56.40

Flexible Pipe Couplings

Coupling joints, because of their greater flexibility and economy, are steadily replacing flanged pipe joints in today's plant and marine applications. Unlike flanged joints, couplings not only eliminate the need for costly welding but also compensate for extreme degrees of pipe linear expansion, vibration, and laying deflection. From chemical plants to mammoth tankers, these couplings are utilized extensively throughout plant and marine piping.

As a wide range of models is available, the most common models have been selected and described below.

General Construction & Features



No.	Parts Name	Pcs	Materials
1	Middle Ring	1	Hot Rolled Steel(SS41) or Ductile Iron(FCD45)
2	Follower	2	Hot Rolled Steel(SS41) or Ductile Iron(FCD45)
3	Gasket	2	NBR, CR, Viton, etc.
4	Bolt & Nut	2 and Over	Steel Galvanized (SS41)
5	Stop Bolt	2	Stainless Steel (SUS304)

1. Construction

As illustrated above, the most common models consist of a middle ring (1), two followers (2), two wedge gaskets (3), four bolts & nuts (4), and two stop bolts (5). Both the middle ring and the followers are made of hot rolled steel, and the wedge gaskets are made of natural or synthetic rubber.

When the bolts are tightened, the followers press the gaskets against the spherical surface of the pipes and the tapered surface of the middle rings providing a leak-tight connection.

When the expansion force of the pipes exceeds the wedging force, the pipes slide and deflect within the gaps between the outer surface of the pipes and the inner surface of the middle ring and followers.

2. Features

The structural design of these flexible pipe couplings offers easy and economical pipe jointing. Pipes can be jointed easily with the use of a spanner. Centering of the pipes and finish-grinding of the pipe sections is not required.

Compared with flanged pipe joints, these pipe couplings assure economical pipe jointing without the need for costly welding or any other additional procedures.

Usually absorbs 65 – 135 mm of pipe linear expansion (specially available models absorb more than 200 mm of linear expansion) and a considerable degree of pipe vibration as well. Also, they allow for joint deflection up to 6 degrees and can join pipes of different material and/or diameter.

3. How to order

When ordering, please specify the following points.

1. Kind of pipes to be connected (steel, cast iron, vinyl, etc).
2. Pipe outside diameter.....mm.
3. Working pressure.....kgf/cm².
4. Kind of liquid or gas of the line content. (desired gasket material)
5. Rust preventive treatments (paint).

Flexible Pipe Couplings for Plain End Pipes

1. Hot Rolled Steel Middle Ring & Follower

These products are all formed from special section steel. As it is designed and built to withstand severe operating conditions on board, no special care is necessary for any applications.

Specifications

Amount of Expansion & Contraction	L=134/160/180/210
Angular Deflection	1° - 8°
Working Pressure	20 - 50 kgf/cm²
Working Temperature	- 70° - 100°C - Standard - 100° - 350°C - Special
Manufacturing Dimensions	Nominal Diam, 40 - 4,000 mm
Applications	Piping for ships, water and gas supply, plant etc.

How to order: CODE

Flexible pipe coupling, hot rolled steel, MIDDLE RING LENGTH, STYLE NO., NOMINAL SIZE

Unit Per Set

CODE	Nominal Size in	Nominal Size mm	Pipe O.D. mm	Follower O.D. mm	Face to Face L mm	Test Press. kgf/cm²
Middle Ring L 178 mm (Style 10)						
73 50 01	6	150	165.2	262	213	
02	8	200	216.3	321	213	
03	10	250	267.4	373	214	32
04	12	300	318.5	425	214	
05	14	350	355.6	473	214	
73 50 06	16	400	406.4	524	218	
07	18	450	457.2	575	218	
08	20	500	508.0	626	218	32
09	22	550	558.8	677	218	
10	24	600	609.6	728	220	
73 50 11	26	650	660.4	779	220	
12	28	700	711.2	830	220	32
13	30	750	762.0	881	223	
14	32	800	812.8	932	223	
Middle Ring L 204 mm (Style 11)						
73 49 41	6	150	165.2	262	239	
42	8	200	216.3	321	239	
43	10	250	267.4	373	240	32
44	12	300	318.5	425	240	
45	14	350	355.6	473	240	
73 49 46	16	400	406.4	524	244	
47	18	450	457.2	575	244	
48	20	500	508.2	626	244	32
49	22	550	558.8	677	244	
50	24	600	609.6	728	246	
73 49 51	26	650	660.4	779	246	
52	28	700	711.2	830	246	32
53	30	750	762.0	881	249	
54	32	800	812.8	932	249	

(to be continued)

Unit Per Set

CODE	Nominal Size in	Nominal Size mm	Pipe O.D. mm	Follower O.D. mm	Face to Face L mm	Test Press. kgf/cm²
Middle Ring L224 mm (Style 11)						
73 49 61	6	150	165.2	262	259	
62	8	200	216.3	321	259	
63	10	250	267.4	373	260	32
64	12	300	318.5	425	260	
65	14	350	355.6	473	260	
73 49 66	16	400	406.4	524	264	
67	18	450	457.2	575	264	
68	20	500	508.2	626	264	32
69	22	550	558.8	677	264	
70	24	600	609.6	728	266	
73 49 71	26	650	660.4	779	266	
72	28	700	711.2	830	266	32
73	30	750	762.0	881	269	
74	32	800	812.8	932	269	
Middle Ring L 254 mm (Style 11)						
73 49 81	6	150	165.2	262	289	
82	8	200	216.3	321	289	
83	10	250	267.4	373	290	32
84	12	300	318.5	425	290	
85	14	350	355.6	473	290	
73 49 86	16	400	406.4	524	294	
87	18	450	457.2	575	294	
88	20	500	508.2	626	294	32
89	22	550	558.8	677	294	
90	24	600	609.6	728	296	
73 49 91	26	650	660.4	779	296	
92	28	700	711.2	830	296	32
93	30	750	762.0	881	299	
94	32	800	812.8	932	299	

Name of Mfr.: Daido Kinzoku Kogyo k.k.

Couplings of sizes other than those listed above are also available upon request.

Seawater resistant couplings made of a special alloy steel are also available upon request. The seawater couplings have the same dimensions and shape as those listed above.

When ordering, please specify the nominal size.

2. Ductile Cast Iron Middle Ring & Follower

These couplings are mainly used for oil loading pipes, ballast pipes, digester pipes and other conduits on board. These couplings are made of ductile cast iron. Couplings made of cast steel are also available upon request.

Specifications

Am't Expansion & Contraction	L = 134
Working Pressure	20 kgf/cm²
Manufacturing Dimensions	Nominal Diam. 50 - 1,200 mm

How to order: CODE

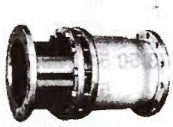
Flexible pipe coupling, ductile cast iron, NOMINAL SIZE

Unit Per set

CODE	Nominal Size mm	Pipe O.D. mm	Middle Ring L mm	Follower O.D. mm	Face to Face L mm	Test P kgf/cm²
73 50 21	150	165.2		262	212	
22	200	216.3		321	212	
23	250	267.4		373	214	
24	300	318.4		425	214	
25	350	355.6	178	465	214	32
73 50 26	400	406.4		516	222	
27	450	457.2		573	222	
28	500	508.0		626	222	
29	550	558.8		679	228	
30	600	609.6		731	228	

Couplings of sizes other than those listed above are also available upon request.

Slide (Sleeve) Type Expansion Joints for Flanged Pipes



These expansion joints are designed to absorb quick expansion and contraction of pipes resulting from the high temperature of fluids such as exhaust gas, high-temperature water, etc.

A variety of packing materials can be used based upon the temperature and the materials contained in the pipes.

Specifications

Working Pressure	Max. 30 kgf/cm²
Working Temperature	Max. 450°C
Manufacturing Dimensions	Nominal Diam. 40 - 350 mm
Material	Sleeve: Stainless Steel SUS 304 Body: Grey Iron Casting FC20, Carbon Steel Casing SC46, or Ductile Cast Iron FCD45
Am't of Expansion-Contraction	120 - 160 mm

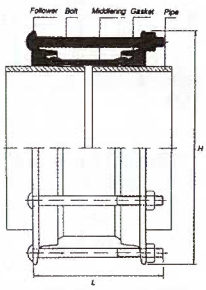
Guide of how to order

CODE	**73 50 31**
Name	Slide type expansion joint
Material of Sleeve and Body	Sleeve: Stainless Steel Body: Grey iron casting
Size	40 mm
Working Pressure	30 kgf/cm²

Anti-corrosive Coated Flexible Pipe Couplings

These couplings are also resistant, and will not be changed by mechanical vibration of the pipes.

Suitable for low and high pressure, and can be used on steel or PVC pipe materials that can withstand the gasket pressure. Couplings suitable for ductile iron pipes are also available if required.



For Steel or PVC Pipes

How to order : CODE

Pipe coupling, flexible, anti-corrosive coated,
PIPE O.D. mm, Material of PIPE to be connected

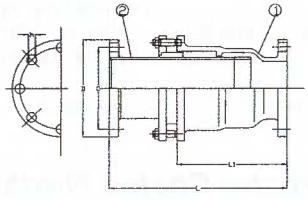
Unit Per Set

CODE	Pipe O.D.		H in mm	No. of Bolts	Working Pressure Bar	Weight kgs
	mm	Inch				
73 50 41	57.0	2.250	135	2	44	2.0
42	60.3	2.375	138	2	42	2.1
43	70.0	2.750	148	2	37	2.7
44	76.1	3.000	154	2	35	2.9
45	82.5	3.250	167	2	32	3.4
73 50 46	88.9	3.500	167	3	45	3.8
47	101.6	4.000	179	3	40	3.6
48	108.0	4.250	186	3	38	3.8
49	114.3	4.500	192	3	36	3.9
50	133.0	5.250	216	4	42	5.1
73 50 51	139.7	5.500	222	4	40	5.3
52	159.0	6.250	254	4	34	7.9
53	165.1	6.500	260	4	33	8.5
54	168.3	6.625	264	4	32	8.5
55	193.7	7.625	290	4	28	10.1
73 50 56	219.1	8.625	315	5	31	11.2
57	244.5	9.625	341	5	34	12.6
58	273.0	10.750	369	6	31	13.8
59	323.9	12.750	420	6	26	15.9
60	355.6	14.000	447	6	20	20.2
73 50 61	406.4	16.000	498	8	20	25.2
62	457.2	18.000	549	8	20	25.7
63	508.0	20.000	600	10	28	28.8
64	558.8	22.000	651	10	25	33.8

Name of Mfr.: Helden Couplings B.V.

Sleeve Type Expansion Joints

JIS 5 kgf/cm² / 10 kgf/cm² or 16 kgf/cm²



Part No.	Material	Code
1. Body	Ductile Iron	FCD 45
2. Sleeve	Stainless Steel	SUS 304

Nominal Pressure kgf/cm²	The Pressure MPa [kgf/cm²]	
	Body	Seal
5	0.98 [10]	0.78 [8]
10	1.96 [20]	1.57 [16]
16	3.92 [40]	3.14 [32]

JIS 5 kgf/cm²

Unit Per Pc.

CODE	Size	Size mm					
		L	L1	D	C	No.	h
73 50 71	50	345	208	130	105	4	15
72	65	350	213	155	130	4	15
73	80	385	243	180	145	4	19
74	100	390	249	200	165	8	19
75	125	390	249	235	200	8	19
73 50 76	150	400	254	265	230	8	19
77	200	420	282	320	280	8	23
78	250	435	292	385	345	12	23
79	300	455	305	430	390	12	23
80	350	465	310	480	435	12	25

JIS 10 kgf/cm²

Unit Per Pc.

CODE	Size	Size mm					
		L	L1	D	C	No.	h
73 50 81	50	368	229	155	120	4	19
82	65	382	236	175	140	4	19
83	80	415	277	185	150	8	19
84	100	415	277	210	175	8	19
85	125	432	282	250	210	8	23
73 50 86	150	439	287	280	240	8	23
87	200	458	306	330	290	12	23
88	250	475	311	400	355	12	25
89	300	510	338	445	400	16	25
90	350	517	343	490	445	16	25

JIS 16 kgf/cm²

Unit Per Pc.

CODE	Size	Size mm					
		L	L1	D	C	No.	h
73 50 91	50	432	251	155	120	8	19
92	65	456	259	175	140	8	19
93	80	469	295	200	160	8	23
94	100	476	295	225	185	8	23
95	125	520	300	270	225	8	25
73 50 96	150	522	305	305	260	12	25
97	200	544	327	350	305	12	25
98	250	576	332	430	380	12	27
99	300	588	362	480	430	16	27
73 51 00	350	612	367	540	480	16	33

Gaskets for Flexible Pipe Coupling

When ordering spare gaskets for the flexible pipe couplings, please specify the manufacturer's name, model and the size of the flexible coupling currently in use, along with the name, temperature, and pressure of the line content, etc.

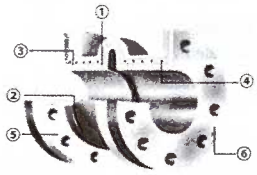
How to order : 73 - 50 - 36

Gasket for flexible pipe coupling, NAME, MODEL, SIZE of the flexible coupling, NAME, TEMPERATURE, PRESSURE of the line content

Rubber Expansion Joints

Single Arch Spool Type

Double Arch Spool Type



1. Inner Lining Rubber
   Acid and Chemical Proof Rubber (NR of Synthetic)
2. Outside Rubber
   Oil Abrasion Heat Proof Rubber of Chloroplene Rubber
3. Insertion Cloth for Reinforcement
4. Iron Wire for Reinforcement
5. Retaining Ring
6. Flange

Single Arch Spool Rubber Expansion Joint JIS 10 kgf/cm² Flanged

Specifications

Unit Per Pc.

CODE	Nominal Size mm	Flange mm			Amount. of mm		Max. working Pressure kgf/cm²
		I.D.	O.D.	F to F	Expansion	Contraction	
73 51 01	50	51	155	150	6	12	12
02	65	64	175	150	6	12	12
03	75	76	185	150	6	12	10
04	100	102	210	150	6	12	9
05	125	127	250	150	6	12	8
73 51 06	150	152	280	200	8	18	8
07	175	178	305	200	8	18	7
08	200	203	330	200	8	18	7
09	225	225	350	200	8	18	6
10	250	253	400	200	8	18	6
73 51 11	300	303	445	200	9	20	6

Double Arch Spool Rubber Expansion Joint JIS 10 kgf/cm² Flanged

Specifications

Unit Per Pc.

CODE	Nominal Size mm	Flange mm			Amount. of mm		Max. working Pressure kgf/cm²
		I.D.	O.D.	F to F	Expansion	Contraction	
73 51 21	50	51	155	250	12	24	12
22	65	64	175	250	12	24	12
23	75	76	185	250	12	24	10
24	100	102	210	250	12	24	9
25	125	127	250	250	12	24	8
73 51 26	150	152	280	300	16	24	8
27	175	178	305	300	16	36	7
28	200	203	330	300	16	36	7
29	225	225	350	300	16	36	6
30	250	253	400	300	16	36	6
73 51 31	300	303	445	300	18	40	6

Rubber Bellow Expansion Joints with DIN Flanges

Flexible expansion joints for absorbing thermal expansion, the reduction of vibrations and preventing stress in pipe systems. The expansion joints have a type approval from Det Norske Veritas, Germanischer Lloyds and ABS. Bellows are optional from the following materials listed in the material information table.

Material Information

Model	DN	L	Below Material		Max.Temp. Deg. C	Color Code
	mm		Inernal	External		
5570	25-600	130-200	Nitrile	Chloroprene	90	Yellow
5571			EPDM	EPDM	90	Red
5572			Hypalon	Chloroprene	90	Green
5573			White nitrile	Chloroprene	90	White
5574			SBR	Chloroprene	90	Blue
5575			EPDM	EPDM	130	Double red

Remark: EPDM denotes Ethylene Propylene Diene Monomer, SBR denotes Styrene-butadiene Rubber.

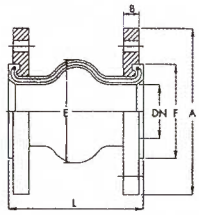
Max. Operating Pressure and Temperature

DN	Max. Pressure and Temperature		Model
25 thru 300	16 bar at 70 deg. C	10 bar at 90 deg. C	5570, 5571, 5572, 5573 and 5574
350 thru 600	10 bar at 70 deg. C	8 bar at 90 deg. C	
25 thru150	16 bar at 100 deg. C	10 bar at 130 deg. C	5575
200 thru 600	10 bar at 100 deg. C	6 bar at 130 deg. C	

Among the various types of bellow materials, we introduce the specifications of the most standard type Model 5570 for your ordering guidance as follows.

Model 5570

Bellow Material:
Internal – Nitrile,
External – Chloroprene



Unit Per Pc.

CODE	ND	Size mm				Max. Permitted Movement mm	Weight kgs
		L	A	F	B		
73 51 41	25	130	115	72			2.8
42	32	130-150	140	72			2.8
43	40		150	80	14	-30/+20	3.3
44	50		165	90			3.7
45	65		185	105			4.8
73 51 46	80	130-150	200	120	15	-30/+20	5.3
47	100		220	140	15		6.2
48	125		250	165	16		8.2
49	150		285	190	18		11
50	200		340	240	20		17
73 51 51	250	130-150	395	290	23	-30/+20	22
52	300		445	340	27		30
53	350	200	505	425	24		32
54	400		565	470	28		45
55	450		615	510	28		52
73 51 56	500	200	670	560	30	-30/+20	63
57	600		780	655	30		95

Name of Mfr.: Econosto

PIPE THREADS

BRITISH STANDARD THREADS

British Engineering Standard Association Reports No. 21-1938
Forms of British Standard Pipe Threads

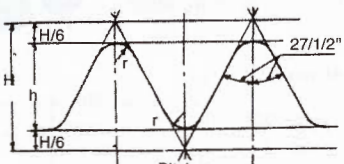


Fig.1.(Parallel)
H=0.960491 x p
h=0.640327 x p
r=0.137329 x p

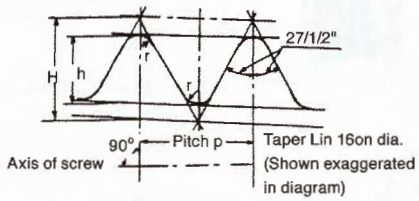


Fig.2.(Taper)
H=0.960237 x p
h=0.640327 x p
r=0.137278 x p

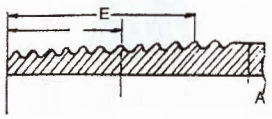


Fig.3.(Taper)

Table 1 Basic Sizes Dimensions,in Inches

Nominal Bore of Pipe	Approximate Outside Diameter of Black Pipe	Number of Threads per Inch	Pitch	Depth of Thread	Diameter at Gauge Plane (Gauge Dia.)	Distance of GaugeDiameter from End (Gauge Length)	Length of Useful Thread
	A		p	h	B	F	E
1/8	0.400	28	0.03571	0.0229	0.383	0.1563	0.2545
1/4	0.538	19	0.05263	0.0337	0.518	0.2367	0.3814
3/8	0.676	19	0.05263	0.0337	0.656	0.2500	0.3947
1/2	0.847	14	0.07143	0.0457	0.825	0.3214	0.5178
3/4	1.063	14	0.07143	0.0457	1.041	0.3750	0.5714
1	1.336	11	0.09091	0.0582	1.309	0.4091	0.6591
1 1/4	1.677	11	0.09091	0.0582	1.650	0.5000	0.7500
1 1/2	1.909	11	0.09091	0.0582	1.882	0.5000	0.7500
2	2.381	11	0.09091	0.0582	2.347	0.6250	0.9204
2 1/2	2.996	11	0.09091	0.0582	2.960	0.6875	1.0511
3	3.499	11	0.09091	0.0582	3.460	0.8125	1.1761
3 1/2	3.991	11	0.09091	0.0582	3.950	0.8750	1.2386
4	4.494	11	0.09091	0.0582	4.450	1.0000	1.4091
5	5.493	11	0.09091	0.0582	5.450	1.1250	1.5795
6	6.501	11	0.09091	0.0582	6.450	1.1250	1.5795

AMERICAN STANDARD THREADS

Apporoved by American Standard Association B2.11945
Forms of American Standard Pipe Threads

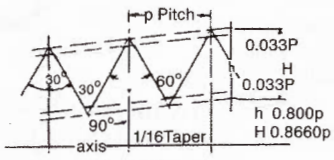


Fig.4.(Taper)
H=0.8660 x p
h=0.8000 x p

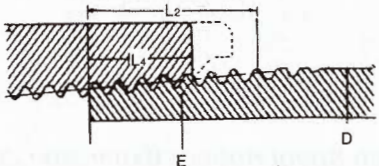


Fig.5.(Taper)
$L_2=(0.8D + 6.8)1/n$

Straight Pipe Threads : the pitch, angle, and depth of thread are the same as the corresponding dimensions of the taper pipe threads.

Table 2 Basic Sizes Dimensions Dimensions, in Inches

Nominal Pipe Size	Outside Diameter of Pipe	Threads per Inch	Pitch of Thread	Hand-Tight Engagement		Effective Thread Length External	Depth of Thread
	D	n	p	L_1	E_1	L_2	h
1/8	0.405	27	0.03704	0.180	0.37476	0.2639	0.02963
1/4	0.540	18	0.05556	0.200	0.48989	0.4018	0.04444
3/8	0.675	18	0.05556	0.240	0.62701	0.4078	0.04444
1/2	0.840	14	0.07143	0.320	0.77843	0.5337	0.05714
3/4	1.050	14	0.07143	0.339	0.98887	0.5457	0.05714
1	1.315	11 1/2	0.08696	0.400	1.23863	0.6828	0.06957
1 1/4	1.660	11 1/2	0.08696	0.420	1.58338	0.7068	0.06957
1 1/2	1.900	11 1/2	0.08696	0.420	1.82234	0.7235	0.06957
2	2.375	11 1/2	0.08696	0.436	2.29627	0.7565	0.06957
2 1/2	2.875	8	0.12500	0.682	2.76216	1.1375	0.10000
3	3.500	8	0.12500	0.766	3.38850	1.2000	0.10000
3 1/2	4.000	8	0.12500	0.821	3.88881	1.2500	0.10000
4	4.500	8	0.12500	0.844	4.38712	1.3000	0.10000
5	5.563	8	0.12500	0.937	5.44929	1.4063	0.10000
6	6.625	8	0.12500	0.958	6.50597	1.5121	0.10000

Conversion Table

Length

	m	km	in	ft	yd	mile
m	1	1×10^{-3}	39.37	3.28	1.093	6.214×10^{-4}
km	1×10^{3}	1	3.937×10^{4}	3,280	1,093	0.621
in	0.0254	2.54×10^{-5}	1	1/12	1/36	1.58×10^{-5}
ft	0.305	3.048×10^{-4}	12	1	1/3	1.894×10^{-4}
yd	0.914	9.144×10^{-4}	36	3	1	5.682×10^{-4}
mile	1609	1.609	63,360	5,280	1,760	1

Mass (Weight)

	g	kg	t	lb	oz
g	1	1×10^{-3}	1×10^{-6}	2.204×10^{-3}	0.0352
kg	1×10^{3}	1	1×10^{-3}	2.204	35.27
t	1×10^{6}	1×10^{3}	1	2,204	35,270
lb	453.6	0.4536	4.536×10^{-4}	1	16
oz	28.35	0.02835	2.835×10^{-5}	1/16	1

Volume

	cm^3 (cc or ml)	m^3	l	in^3	qt	pt	fl-oz	ft^3	gal
cm^3 (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m^3	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in^3	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
Ft^3	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

Pressure

	bar	kgf/cm^2	lbf/cm^2	mmHg (0°C)	Pa (SI)
bar	1	1.020	14.50	750.1	100,000
kgf/cm^2	0.9807	1	14.22	753.6	98,066
lbf/cm^2	0.0689	0.0703	1	51.72	6,895
mmHg (0°C)	0.00133	0.0013	0.0193	1	133.3
Pa (SI)	1×10^{-5}	1.02×10^{-5}	1.45×10^{-4}	10.2×10^{-4}	1

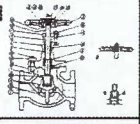
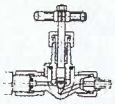
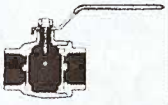
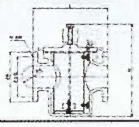
Stress

	Pa (SI)	MPa	kgf/mm^2	kgf/cm^2
Pa (SI)	1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
MPa	1×10^{6}	1	1.01972×10^{-1}	1.01972×10
kgf/mm^2	9.80665×10^{6}	9.80665	1	1×10^{2}
kgf/cm^2	9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

Force

	kW	kgf · m/sec	HP
kW	1	102.0	1.341
kgf · m/sec	0.009807	1	0.01315
HP	0.7457	76.04	1

VALVES & COCKS

JIS Valves P. 75-1 ~ 3	(a) Ordinary Globe & Angle Valves P. 75-3 ~8	(b) Union Bonnet Type Valves P. 75-8 ~ 9	(c) Screw or Union End Valves P. 75-9 ~ 11
(d) Compressed Air Valves P. 75-11 ~ 12 	(e) Pressure Gauge & Stop Valves P. 75-12 ~ 13 	(f) Gate Valves P. 75-13 ~ 15	(g) Screw Down Check Valves P. 75-15 ~ 19
(h) Lift Check Valves P. 75-19 ~ 21	(i) Swing Check Valves P. 75-21 ~ 22	(j) Marine Cocks P. 75-22 ~ 23	(k) Hose Valves P. 75-23 ~ 26
Emergency Shut-off Valves P. 75-26 ~ 29	Screwed Valves P. 75-29 ~ 31	Air & Oil Cocks P. 75-31 ~ 32	Needle Valves P. 75-32 ~ 34
Butterfly Valves P. 75-34 ~ 37	Diaphragm Valves P. 75-37 ~ 38	Ball Valves P. 75-38 	Y-Strainers P. 75-38 ~ 40
Marine Can Water Filters P. 75-40 	DIN Strainers P. 75-40-41	DIN Mud Boxes P. 75-41	Steam Traps P. 75-41 ~ 43
Flow Indicators P. 75-43 ~ 46	Indicator Cocks P. 75-46 ~ 48	Automatic Control for Refrigerant P. 75-48 ~ 50	Storm Valves P. 75-50 ~ 52
DIN Standard Valves - Introduction P. 75-52 ~ 56	DIN Globe Valves P. 75-57 ~ 64	DIN Gate Valves P. 75-64 ~ 71	DIN Check Valves P. 75-71 ~ 77
DIN Fire and Deckwash Valves P. 75-77 ~ 80	DIN Cocks P. 75-80 ~ 82	DIN Needle Valves P. 75-82 ~ 83	DIN Butterfly Valves P. 75-83 ~ 92
DIN Diaphragm Valves P. 75-92 ~ 93	DIN Pressure Reducing Valves P. 75-93 ~ 98	DIN Ball Valves P. 75-98 ~ 103	DIN Strainers P. 75-103 ~ 105
DIN Sight Glasses P. 75-105	DIN Overflow Valves P. 75-105 ~ 110	DIN Safety Valves P. 75-110 ~ 124	ANSI Valves - Introduction P. 75-125
ANSI Glove Valves P. 75-126 ~ 127	ANSI Gate Valves P. 75-127 ~ 128	ANSI Check Valves P. 75-128 ~ 130	ANSI Strainers P. 75-130

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INTERNATIONAL MARINE PURCHASING ASSOCIATION

754576	75-89	754651	75-90	755134	75-57	755197	75-60	755295	75-61	755360	75-62	755442	75-64
754577	75-89	754652	75-90	755135	75-57	755198	75-60	755296	75-61	755362	75-62	755443	75-64
754578	75-89	754653	75-90	755136	75-57	755199	75-60	755297	75-61	755363	75-62	755444	75-64
754579	75-89	754654	75-90	755137	75-57	755231	75-59	755298	75-61	755364	75-62	755445	75-64
754581	75-89	754655	75-90	755138	75-57	755232	75-59	755299	75-61	755365	75-62	755446	75-64
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754585	75-89	754659	75-90	755142	75-58	755236	75-59	755304	75-60	755369	75-61	755453	75-63
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754592	75-89	754672	75-90	755149	75-58	755244	75-59	755312	75-61	755379	75-62	755460	75-63
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754628	75-90	755111	75-57	755174	75-59	755269	75-60	755338	75-61	755419	75-63	755484	75-64
754629	75-90	755112	75-57	755175	75-59	755270	75-60	755339	75-61	755420	75-63	755485	75-64
754630	75-90	755113	75-57	755176	75-59	755271	75-60	755340	75-61	755421	75-63	755486	75-64
754631	75-90	755114	75-57	755177	75-59	755273	75-60	755341	75-61	755422	75-63	755487	75-64
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754633	75-90	755116	75-57	755179	75-59	755275	75-60	755343	75-61	755424	75-63	755489	75-62
754634	75-90	755117	75-57	755180	75-59	755276	75-60	755344	75-61	755425	75-63	755490	75-62
754636	75-90	755118	75-57	755181	75-59	755277	75-60	755345	75-61	755426	75-63	755491	75-62
754637	75-90	755121	75-57	755182	75-59	755278	75-60	755346	75-61	755428	75-63	755492	75-62
754638	75-90	755122	75-57	755183	75-59	755279	75-60	755347	75-61	755429	75-63	755501	75-65
754639	75-90	755123	75-57	755184	75-59	755280	75-60	755348	75-61	755431	75-64	755502	75-65
754640	75-90	755124	75-57	755185	75-59	755281	75-60	755349	75-61	755432	75-64	755503	75-65
754641	75-90	755125	75-57	755186	75-59	755282	75-60	755350	75-61	755433	75-64	755504	75-65
754642	75-90	755126	75-57	755188	75-59	755283	75-60	755351	75-61	755434	75-64	755505	75-65
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756807 75-104	756893 75-103	756992 75-106	757056 75-112	757146 75-126	757218 75-110	757294 75-120
756808 75-104	756894 75-103	756993 75-106	757057 75-112	757147 75-126	757219 75-110	757295 75-120
756809 75-104	756895 75-103	756994 75-106	757058 75-112	757148 75-119	757220 75-110	757296 75-120
756810 75-104	756896 75-103	756995 75-106	757059 75-112	757151 75-127	757227 75-110	757297 75-120
756811 75-104	756897 75-103	756996 75-106	757060 75-112	757152 75-127	757228 75-110	757298 75-120
756812 75-104	756898 75-103	756997 75-106	757070 75-118	757153 75-127	757229 75-110	757299 75-120
756813 75-104	756899 75-103	757001 75-111	757071 75-117	757154 75-127	757230 75-110	757300 75-110
756814 75-104	756900 75-103	757002 75-111	757072 75-117	757155 75-127	757237 75-110	757307 75-120
756815 75-104	756912 75-103	757003 75-111	757073 75-117	757156 75-127	757238 75-110	757308 75-120
756816 75-104	756913 75-103	757004 75-111	757074 75-117	757157 75-127	757239 75-110	757309 75-121
756817 75-104	756914 75-103	757005 75-111	757075 75-117	757161 75-107	757240 75-110	757310 75-121
756818 75-104	756915 75-105	757006 75-111	757076 75-117	757162 75-107	757241 75-128	757311 75-129
756819 75-104	756916 75-95	757007 75-106	757077 75-118	757163 75-107	757242 75-128	757312 75-129
756820 75-104	756917 75-95	757008 75-106	757078 75-118	757164 75-107	757243 75-128	757313 75-129
756821 75-104	756918 75-95	757009 75-106	757079 75-118	757165 75-107	757244 75-128	757314 75-129
756822 75-104	756919 75-96	757010 75-106	757080 75-118	757166 75-107	757245 75-128	757315 75-129
756823 75-104	756920 75-96	757011 75-111	757081 75-117	757167 75-107	757246 75-128	757316 75-129
756824 75-102	756927 75-96	757012 75-111	757082 75-117	757168 75-107	757247 75-128	757317 75-121
756825 75-104	756928 75-96	757013 75-111	757083 75-117	757169 75-107	757248 75-128	757318 75-121
756826 75-104	756929 75-96	757014 75-111	757084 75-117	757170 75-107	757253 75-110	757319 75-121
756827 75-104	756930 75-96	757015 75-111	757085 75-117	757171 75-107	757254 75-110	757320 75-121
756828 75-104	756937 75-96	757016 75-111	757086 75-118	757172 75-107	757255 75-110	757321 75-129
756829 75-104	756938 75-96	757017 75-106	757087 75-118	757173 75-107	757256 75-119	757322 75-129
756830 75-105	756939 75-96	757018 75-106	757088 75-118	757174 75-107	757257 75-119	757323 75-129
756831 75-105	756940 75-96	757019 75-106	757089 75-118	757175 75-108	757258 75-119	757324 75-129
756832 75-105	756949 75-96	757020 75-106	757091 75-119	757176 75-108	757259 75-119	757325 75-129
756833 75-105	756950 75-96	757021 75-111	757092 75-119	757177 75-108	757260 75-119	757326 75-129
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JIS Valves

Application Table for JIS Valves

The tables below are provided to help determine the valves and cocks which are suitable for use under the material, pressure, and temperature conditions of the pipes listed below.

1. In steam piping and boiler circulating water piping

Globe valves and angle valves
Nominal diameter 15 – 40 mm

Max. Working Pressure	Max. Working Temperature	Applicable JIS F Valve No.
1.57 MPa (16 kgf/cm²)	205°C	F-7301,F-7302, F-7303,F-7304, F-7346,F-7347, F-7348,F-7349, F-7351,F-7352, F-7411,F-7412, F-7413,F-7414
3.04 MPa (31 kgf/cm²)	400°C	F-7313,F-7314, F-7421,F-7422, F-7473,F-7474
5.59 MPa (57 kgf/cm²)	425°C	F-7317,F-7318, F-7320,F-7330

Nominal diameter 50 – 200 mm

0.49 MPa (5 kgf/cm²)	205°C	F-7301, F-7302, F-7305, F-7306, F-7353, F-7354
0.98 MPa (10 kgf/cm²)		F-7307, F-7308, F-7375, F-7376
1.57 MPa (16 kgf/cm²)		F-7309, F-7310, F-7377, F-7378
1.18 MPa (12 kgf/cm²)	300°C	F-7319, F-7320, F-7471, F-7472
3.04 MPa (31 kgf/cm²)	400°C	F-7313, F-7314, F-7473, F-7474
4.22 MPa (43 kgf/cm²)	425°C	F-7317, F-7318, F-7315, F-7316
5.59 MPa (57 kgf/cm²)		F-7317, F-7318

Nominal diameter 250 – 400 mm

0.49 MPa (5 kgf/cm²)	100°C	F-7307, F-7308
1.18 MPa (12 kgf/cm²)	300°C	F-7319, F-7320
3.04 MPa (31 kgf/cm²)	400°C	F-7313, F-7314, F-7473, F-7474

2. In feed water piping general non-shock sea water, bilge and ballast sea water piping

Globe valves and angle valves

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.49 MPa (5 kgf/cm²)	450 • 500	F-7354
0.60 MPa (6 kgf/cm²)	300 - 400	F-7305, F-7306, F-7354
0.69 MPa (7 kgf/cm²)	15 - 40	F-7301, F-7302, F-7346, F-7347, F-7351, F-7352, F-7356, F-7411, F-7412, F-7415, F-7416
	50 - 150	F-7305, F-7306, F-7353, F-7354, F-7358, F-7359
	200 • 250	F-7305, F-7306, F-7353, F-7354
0.98 MPa (10 kgf/cm²)	250 • 300	F-7307, F-7308
	350 • 400	F-7308
1.37 MPa (14 kgf/cm²)	50 - 200	F-7307, F-7308, F-7375, F-7376
2.16 MPa (22 kgf/cm²)	15 - 40	F-7307, F-7304, F-7348, F-7349, F-7413, F-7414, F-7417, F-7418
	50 - 150	F-7309, F-7310, F-7377, F-7378
	200	F-7309, F-7310
2.75 MPa (28 kgf/cm²)	6 • 10	F-7388, F-7389
3.33 MPa (34 kgf/cm²)	6 - 25	F-7421, F-7422
	32 - 250	F-7313, F-7314, F-7473, F-7474
4.51 MPa (46 kgf/cm²)	100 - 150	F-7315, F-7316
6.08 MPa (62 kgf/cm²)	6 - 25	F-7329, F-7330
	32 - 150	F-7317, F-7318

3. In feed water piping for non-shock water at temperatures 120°C or less, general non-shock sea waterpiping, bilge and ballast sea water piping

Gate valves

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.69 MPa (7 kgf/cm²)	15 - 40	F-7367
	50 - 400	F-7363
1.37 MPa (14 kgf/cm²)	15 - 40	F-7368
	50 - 400	F-7364
1.57 MPa (16 kgf/cm²)	300 - 400	F-7369

Swing check valves

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.69 MPa (7 kgf/cm²)	25 - 40	F-7371
	50 - 250	F-7372
1.37 MPa (14 kgf/cm²)	50 - 200	F-7373

4. Cocks in feed water piping for non-shock water at temperature 120°C or less

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.49 MPa (5 kgf/cm²)	25 - 65	F-7381

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
1.57 MPa (16 kgf/cm²)	6 - 20	F-7387

5. In pulsating water piping, fuel oil piping, lubricating oil piping and cargo oil piping

Globe and angle valves

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.49 MPa (5 kgf/cm²)	15 - 40	F-7301, F-7302, F-7346, F-7347 F-7351, F-7352, F-7356, F-7411 F-7412, F-7415, F-7416
	50 - 150	F-7305, F-7306, F-7353, F-7354, F-7358, F-7359
	200 • 250	F-7305, F-7306, F-7353, F-7354
	300 - 400	F-7305, F-7306
0.98 MPa (10 kgf/cm²)	50 - 200	F-7307, F-7308, F-7375, F-7376
	250 • 300	F-7307, F-7308
	350 • 400	F-7308
1.57 MPa (16 kgf/cm²)	15 - 40	F-7303, F-7304, F-7348, F-7349 F-7413, F-7414, F-7417, F-7418
	50 - 150	F-7309, F-7310, F-7377, F-7378
	200	F-7309, F-7310
1.96 MPa (20 kgf/cm²)	6 • 10	F-7388, F-7389
2.94 MPa (31 kgf/cm²)	6 - 25	F-7421, F-7422
	32 - 250	F-7313, F-7314, F-7373
4.51 MPa (46 kgf/cm²)	100 - 150	F-7315, F-7316
6.08 MPa (62 kgf/cm²)	6 - 25	F-7329, F-7330,
	32 - 150	F-7317, F-7318

Gate valves

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.49 MPa (5 kgf/cm²)	15 - 40	F-7367
	50 - 600	F-7363
0.98 MPa (10 kgf/cm²)	15 - 40	F-7368
	50 - 600	F-7364
1.57 MPa (16 kgf/cm²)	300 - 400	F-7369

Swing check valves

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.49 MPa (5 kgf/cm²)	25 - 40	F-7371
	50 - 250	F-7372
0.98 MPa (10 kgf/cm²)	50 - 200	F-7373

Cocks

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.49 MPa (5 kgf/cm²)	25 - 65	F-7381
1.27 MPa (13 kgf/cm²)	6 - 20	F-7387

6. In compressed air piping and control air piping

Globe and angle valves

Max. Working Pressure	Nominal Diameter mm	Applicable JIS F Valve No.
0.49 MPa (5 kgf/cm²)	15 - 40	F-7301, F-7302, F-7346, F-7347, F-7351, F-7352 F-7411, F-7412,
	50 - 200	F-7305, F-7306, F-7353, F-7354,
0.98 MPa (10 kgf/cm²)	50 - 200	F-7307, F-7308, F-7375, F-7376
1.57 MPa (16 kgf/cm²)	15 - 40	F-7303, F-7304, F-7348, F-7349, F-7413, F-7414
	50 - 150	F-7309, F-7310, F-7377, F-7378
	200	F-7309, F-7310
1.96 MPa (20 kgf/cm²)	6 • 10	F-7388, F-7389
3.04 MPa (31 kgf/cm²)	6 - 25	F-7421, F-7422 F-7336, F-7337
	32 - 150	F-7313, F-7314, F-7340, F-7473 F-7474, F-7475
	200	F-7313, F-7314 F-7473, F-7474 F-7475
4.51 MPa (46 kgf/cm²)	6 - 25	F-7336, F-7337
	32 - 150	F-7340, F-7475
	200	F-7475

JIS F No. / CODE Reference Table

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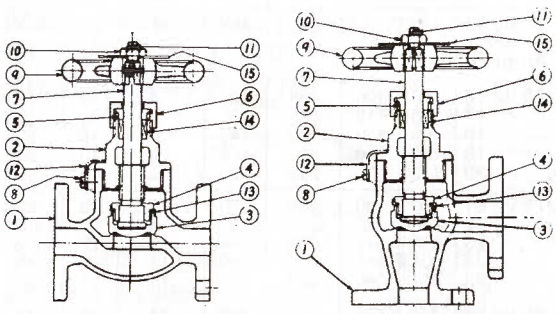
F-7301	**75 01 21 - 27**	75 - 3	F-7306	**75 02 16 - 26**	75 - 4	F-7311	**75 04 01 - 02**	75 - 6
F-7302	**75 01 31 - 37**	75 - 3	F-7307	**75 02 31 - 39**	75 - 5	F-7312	**75 04 06 - 07**	75 - 6
F-7303	**75 01 41 - 45**	75 - 4	F-7308	**75 02 46 - 56**	75 - 5	F-7313	**75 04 31 - 40**	75 - 7
F-7304	**75 01 51 - 55**	75 - 4	F-7309	**75 02 61 - 67**	75 - 5	F-7314	**75 04 41 - 50**	75 - 7
F-7305	**75 02 01 - 11**	75 - 4	F-7310	**75 02 71 - 77**	75 - 5	F-7315	**75 04 61 - 63**	75 - 7

JIS No.	CODE	Page	JIS No.	CODE	Page	JIS No.	CODE	Page
F-7316	**75 04 66 - 68**	75 - 7	F-7354	**75 11 16 - 29**	75 - 16	F-7389	**75 05 61 - 62**	75 - 9
F-7317	**75 04 71 - 78**	75 - 7	F-7356	**75 13 01 - 03**	75 - 20	F-7390	**75 16 61 - 64**	75 - 23
F-7318	**75 04 81 - 88**	75 - 7	F-7358	**75 13 11 - 16**	75 - 20	F-7409	**75 10 71 - 75**	75 - 16
F-7319	**75 04 11 - 19**	75 - 6	F-7359	**75 13 21 - 26**	75 - 20	F-7410	**75 10 81 - 85**	75 - 16
F-7320	**75 04 21 - 29**	75 - 6	F-7363	**75 08 01 - 15**	75 - 13	F-7411	**75 12 61 - 65**	75 - 19
F-7329	**75 06 41 - 63**	75 - 10	F-7364	**75 08 21 - 35**	75 - 14	F-7412	**75 12 66 - 70**	75 - 19
F-7330	**75 06 71 - 83**	75 - 11	F-7366	**75 09 01 - 11**	75 - 14	F-7413	**75 12 81 - 85**	75 - 19
F-7333	**75 17 31 - 37**	75 - 25	F-7367	**75 09 51 - 55**	75 - 15	F-7414	**75 12 86 - 90**	75 - 19
F-7334	**75 17 01 - 23**	75 - 23	F-7368	**75 09 61 - 65**	75 - 15	F-7415	**75 13 41 - 45**	75 - 20
F-7336	**75 07 31 - 43**	75 - 12	F-7369	**75 08 41 - 43**	75 - 14	F-7416	**75 13 46 - 50**	75 - 20
F-7337	**75 07 51 - 58**	75 - 12	F-7371	**75 14 01 - 03**	75 - 21	F-7417	**75 13 61 - 65**	75 - 20
F-7340	**75 07 01 - 08**	75 - 11	F-7372	**75 14 21 - 28**	75 - 21	F-7418	**75 13 66 - 70**	75 - 20
F-7341	**75 07 66 - 69**	75 - 13	F-7373	**75 14 31 - 37**	75 - 21	F-7421	**75 06 01 - 13**	75 - 9
F-7343	**75 16 51 - 54**	75 - 25	F-7375	**75 11 31 - 37**	75 - 17	F-7422	**75 06 21 - 28**	75 - 10
F-7346	**75 05 01 - 05**	75 - 8	F-7376	**75 11 41 - 47**	75 - 17	F-7471	**75 12 01 - 12**	75 - 18
F-7347	**75 05 11 - 15**	75 - 8	F-7377	**75 11 51 - 56**	75 - 17	F-7472	**75 12 16 - 27**	75 - 18
F-7348	**75 05 21 - 25**	75 - 8	F-7378	**75 11 61 - 66**	75 - 17	F-7473	**75 12 31 - 41**	75 - 18
F-7349	**75 05 31 - 35**	75 - 8	F-7379	**75 07 76 - 88**	75 - 13	F-7474	**75 12 46 - 56**	75 - 18
F-7351	**75 10 51 - 55**	75 - 15	F-7381	**75 16 01 - 15**	75 - 22	F-7475	**75 07 16 - 24**	75 - 11
F-7352	**75 10 61 - 65**	75 - 15	F-7387	**75 16 31 - 36**	75 - 22			
F-7353	**75 11 01 - 11**	75 - 16	F-7388	**75 05 51 - 57**	75 - 9			

(a) Ordinary Globe & Angle Valves

CODE	JIS No.	Material	Pressure kgf/cm²	Shape
75 01 21-27 31-37	F-7301 F-7302	Bronze	5	Globe Angle
75 01 41-45 51-55	F-7303 F-7304		16	Globe Angle
75 02 01-11 16-26	F-7305 F-7306	Cast Iron	5	Globe Angle
75 02 31-39 46-56	F-7307 F-7308		10	Globe Angle
75 02 61-67 71-77	F-7309 F-7310		16	Globe Angle
75 04 01-02 06-07	F-7311 F-7312	Cast Steel	5	Globe Angle
75 04 11-19 21-29	F-7319 F-7320		10	Globe Angle
75 04 31-40 41-50	F-7313 F-7314		20	Globe Angle
75 04 61-63 66-68	F-7315 F-7316		30	Globe Angle
75 04 71-78 81-88	F-7317 F-7318		40	Globe Angle



No.	Component	No.	Component
1	Body	9	Handwheel
2	Bonnet	10	Hexagon nut
3	Disc	11	Split pin
4	Valve disc nut	12	Lock plate
5	Packing gland	13	Disc lock washer
6	Gland nut	14	Packing
7	Stem	15	Name plate
8	Cross recessed pan head machine screw		

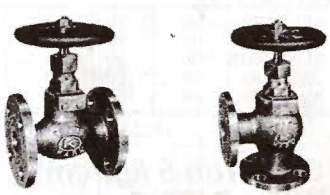
Marine Bronze 5 kgf/cm² Globe Valves F-7301/Angle Valves F-7302

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205°C or less	0.49 [5]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat	0.76 MPa [7.7 kgf/cm²]
Hydraulic inspection for body	1.03 MPa [10.5kgf/cm²]



F-7301 F-7302

How to order: CODE

GLOBE or ANGLE valve, bronze, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7301							
75 01 21	15	100	80	60	4	12	2.02
22	20	110	85	65	4	12	2.86
23	25	120	95	75	4	12	3.54
24	32	140	115	90	4	15	5.00
25	40	160	120	95	4	15	6.48
75 01 26	50	210	130	105	4	15	11.7
27	65	250	155	130	4	15	17.0
Angle Valve F-7302							
75 01 31	15	55	80	60	4	12	1.98
32	20	60	85	65	4	12	2.73
33	25	65	95	75	4	12	3.44
34	32	80	115	90	4	15	4.77
35	40	85	120	95	4	15	5.99
75 01 36	50	100	130	105	4	15	10.1
37	65	115	155	130	4	15	15.6

7TH 75

Marine Bronze 16 kgf/cm²
Globe Valves F-7303
Angle Valves F-7304

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205°C or less	1.57 [16]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	2.16 [22]

Hydraulic Inspection

Watertight inspection for valve seat	2.37 MPa [24.2 kgf/cm²]
Hydraulic inspection for body	3.24 MPa [33.0 kgf/cm²]

How to order: CODE

GLOBE or ANGLE valve, bronze, 16 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7303							
75 01 41	15	110	95	70	4	15	2.76
42	20	120	100	75	4	15	3.72
43	25	130	125	90	4	19	5.20
44	32	160	135	100	4	19	6.91
45	40	180	140	105	4	19	8.43
Angle Valve F-7304							
75 01 51	15	70	95	70	4	15	2.73
52	20	75	100	75	4	15	3.65
53	25	85	125	90	4	19	5.16
54	32	95	135	100	4	19	6.72
55	40	100	140	105	4	19	8.13

Marine Cast Iron 5 kgf/cm²
Globe Valves F-7305
Angle Valves F-7306

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]			
	Nominal dia. 200mm or less		Nominal dia.250, 300mm	Nominal dia.350, 400mm
	Class B	Class S	Class B	
Steam of 230°C or less	-	0.49 [5]	-	
Steam of 205°C or less	0.49 [5]			
Air & gas	0.49 [5]			-
Oil & pulsation water				0.49 [5]
Non-shock water of 120°C or less	0.69 [7]			0.59 [6]

Hydraulic Inspection

Nominal dia. mm	Test pressure MPa [kgf/cm²]	
	Watertight inspection for valve seat	Hydraulic inspection for body
300 or less	0.76 [7.7]	1.03 [10.5]
350 & 400	0.65 [6.6]	0.88 [9]

F-7305

F-7306

How to order: CODE

GLOBE or ANGLE valve, cast iron, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7305							
75 02 01	50	210	130	105	4	15	14.7
02	65	250	155	130	4	15	21.3
03	80	280	180	145	4	19	27.7
04	100	340	200	165	8	19	40.8
05	125	410	235	200	8	19	57.6
75 02 06	150	480	265	230	8	19	80.3
07	200	570	320	280	8	23	139
08	250	740	385	345	12	23	246
09	300	840	430	390	12	23	377
10	350	940	480	435	12	25	462
75 02 11	400	1,050	540	495	16	25	647
Angle Valve F-7306							
75 02 16	50	100	130	105	4	15	12.9
17	65	115	155	130	4	15	18.2
18	80	130	180	145	4	19	23.4
19	100	150	200	165	8	19	33.7
20	125	170	235	200	8	19	46.2
75 02 21	150	190	265	230	8	19	63.4
22	200	220	320	280	8	23	105
23	250	275	385	345	12	23	176
24	300	310	430	390	12	23	243
25	350	360	480	435	12	25	327
75 02 26	400	395	540	495	16	25	459

Marine Cast Iron 10 kgf/cm² Globe Valves F-7307 Angle Valves F-7308

Pressure Raring

Fluid condition	Maximum working pressure MPa [kgf/cm²]			
	Nominal dia. 200 mm or less		Nominal dia. 250 mm or more	
	Class B	Class S	Class B	Class S
Steam or 230°C or less	-	0.98 [10]	-	
Steam of 205°C or less	0.98 [10]			
Saturated steam			0.49 [5]	
Air & gas			-	
Oil & pulsation water			0.98 [10]	
Non-shock water of 120°C or less	1.37 [14]			

Hydraulic Inspection

Nominal dia. mm	Test pressure MPa [kgf/cm²]	
	Watertight inspection for valve seat	Hydraulic inspection for body
200 or less	1.51[15.4]	2.06[21]
250 or more	1.08[11]	1.47[15]

How to order: CODE

GLOBE or ANGLE valve, cast iron, 10 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7307							
75 02 31	50	220	155	120	4	19	19.9
32	65	270	175	140	4	19	28.7
33	80	300	185	150	8	19	32.4
34	100	350	210	175	8	19	48.7
35	125	420	250	210	8	23	73.1
75 02 36	150	490	280	240	8	23	104
37	200	570	330	290	12	23	162
38	250	740	400	355	12	25	304
39	300	840	445	400	16	25	458
Angle Valve F-7308							
75 02 46	50	120	155	120	4	19	18.2
47	65	130	175	140	4	19	25.4
48	80	140	185	150	8	19	27.4
49	100	160	210	175	8	19	40.6
50	125	180	250	210	8	23	69.9
75 02 51	150	205	280	240	8	23	81.0
52	200	230	330	290	12	23	125
53	250	290	400	355	12	25	211
54	300	320	445	400	16	25	293
55	350	360	490	445	16	25	386
75 02 56	400	420	560	510	16	27	544

Marine Cast Iron 16 kgf/cm² Globe Valves F-7309 Angle Valves F-7310

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Class B	Class S
Steam of 230°C or less	-	1.57 [16]
Steam of 205°C or less	1.57 [16]	
Air, gas, oil & pulsation water	1.57 [16]	
Non-shock water of 120°C or less	2.16 [22]	

Hydraulic Inspection

Watertight inspection for valve seat	2.38 MPa[24.2kgf/cm²]
Hydraulic inspection for body	3.24 MPa[33kgf/cm²]

How to order: CODE

GLOBE or ANGLE valve, cast iron, 16 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7309							
75 02 61	50	220	155	120	8	19	19.6
62	65	270	175	140	8	19	28.3
63	80	300	200	160	8	23	40.4
64	100	350	225	185	8	23	56.9
65	125	430	270	225	8	25	89.5
75 02 66	150	500	305	260	12	25	123
67	200	570	350	305	12	25	188
Angle Valve F-7310							
75 02 71	50	120	155	120	8	19	18.0
72	65	130	175	140	8	19	25.0
73	80	150	200	160	8	23	35.7
74	100	170	225	185	8	23	49.2
75	125	200	270	225	8	25	76.1
75 02 76	150	225	305	260	12	25	103
77	200	250	350	305	12	25	155

Marine Malleable Iron 5 kgf/cm² Globe Valves/Angle Valves

Previously listed in JIS standard and abolished in 1999, but still in demand and available in marine industry.

Globe Valve – ex JIS F-7321
Angle Valve – ex JIS F-7322

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Class B	Class S
Steam of 300°C	-	0.49 [5]
Steam of 220°C or less	-	0.59 [6]
Steam of 205°C or less	0.49 [5]	
Air, gas, oil & pulsation water		
Non-shock water of 120°C or less	0.69 [7]	

Hydraulic Inspection

Watertight inspection for valve seat	0.76 MPa[7.7kgf/cm²]
Hydraulic inspection for body	1.04 MPa[10.5kgf/cm²]

How to order: CODE

GLOBE or ANGLE valve, cast iron, 5 kgf/cm², SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve (ex JIS F-7321)							
75 03 01	15	100	80	60	4	12	1.98
02	20	110	85	65	4	12	2.80
03	25	120	95	75	4	12	4.18
04	32	140	115	90	4	15	5.53
05	40	160	120	95	4	15	7.08

(to be continued)

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Angle Valve (ex JIS F-7322)							
75 03 11	15	55	80	60	4	12	1.88
12	20	60	85	65	4	12	2.65
13	25	65	95	75	4	12	3.85
14	32	80	115	90	4	15	5.29
15	40	85	120	95	4	15	6.86

Marine Malleable Iron 16 kgf/cm² Globe Valves/Angle Valves

Previously listed in JIS standard and abolished in 1999, but still in demand and available in marine industry.

Globe Valve – ex JIS F-7323
Angle Valve – ex JIS F-7324

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Class B	Class S
Steam of 350°C	-	1.57 [16]
Steam of 300°C		1.77 [18]
Steam of 220°C or less	1.57 [16]	1.96 [20]
Steam of 205°C or less		
Air, gas, oil & pulsation water		
Non-shock water of 120°C or less	2.16 [22]	

Hydraulic Inspection

Watertight inspection for valve seat	2.38 MPa[24.2kgf/cm²]
Hydraulic inspection for body	3.24 MPa[33kgf/cm²]

How to order: CODE

GLOBE or ANGLE valve, cast iron, 16 kgf/cm², SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve (ex JIS F-7323)							
75 03 21	15	100	95	70	4	15	2.91
22	20	120	100	75	4	15	3.85
23	25	130	125	90	4	19	5.57
24	32	160	135	100	4	19	7.40
25	40	180	140	105	4	19	9.29
Angle Valve (ex JIS F-7324)							
75 03 31	15	70	95	70	4	15	2.85
32	20	75	100	75	4	15	3.75
33	25	85	125	90	4	19	5.36
34	32	95	135	100	4	19	7.05
35	40	100	140	105	4	19	8.80

Marine Cast Steel 5 kgf/cm² Globe Valves F-7311 Angle Valves F-7312

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & pulsation water	0.49 [5]
Non-shock water of 120°C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat	0.76 MPa[7.7kgf/cm²]
Hydraulic inspection for body	1.04 MPa[10.5kgf/cm²]

F-7311

F-7312

How to order: CODE

GLOBE or ANGLE valve, cast steel, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7311							
75 04 01	250	740	385	345	12	23	230
02	300	840	430	390	12	23	309
Angle Valve F-7312							
75 04 06	250	275	385	345	12	23	178
07	300	310	430	390	12	23	275

Marine Cast Steel 10 kgf/cm² Globe Valves F-7319 Angle Valves F-7320

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 300°C	0.98 [10]
Steam of 220°C or less	1.18 [12]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	1.37 [14]

Hydraulic Inspection

Watertight inspection for valve seat	1.51 MPa[15.4kgf/cm²]
Hydraulic inspection for body	2.06 MPa[21.0kgf/cm²]

How to order: CODE

GLOBE or ANGLE valve, cast steel, 10 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7319							
75 04 11	50	220	155	120	4	19	17.9
12	65	270	175	140	4	19	26.0
13	80	300	185	150	8	19	29.8
14	100	350	210	175	8	19	44.7
15	125	420	250	210	8	23	70.3
75 04 16	150	490	280	240	8	23	96.4
17	200	570	330	290	12	23	159
18	250	740	400	355	12	25	257
19	300	840	445	400	16	25	370

(to be continued)

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Angle Valve F-7320							
75 04 21	50	120	155	120	4	19	16.3
22	65	130	175	140	4	19	23.0
23	80	140	185	150	8	19	25.3
24	100	160	210	175	8	19	37.0
25	125	180	250	210	8	23	57.1
75 04 26	150	205	280	240	8	23	77.2
27	200	230	330	290	12	23	116
28	250	290	400	355	12	25	188
29	300	320	445	400	16	25	256

Marine Cast Steel 20 kgf/cm² Globe Valves F-7313 Angle Valves F-7314

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 400°C	2.26 [23]
Steam of 350°C	2.55 [26]
Steam of 300°C	2.84 [29]
Steam of 220°C or less	3.04 [31]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	3.33 [34]

Hydraulic Inspection

Watertight inspection for valve seat	3.67 MPa [37.4 kgf//cm²]
Hydraulic inspection for body	5.0 MPa [51 kgf/cm²]

How to order: CODE

GLOBE or ANGLE valve, cast steel, 20 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7313							
75 04 31	32	190	135	100	4	19	14.4
32	40	200	140	105	4	19	16.0
33	50	230	155	120	8	19	21.6
34	65	270	175	140	8	19	30.4
35	80	300	200	160	8	23	43.5
75 04 36	100	350	225	185	8	23	62.3
37	125	430	270	225	8	25	95.7
38	150	500	305	260	12	25	133.3
39	200	560	350	305	12	25	296.1
40	250	660	430	380	12	27	339.1
Angle Valve F-7314							
75 04 41	32	100	135	100	4	19	13.0
42	40	110	140	105	4	19	15.2
43	50	125	155	120	8	19	20.0
44	65	135	175	140	8	19	26.9
45	80	150	200	160	8	23	38.9
75 04 46	100	170	225	185	8	23	54.4
47	125	200	270	225	8	25	80.7
48	150	225	305	260	12	25	112.3
49	200	280	350	305	12	25	183.0
50	250	310	430	380	12	27	285.9

Marine Cast Steel 30 kgf/cm² Globe Valves F-7315 Angle Valves F-7316

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Carbon steel	Molybdenum steel
Steam of 450°C	-	3.33 [34]
Steam of 425°C	2.94 [30]	3.53 [36]
Steam of 400°C	3.33 [34]	3.73 [38]
Steam of 350°C	3.82 [39]	
Steam of 300°C or less	4.22 [43]	
Air, gas, oil & pulsation water	4.51 [46]	

Hydraulic Inspection

Watertight inspection for valve seat	4.96 MPa [50.6 kgf/cm²]
Hydraulic inspection for body	6.76 MPa [59 kgf/cm²]

How to order: CODE

GLOBE or ANGLE valve, cast steel, 30 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7315							
75 04 61	100	410	240	195	8	25	115
62	125	460	275	230	8	25	168
63	150	500	325	275	12	27	242
Angle Valve F-7316							
75 04 66	100	205	240	195	8	25	106
67	125	230	275	230	8	25	154
68	150	250	325	275	12	27	223

Marine Cast Steel 40 kgf/cm² Globe Valves F-7317 Angle Valves F-7318

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]		
	Carbon steel	Molybdenum steel	Chromium molybdenum steel
Steam of 490°C	-	-	3.92 [40]
Steam of 475°C	-	3.92 [40]	4.12 [42]
Steam of 450°C	-	4.41 [45]	
Steam of 425°C	3.92 [40]	4.71 [48]	
Steam of 400°C	4.51 [46]	5.00 [51]	
Steam of 350°C	5.10 [52]		
Steam of 300°C or less	5.59 [57]		
Air, gas, oil & pulsation water	6.08 [62]		

Hydraulic Inspection

Watertight inspection for valve seat	6.69 MPa [68.2 kgfcm²]
Hydraulic inspection for body	9.12 MPa [93 kgf/cm²]

How to order: CODE

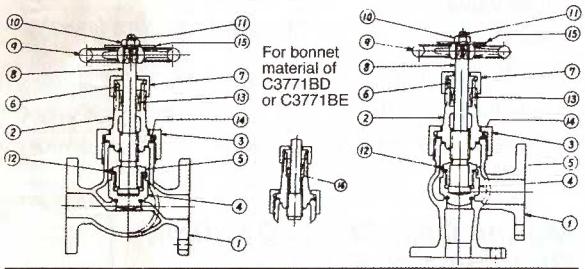
GLOBE or ANGLE valve, cast steel, 40 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7317							
75 04 71	32	229	140	105	4	19	25.4
72	40	241	160	120	4	23	30.2
73	50	292	165	130	8	19	41.0
74	65	330	200	160	8	23	62.3
75	80	356	210	170	8	23	79.0
75 04 76	100	432	250	205	8	25	140
77	125	508	300	250	8	27	197
78	150	559	355	295	12	33	298
Angle Valve F-7318							
75 04 81	32	114	140	105	4	19	24.9
82	40	121	160	120	4	23	29.4
83	50	146	165	130	8	19	40.0
84	65	165	200	160	8	23	60.3
85	80	178	210	170	8	23	76.2
75 04 86	100	216	250	205	8	25	135
87	125	254	300	250	8	27	189
88	150	279	355	295	12	33	284

(b) Union Bonnet Type Valves

CODE	JIS No.	Material	Pressure kgf/cm²	Shape
75 05 01-05 **11-15**	F-7346 F-7347	Bronze	5	Globe Angle
75 05 21-25 **31-35**	F-7348 F-7349	Bronze	16	Globe Angle



No.	Component	No.	Component
1	Body	9	Handwheel
2	Bonnet	10	Hexagon nut
3	Bonnet nut	11	Split pin
4	Disc	12	Disc lock washer
5	Disc nut	13	Packing
6	Packing gland	14	Gasket
7	Gland nut	15	Name plate
8	Stem	16	Seat ring

Marine Bronze Union Bonnet Type 5 kgf/cm² Globe Valves F-7346 Angle Valves F-7347

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205°C or less	0.49 [5]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat	0.76 MPa [7.7 kgf/cm²]
Hydraulic inspection for body	1.04 MPa [10.5 kgf/cm²]

F-7346

F-7347

How to order: CODE

Union bonnet type GLOBE or ANGLE valve, bronze, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7346							
75 05 01	15	100	80	60	4	12	2.21
02	20	110	85	65	4	12	3.04
03	25	120	95	75	4	12	3.97
04	32	140	115	90	4	15	5.23
05	40	160	120	95	4	15	6.94
Angle Valve F-7347							
75 05 11	15	55	80	60	4	12	2.15
12	20	60	85	65	4	12	2.94
13	25	65	95	75	4	12	3.82
14	32	80	115	90	4	15	4.99
15	40	85	120	95	4	15	6.40

Marine Bronze Union Bonnet Type 16 kgf/cm² Globe Valves F-7348 Angle Valves F-7349

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205°C or less	1.57 [16]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	2.16 [22]

Hydraulic Inspection

Watertight inspection for valve seat	2.38 MPa [24.2 kgf/cm²]
Hydraulic inspection for body	3.24 MPa [33 kgf/cm²]

How to order: CODE

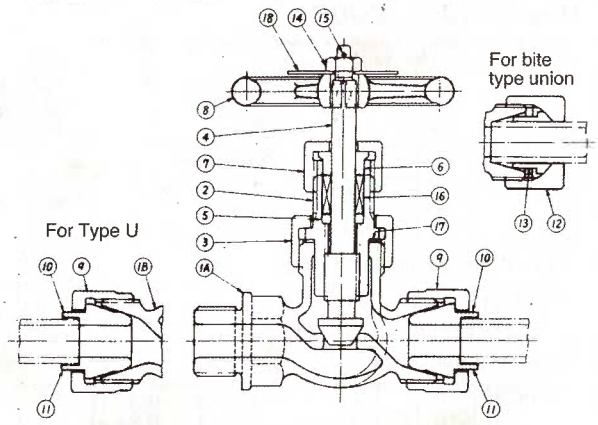
Union bonnet type GLOBE or ANGLE valve, bronze, 16 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7348							
75 05 21	15	110	95	70	4	15	2.96
22	20	120	100	75	4	15	3.92
23	25	130	125	90	4	19	5.65
24	32	160	135	100	4	19	7.24
25	40	180	140	105	4	19	9.12
Angle Valve F-7349							
75 05 31	15	70	95	70	4	15	2.94
32	20	75	100	75	4	15	3.88
33	25	85	125	90	4	19	5.53
34	32	95	135	100	4	19	6.98
35	40	100	140	105	4	19	8.57

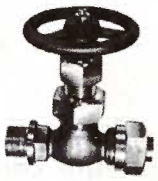
(c) Screw or Union End Valves

CODE	JIS No.	Material	Pressure kgf/cm²	Shape
75 05 51-57 **61-62**	F-7388 F-7389	Bronze	20	Globe Angle
75 06 01-13 **21-28**	F-7421 F-7422	Forged Steel	20	Globe Angle
75 06 41-63 **71-83**	F-7329 F-7330		40	Globe Angle



No.	Component	No.	Component
1A	Body (Type S)	10	Nipple for copper pipe
1B	Body (Type U)	11	Nipple for Steel pipe
2	Bonnet	12	Union nut
3	Bonnet nut	13	Sleeve
4	Stem	14	Hexagon nut
5	Seat ring	15	Split pin
6	Packing gland	16	Packing
7	Gland nut	17	Gasket
8	Handwheel	18	Name plate
9	Unit nut		

Marine Bronze 20 kgf/cm² Globe Valves F-7388



F-7388

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205˚C or less	1.57 [16]
Air, gas, oil & pulsation water	1.96 [20]
Non-shock water of 120˚C or less	2.75 [28]

Hydraulic Inspection

Watertight inspection for valve seat	3.02 MPa[30.8kgf/cm²]
Hydraulic inspection for body	4.12 MPa[42kgf/cm²]

How to order: CODE

Globe valve, bronze, 20 kgf/cm², JIS F-7388, TYPE of CONNECTION, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm			Weight kgs
		Pipe Out. Diam.		Thread	
		Copper	Steel		
Type S (Screwed)					
75 05 51	6	8 & 10	10.5	M20 x 1.5	0.81
52	10	15	17.3	M24 x 2	1.22
Type U (Union)					
75 05 56	6	8 & 10	10.5	-	0.85
57	10	15	17.3	-	1.37

Note: When copper pipe is applied, a valve with bite type union may be used.

Marine Bronze 20 kgf/cm² Angle Valves F-7389

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205˚C or less	1.57 [16]
Air, gas, oil & pulsation water	1.96 [20]
Non-shock water of 120˚C or less	2.75 [28]

Hydraulic Inspection

Watertight inspection for valve seat	3.02 MPa[30.8kgf/cm²]
Hydraulic inspection for body	4.12 MPa[42kgf/cm²]

How to order: CODE

Angle valve, bronze, 20 kgf/cm², JIS F-7389, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm			Weight kgs
		Pipe Out. Diam.		Thread	
		Copper	Steel		
75 05 61	6	8 & 10	10.5	M20 x 1.5	0.83
62	10	15	17.3	M24 x 2	1.19

Note: When copper pipe is applied, a valve with bite type union may be used.

Marine Forged Steel 20 kgf/cm² Globe Valves F-7421

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 400˚C	2.16 [22]
Steam of 350˚C	2.55 [26]
Steam of 300˚C	2.84 [29]

(to be continued)

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 220°C or less	3.04 [31]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	3.33 [34]

Hydraulic Inspection	
Watertight inspection for valve seat	3.67 MPa[37.4kgf/cm²]
Hydraulic inspection for body	5.0 MPa[51kgf/cm²]

How to order: CODE

Globe valve, forged steel, 20 kgf/cm², JIS F-7421,
TYPE of CONNECTION, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm			Weight kgs
		Pipe Out. Diam.		Thread	
		Copper	Steel		
Type S (Screw Thread Type)					
75 06 01	6	8 & 10	10.5	M20 x 1.5	1.47
02	10	15	17.3	M24 x 2	1.75
Type U (Union Type)					
75 06 06	6	8 & 10	10.5	-	1.55
07	10	15	17.3	-	1.85

Type F (Flange Type)

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 06 11	15	140	95	70	4	15	4.4
12	20	160	100	75	4	15	5.9
13	25	180	125	90	4	19	7.7

Marine Forged Steel 20 kgf/cm² Angle Valves F-7422

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 400°C	2.16 [22]
Steam of 350°C	2.55 [26]
Steam of 300°C	2.84 [29]
Steam of 220°C or less	3.04 [31]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	3.33 [34]

Hydraulic Inspection	
Watertight inspection for valve seat	3.67 MPa[37.4kgf/cm²]
Hydraulic inspection for body	5.0 MPa[51kgf/cm²]

How to order: CODE

Angle valve, forged steel, 20 kgf/cm², JIS F-7422,
TYPE of CONNECTION, SIZE mm

Type S (Screw Thread Type)

Unit Per Pc.

CODE	Size mm	Dimensions mm			Weight kgs
		Pipe Out. Diam.		Thread	
		Copper	Steel		
75 06 21	6	8.& 10	10.5	M20 x 1.5	1.47
22	10	15	17.3	M24 x 2	1.75

Type F (Flange Type)

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 06 26	15	75	95	70	4	15	4.2
27	20	80	100	75	4	15	5.6
28	25	95	125	90	4	19	7.2

Marine Forged Steel 40 kgf/cm² Globe Valves F-7329

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 425°C	3.92 [40]
Steam of 400°C	4.51 [46]
Steam of 350°C	5.10 [52]
Steam of 300°C or less	5.59 [57]
Air, gas, oil & pulsation water	6.08 [62]

Hydraulic Inspection	
Watertight inspection for valve seat	6.69 MPa[68.2kgf/cm²]
Hydraulic inspection for body	9.12 MPa[93kgf/cm²]

How to order: CODE

Globe valve, forged steel, 40 kgf/cm², JIS F-7329,
TYPE of CONNECTION, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm			Weight kgs
		Length	Thread	Height Fully Opened	
		End to End			
Type S (Screw Thread Type)					
75 06 41	6	89	M20 x 1.5	152	1.6
42	10	108	M24 x 2	152	2.0
Type U (Union Type)					
75 06 46	6	102	-	152	1.8
47	10	126	-	152	2.3
Type W (Socket Weld Type)					
75 06 51	6	84	-	152	1.5
52	10	102	-	152	2.0
53	15	130	-	205	3.6
54	20	150	-	230	5.2
55	25	170	-	255	7.5

Type F (Flange Type)

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 06 61	15	150	115	80	4	19	5.2
62	20	170	120	85	4	19	6.8
63	25	200	130	95	4	19	8.9

Marine Forged Steel 40 kgf/cm² Angle Valves F-7330

Pressure Rating	
Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 425°C	3.92 [40]
Steam of 400°C	4.51 [46]
Steam of 350°C	5.10 [52]
Steam of 300°C or less	5.59 [57]
Air, gas, oil & pulsation water	6.08 [62]

Hydraulic Inspection	
Watertight inspection for valve seat	6.69 MPa[68.2kgf/cm²]
Hydraulic inspection for body	9.12 MPa[93kgf/cm²]

How to order: CODE

Angle valve, forged steel, 40 kgf/cm², JIS F-7330, TYPE of CONNECTION, SIZE mm

Unit Per Pc.

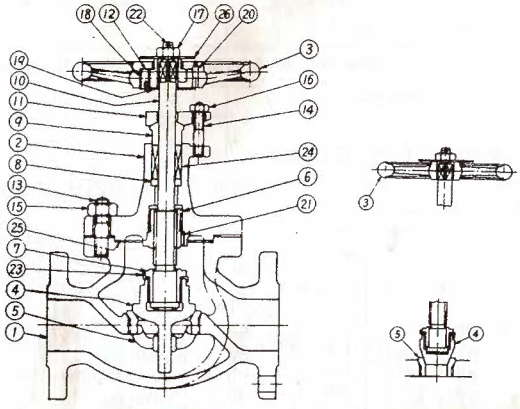
CODE	Size mm	Dimensions mm			Weight kgs
		Length End to End	Thread	Height Fully Opened	
Type S (Screw Thread Type)					
75 06 71	6	51	M20 x 1.5	136	1.6
72	10	51	M24 x 2	136	1.9
Type W (Socket Weld Type)					
75 06 76	15	75	-	205	3.6
77	20	80	-	230	5.0
78	25	95	-	255	7.1

Type F (Flange Type)

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 06 81	15	90	115	80	4	19	5.2
82	20	95	120	85	4	19	6.6
83	25	100	130	95	4	19	8.5

(d) Compressed Air Valves

CODE	JIS No.	Material	Shape
75 07 01-08 16-24	F-7340 F-7475	Cast Steel	Globe Angle
75 07 31-43 51-58	F-7336 F-7337	Forged Steel	Globe Angle



No.	Component	No.	Component
1	Body	14	Stud
2	Bonnet	15	Hexagon nut
3	Hand wheel	16	Hexagon nut
4	Disc	17	Hexagon nut
5	Valve seat	18	Pounding piece
6	Screwed bush	19	Pounding piece holder
7	Disc nut	20	Straight pin
8	Seat ring	21	Straight pin
9	Packing gland ring	22	Split pin
10	Stem	23	Disc lock washer
11	Packing gland	24	Packing
12	Pounding receiver piece	25	Gasket
13	Stud	26	Name plate

Marine Cast Steel Globe Air Valves F-7340

Pressure Rating	
Maximum working pressure	4.51 MPa [46kgf/cm²]

Hydraulic Inspection	
Watertight inspection for valve seat	4.96 MPa[50.6kgf/cm²]
Hydraulic inspection for body	6.76 MPa[69kgf/cm²]

How to order: CODE

Globe air valve, cast steel, JIS F-7340, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 07 01	32	220	140	105	4	19	16.7
02	40	240	160	120	4	23	21.1
03	50	260	165	130	8	19	28.8
04	65	310	200	160	8	23	48.7
05	80	340	210	170	8	23	60.9
75 07 06	100	390	240	195	8	25	86.0
07	125	470	275	230	8	25	139
08	150	540	325	275	12	27	199

Marine Cast Steel Angle Air Valves F-7475

Pressure Rating	
Maximum working pressure	4.51 MPa [46kgf/cm²]

Hydraulic Inspection	
For body	6.76 MPa[69kgf/cm²]

How to order: CODE

Angle air valve, cast steel, JIS F-7475, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 07 16	32	114	140	105	4	19	16.6
17	40	121	160	120	4	23	20.3
18	50	146	165	130	8	19	27.6
19	65	165	200	160	8	23	46.6
20	80	178	210	170	8	23	55.6
75 07 21	100	205	240	195	8	25	80.9
22	125	230	275	230	8	25	126
23	150	250	325	275	12	27	177
24	200	300	370	320	12	27	258

Marine Forged Steel Globe Air Valves F-7336

Pressure Rating	
Maximum working pressure	4.51 MPa [46kgf/cm²]

Hydraulic Inspection	
Watertight inspection for valve seat	4.96 MPa[50.6kgf/cm²]
Hydraulic inspection for body	6.76 MPa[69kgf/cm²]

How to order: CODE

Globe air valve, forged steel, JIS F-7336,
TYPE of CONNECTION, SIZE mm

Unit Per Pc.

CODE	Size mm	Pipe Out. Diam.		Thread	Weight kgs
		Copper	Steel		
Type S (Union Nut and Thread Type)					
75 07 31	6	8 & 10	10.5	M20 x 1.5	1.26
32	10	15	17.3	M24 x 2	1.80
Type U (Both Side Union Nut Type)					
75 07 36	6	8 & 10	10.5	-	1.30
37	10	15	17.3	-	1.94

Type F (Flange Type)

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 07 41	15	150	115	80	4	19	5.60
42	20	170	120	85	4	19	7.09
43	25	200	130	95	4	19	9.46

Marine Forged Steel Angle Air Valves F-7337

Pressure Rating	
Maximum working pressure	4.51 MPa [46kgf/cm²]

Hydraulic Inspection	
Watertight inspection for valve seat	4.96 MPa[50.6kgf/cm²]
Hydraulic inspection for body	6.76 MPa[69kgf/cm²]

How to order: CODE

Angle air valve, forged steel, JIS F-7337,
TYPE of CONNECTION, SIZE mm

Unit Per Pc.

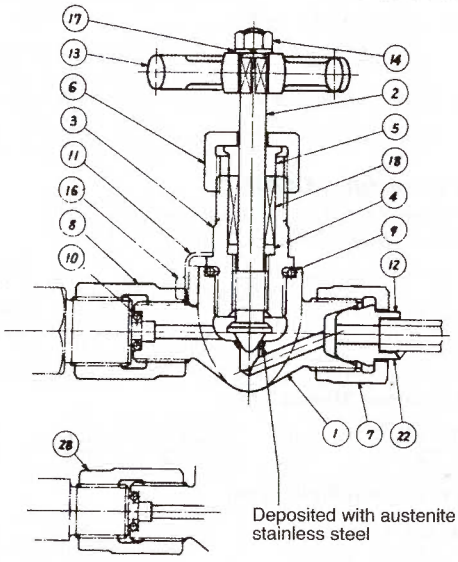
CODE	Size mm	Pipe Out. Diam.		Thread	Weight kgs
		Copper	Steel		
Type S (Union Nut Type)					
75 07 51	6	8 & 10	10.5	M20 x 1.5	1.23
52	10	15	17.3	M24 x 2	1.75

Type F (Flange Type)

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 07 56	15	90	115	80	4	19	5.59
57	20	95	120	85	4	19	7.00
58	25	100	130	95	4	19	9.11

(e) Pressure Gauge & Stop Valves

CODE	JIS No.	Material	Pressure kgf/cm²	For
75 07 66-69	F-7341	Forged Steel	100	Pressure gauge
75 07 76-88	F-7379	Brass	30	Stop



Deposited with austenite stainless steel

No.	Component	No.	Component
1	Body	11	Bonnet lock plate
2	Stem	12	Nipple for steel pipe
3	Bonnet	13	Handwheel
4	Seat ring	14	Hexagon nut
5	Gland	16	Cross recessed pan head machine screw
6	Galnd nut	17	Spring washer
7	Union nut	18	Stem packing
8	PF 1/2 union nut	22	Nipple for copper pipe
9	Gasket	28	PF 3/8 union nut
10	Gasket		

Marine Forged Steel 100 kgf/cm² Pressure Gauge Valves F-7341

Pressure Rating	
Maximum working pressure	10.40 MPa [106kgf/cm²]

Hydraulic Inspection	
Watertight inspection for valve seat	11.44 MPa[116.6kgf/cm²]
Hydraulic inspection for body	15.60 MPa[159kgf/cm²]

How to order: CODE

Pressure gauge valve, forged steel, 100 kgf/cm²,
JIS F-7341, SIZE mm

Unit Per Pc.

CODE	Size	Thread	Length End to End mm	Connecting Pipe	Weight kgs
75 07 66	3/8 C	PF 3/8	96.0	Copper pipe	0.68
67	3/8 S	PF 3/8	96.0	Steel pipe	0.68
68	1/2 C	PF 1/2	96.0	Copper pipe	0.71
69	1/2 S	PF 1/2	96.0	Steel pipe	0.71

Marine Brass 30 kgf/cm² Stop Valves

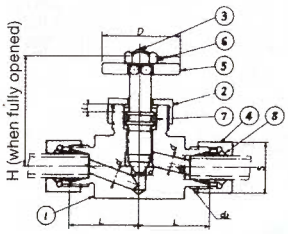
with Bite Joint F-7379

Pressure Rating

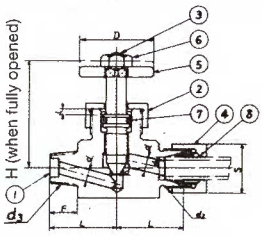
Fluid condition	Maximum working pressure MPa [kgf/cm²]
Non-shock fluid of 80°C or less	2.94 [30]

Hydraulic Inspection

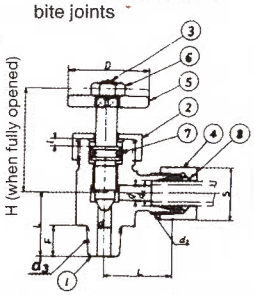
Watertight inspection for valve seat	3.23 MPa[33.0kgf/cm²]
Hydraulic inspection for body	4.41 MPa[45.0kgf/cm²]



Globe valve with both bite joints



Screwed globe valve with bite joint



Screwed angle valve with bite joint

No.	Component
1	Body
2	Cap nut
3	Stem
4	Union nut
5	Handwheel
6	Hexagon nut
7	O-ring
8	Sleeve

How to order: CODE

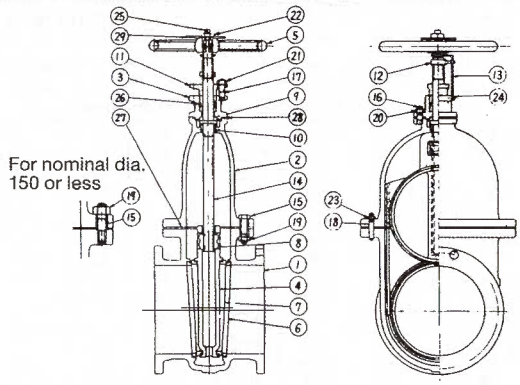
Stop valve, brass, 30 kgf/cm², JIS F-7379, TYPE of CONNECTION, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm			
		Pipe out Diam.	"L" for Stop Valve	"L" for Angle Valve	d Thread PT
Globe valve with both bite joint (GBB)					
75 07 76	4	6	24	-	-
77	6	8 & 10	28	-	-
78	10	15	35	-	-
Screwed globe valve with bite joint (GBS)					
75 07 81	4	6	24	-	PT 1/8
82	6	8 & 10	28	-	PT 1/4
83	10	15	35	-	PT 3/8
Screwed angle valve with bite joint (LBS)					
75 07 86	4	6	-	22	PT 1/8
87	6	8 & 10	-	25	PT 1/4
88	10	15	-	31	PT 3/8

(f) Gate Valves

CODE	JIS No.	Material	Pressure kgf/cm²
75 08 01-15	F-7363	Cast Iron	5
21-35	F-7364		10
41-43	F-7369		16
75 09 01-11	F-7366	Cast Steel	10
75 09 51-55	F-7367	Bronze	5
61-65	F-7368		10



No.	Component	No.	Component
1	Body	16	Stud
2	Bonnet	17	Stud
3	Stuffing box	18	Taper pin with thread
4	Disc	19	Hexagon nut
5	Hand wheel	20	Hexagon nut
6	Valve seat for body	21	Hexagon nut
7	Valve seat of disc	22	Hexagon nut
8	Screwed piece	23	Hexagon nut
9	Guide bush	24	Cross recessed pan head machine screw
10	Guide bush	25	Split pin
11	Packing gland	26	Packing
12	Indicator	27	Gasket
13	Indicator plate	28	Gasket
14	Stem	29	Name plate
15	Stud / Hexagon head bolt		

Marine Cast Iron 5 kgf/cm² Gate Valves F-7363

F-7363

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]		
	Nominal dia. 200 mm or less	Nominal dia. 250 mm to 400 mm	Nominal dia. 450 mm to 600 mm
Saturated steam	0.29 [3]	0.20 [2]	
Oil & pulsation water	0.49 [5]		
Non-shock water of 120°C or less	0.69 [7]		0.49 [5]

Hydraulic Inspection

Nominal dia. mm	Test pressure MPa [kgf/cm²]	
	Watertight inspection for valve seat	Hydraulic inspection for body
400 or less	0.76 [7.7]	1.03 [10.5]
450 to 600	0.54 [5.5]	0.74 [7.5]

How to order: CODE

Gate valve, cast iron, 5 kgf/cm², JIS F-7363, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 08 01	50	180	130	105	4	15	13.5
02	65	190	155	130	4	15	19.0
03	80	200	180	145	4	19	24.2
04	100	230	200	165	8	19	35.3
05	125	250	235	200	8	19	48.1
75 08 06	150	270	265	230	8	19	65.3
07	200	290	320	280	8	23	103
08	250	330	385	345	12	23	164
09	300	370	430	390	12	23	236
10	350	410	480	435	12	25	307
75 08 11	400	470	540	495	16	25	405
12	450	500	605	555	16	25	556
13	500	550	655	605	20	25	700
14	550	600	720	665	20	27	878
15	600	660	770	715	20	27	1,120

Marine Cast Iron 10 kgf/cm² Gate Valves F-7364

7TH 75

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]		
	Nominal dia. 200 mm or less	Nominal dia. 250 mm to 400 mm	Nominal dia. 450 mm to 600 mm
Saturated steam	0.49 [5]	0.29 [3]	
Oil & pulsation water	0.98 [10]		
Non-shock water of 120°C or less	1.37 [14]		1.18 [12]

Hydraulic Inspection

Nominal dia. mm	Test pressure MPa [kgf/cm²]	
	Watertight inspection for valve seat	Hydraulic inspection for body
400 or less	1.57 [15.4]	2.06 [21]
450 to 600	1.29 [13.2]	1.77 [18]

How to order: CODE

Gate valve, cast iron, 10 kgf/cm², JS F-7364, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 08 21	50	200	155	120	4	19	19.4
22	65	220	175	140	4	19	27.6
23	80	230	185	150	8	19	33.0
24	100	250	210	175	8	19	45.8
25	125	270	250	210	8	23	65.9
75 08 26	150	290	280	240	8	23	86.0
27	200	320	330	290	12	23	136
28	250	380	400	355	12	25	230
29	300	440	445	400	16	25	331
30	350	500	490	445	16	25	433
75 08 31	400	590	560	510	16	27	597
32	450	640	620	565	20	27	704
33	500	710	675	620	20	27	901
34	550	780	745	680	20	33	1,192
35	600	850	795	730	24	33	1,490

Marine Cast Iron 16 kgf/cm² Gate Valves F-7369

Pressure Rating

Maximum working pressure	1.57 MPa [16kgf/cm²]

Hydraulic Inspection

Watertight inspection for valve seat	1.73 MPa[17.6kgf/cm²]
Hydraulic inspection for body	2.36 MPa[24kgf/cm²]

How to order: CODE

Gate valve, cast iron, 16 kgf/cm², JIS F-7369, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 08 41	300	490	480	430	16	27	430
42	350	540	540	480	16	33	580
43	400	610	605	540	16	33	780

Marine Cast Steel 10 kgf/cm² Gate Valves F-7366

F-7366

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Nominal dia. 200 mm or less	Nominal dia. 250 mm or less
Saturated steam	0.69 [7]	0.49 [5]
Oil & pulsation water	0.981 [10]	
Non-shock water of 120°C or less	1.37 [14]	

Hydraulic Inspection

Watertight inspection for valve seat	1.51 MPa[15.4kgf/cm²]
Hydraulic inspection for body	2.06 MPa[21kgf/cm²]

How to order: CODE

Gate valve, cast steel, 10 kgf/cm², JIS F-7366, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 09 01	50	200	155	120	4	19	17.1
02	65	220	175	140	4	19	26.5
03	80	230	185	150	8	19	31.5
04	100	250	210	175	8	19	44.9
05	125	270	250	210	8	23	63.2
75 09 06	150	290	280	240	8	23	82.3
07	200	310	330	290	12	23	130
08	250	340	400	355	12	25	203
09	300	380	445	400	16	25	291
10	350	420	490	445	16	25	368
75 09 11	400	480	560	510	16	27	507

Marine Bronze 5 kgf/cm² Rising Stem Type Gate Valves F-7367

F-7367

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm ²]
Oil & pulsation water	0.49 [5]
Saturated steam	0.20 [2]
Non-shock water of 120˚C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat	0.76 MPa[7.7kgf/cm²]
Hydraulic inspection for body	1.04 MPa[10.5kgf/cm²]

How to order: CODE

Gate valve, rising stem type, bronze, 5 kgf/cm², JIS F-7367, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 09 51	15	90	80	60	4	12	2.29
52	20	100	85	65	4	12	2.98
53	25	110	95	75	4	12	4.10
54	32	130	115	90	4	15	5.79
55	40	140	120	95	4	15	7.78

Marine Bronze 10 kgf/cm² Rising Stem Type Gate Valves F-7368

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & Pulsation water	0.98 [10]
Saturated steam	0.20 [2]
Non-shock water of 120˚C or less	1.37 [14]

Hydraulic Inspection

Watertight inspection for valve seat	1.51 MPa[15.4kgf/cm²]
Hydraulic inspection for body	2.06 MPa[21.0kgf/cm²]

How to order: CODE

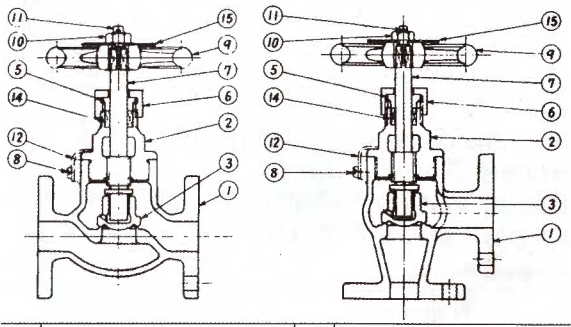
Gate valve, rising stem type, bronze, 10 kgf/cm2, JIS F-7368, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 09 61	15	100	95	70	4	15	2.96
62	20	110	100	75	4	15	3.89
63	25	120	125	90	4	19	5.82
64	32	140	135	100	4	19	7.52
65	40	150	140	105	4	19	9.71

(g) Screw Down Check Valves

CODE	JIS No.	Material	Pressure kgf/cm²	Shape
75 10 51-55 **61-65**	F-7351 F-7352	Bronze	5	Globe Angle
75 10 71-75 **81-85**	F-7409 F-7410		16	Globe Angle
75 11 01-11 **16-29**	F-7353 F-7354	Cast Iron	5	Globe Angle
75 11 31-37 **41-47**	F-7375 F-7376		10	Globe Angle
75 11 51-56 **61-66**	F-7377 F-7378		16	Globe Angle
75 12 01-12 **16-27**	F-7471 F-7472	Cast Steel	10	Globe Angle
75 12 31-41 **46-56**	F-7473 F-7474		20	Globe Angle
75 12 61-65 **66-70**	F-7411 F-7412	Bronze	5	Globe Angle
75 12 81-85 **86-90**	F-7413 F-7414		16	Globe Angle



No.	Component	No.	Component
1	Body	9	Hand wheel
2	Bonnet	10	Hexagon nut
3	Disc	11	Split pin
5	Packing gland	12	Bonnet lock plate
6	Gland nut	14	Packing
7	Stem	15	Name plate
8	Cross recessed pan head machine screw		

Marine Bronze 5 kgf/cm² Screw Down Check Globe Valves F-7351 Angle Valves F-7352

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205˚C or less	0.49 [5]
Air, gas, oil & pulsation water	
Non-shock water of 120˚C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat	
Inlet side	0.76MPa[7.7kgf/cm²]
Outlet side	0.76MPa[7.7kgf/cm²] to 0.39MPa[4kgf/cm²]
Hydraulic inspection for body	1.03MPa[10.5kgf/cm²]

F-7351

F-7352

How to order: CODE

Screw down check valve, GLOBE or ANGLE, bronze, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7351							
75 10 51	15	100	80	60	4	12	1.96
52	20	110	85	65	4	12	2.77
53	25	120	95	75	4	12	3.41
54	32	140	115	90	4	15	4.86
55	40	160	120	95	4	15	6.30
Angle Valve F-7352							
75 10 61	15	55	80	60	4	12	1.92
62	20	60	85	65	4	12	2.64
63	25	65	95	75	4	12	3.30
64	32	80	115	90	4	15	4.63
65	40	85	120	95	4	15	5.81

Marine Bronze 16 kgf/cm² Screw Down Check Globe Valves F-7409 Angle Valves F-7410

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205°C or less	1.57 [16]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	2.16 [22]

Hydraulic Inspection

Watertight inspection for valve seat	
Inlet side	2.37 MPa [24.2kgf/cm²]
Outlet side	2.37 MPa [24.2kgf/cm²] to 0.39 MPa [4kgf/cm²]
Hydraulic inspection for body	3.23 MPa [33kgf/cm²]

How to order: CODE

Screw down check valve, GLOBE or ANGLE, bronze, 16 kgf/cm2, JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7409							
75 10 71	15	110	95	70	4	15	2.70
72	20	120	100	75	4	15	3.63
73	25	130	125	90	4	19	5.09
74	32	160	135	100	4	19	6.77
75	40	180	140	105	4	19	8.25
Angle Valve F-7410							
75 10 81	15	70	95	70	4	15	2.67
82	20	75	100	75	4	15	3.56
83	25	85	125	90	4	19	5.02
84	32	95	135	100	4	19	6.58
85	40	100	140	105	4	19	7.95

Marine Cast Iron 5 kgf/cm² Screw Down Check Globe Valves F-7353

F-7353

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]			
	Nominal Dia. 200 or less		Nominal Dia. 250 and 300	Nominal Dia. 350 and 400
	Class B	Class S	Class B	
Steam of 230°C or less	-	0.49 [5]	-	-
Steam of 205°C or less	0.49 [5]			
Air & gas	0.49 [5]			
Oil & pulsation water			0.49 [5]	
Non-shock water of 120°C or less	0.69 [7]			0.59 [6]

Hydraulic Inspection

Nominal dia. mm	Test Pressure MPa [kgf/cm²]		
	Watertight inspection for valve seat		Hydraulic inspection for body
	Inlet Side	Outlet Side	
300 or less	0.76 [7.7]	0.76 [7.7] to 0.39 [4]	1.03 [10.5]
350, 400	0.65 [6.6]	0.65 [6.6] to 0.29 [3]	0.88 [9]

How to order: CODE

Screw down check globe valve, cast iron, 5 kgf/cm², JIS F-7353, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 11 01	50	210	130	105	4	15	14.8
02	65	250	155	130	4	15	21.3
03	80	280	180	145	4	19	27.6
04	100	340	200	165	8	19	40.4
05	125	410	235	200	8	19	57.9
75 11 06	150	480	265	230	8	19	80.9
07	200	570	320	280	8	23	139
08	250	740	385	345	12	23	243
09	300	840	430	390	12	23	377
10	350	940	480	435	12	25	463
75 11 11	400	1,050	540	495	16	25	643

Marine Cast Iron 5 kgf/cm² Screw Down Check Angle Valves F-7354

F-7354

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]				
	Nominal Dia. 200 or less		Nominal Dia. 250 and 300	Nominal Dia. 350 and 400	Nominal Dia. 450 or more
	Class B	Class S	Class B		
Steam of 230°C or less	-	0.49 [5]	-	-	-
Steam of 205°C or less	0.49 [5]				
Air & gas	0.49 [5]				
Oil & pulsation water			0.49 [5]		0.39 [4]
Non-shock water of 120°C or less	0.69 [7]			0.59 [6]	0.49 [5]

Hydraulic Inspection

Nominal dia. mm	Test Pressure MPa [kgf/cm²]		
	Watertight inspection for valve seat		Hydraulic inspection for body
	Inlet Side	Outlet Side	
300 or less	0.76 [7.7]	0.76 [7.7] to 0.39 [4]	1.03 [10.5]
350, 400	0.65 [6.6]	0.65 [6.6] to 0.29 [3]	0.88 [9]
450 or more	0.54 [5.5]	0.54 [5.5] to 0.20 [2]	0.74 [7.5]

How to order: CODE

Screw down check angle valve, cast iron, 5 kgf/cm², JIS F-7354, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 11 16	50	100	130	105	4	15	13.0
17	65	115	155	130	4	15	18.2
18	80	130	180	145	4	19	23.3
19	100	150	200	165	8	19	33.5
20	125	170	235	200	8	19	46.5
75 11 21	150	190	265	230	8	19	64.0
22	200	220	320	280	8	23	104
23	250	275	385	345	12	23	175
24	300	310	430	390	12	23	243
25	350	360	480	435	12	25	336
75 11 26	400	395	540	495	16	25	455
27	450	440	605	555	16	25	618
28	500	485	655	605	20	25	800
29	550	530	720	665	20	27	1,161

Marine Cast Iron 10 kgf/cm² Screw Down Check Globe Valves F-7375 Angle Valves F-7376

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Class B	Class S
Steam of 230°C or less	-	0.98 [10]
Steam of 205°C or less	0.98 [10]	
Air, gas, oil & pulsation water	0.98 [10]	
Non-shock water of 120°C or less	1.37 [14]	

Hydraulic Inspection

Watertight inspection for valve seat	
Inlet side	1.51Mpa [15.4 kgf/cm²]
Outlet side	1.51Mpa [15.4 kgf/cm²] to 0.39MPa [4 kgf/cm²]
Hydraulic inspection for body	2.06 Mpa [21 kgf/cm²]

How to order: CODE

Screw down check valve, GLOBE or ANGLE, cast iron 10 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7375							
75 11 31	50	220	155	120	4	19	19.9
32	65	270	175	140	4	19	28.6
33	80	300	185	150	8	19	32.5
34	100	350	210	175	8	19	48.7
35	125	420	250	210	8	23	73.0
75 11 36	150	490	280	240	8	23	104
37	200	570	330	290	12	23	161
Angle Valve F-7376							
75 11 41	50	120	155	120	4	19	18.2
42	65	130	175	140	4	19	25.3
43	80	140	185	150	8	19	27.5
44	100	160	210	175	8	19	40.6
45	125	180	250	210	8	23	69.8
75 11 46	150	205	280	240	8	23	81.2
47	200	230	330	290	12	23	124

Marine Cast Iron 16 kgf/cm² Screw Down Check Globe Valves F-7377 Angle Valves F-7378

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Class B	Class S
Steam of 230°C or less	-	1.57 [16]
Steam of 205°C or less	1.57 [16]	
Air, gas, oil & pulsation water	1.57 [16]	
Non-shock water of 120°C or less	2.16 [22]	

Hydraulic Inspection

Watertight inspection for valve seat	
Inlet side	2.37MPa[24.2kgf/cm²]
Outlet side	2.37MPa[24.2kgf/cm²] to 0.39MPa [4kgf/cm²]
Hydraulic inspection for body	3.24 MPa[33kgf/cm²]

How to order: CODE

Screw down check valve, GLOBE or ANGLE, cast iron, 16 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7377							
75 11 51	50	220	155	120	8	19	19.6
52	65	270	175	140	8	19	28.2
53	80	300	200	160	8	23	40.5
54	100	350	225	185	8	23	56.9
55	125	430	270	225	8	25	89.5
75 11 56	150	500	305	260	12	25	123
57	200	570	350	305	12	25	188

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Angle Valve F-7378							
75 11 61	50	120	155	120	8	19	18.0
62	65	130	175	140	8	19	24.9
63	80	150	200	160	8	23	35.8
64	100	170	225	185	8	23	49.2
65	125	200	270	225	8	25	76.1
75 11 66	150	225	305	260	12	25	103

Marine Cast Steel 10 kgf/cm² Screw Down Check Globe Valves F-7471

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 300°C	0.98 [10]
Steam of 220°C or less	1.18 [12]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	1.37 [14]

Hydraulic Inspection

Watertight inspection for valve seat	1.51MPa[15.4kgf/cm²]
Inlet side	1.51MPa[15.4kgf/cm²]
Outlet side	to 0.39MPa[4kgf/cm²]
Hydraulic inspection for body	2.06MPa[21kgf/cm²]

How to order: CODE

Screw down check globe valve, cast steel, 10 kgf/cm², JIS F-7471, TYPE of GUIDE, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Stem-Guide Type							
75 12 01	50	220	155	120	4	19	17.9
02	65	270	175	140	4	19	26.1
03	80	300	185	150	8	19	29.8
04	100	350	210	175	8	19	44.8
05	125	420	250	210	8	23	69.8
75 12 06	150	490	280	240	8	23	96.3
07	200	570	330	290	12	23	158
Piston-Guide Type							
75 12 11	150	490	280	240	8	23	100
12	200	570	330	290	12	23	165

Marine Cast Steel 10 kgf/cm² Screw Down Check Angle Valves F-7472

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 300°C	0.98 [10]
Steam of 220°C or less	1.18 [12]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	1.37 [14]

Hydraulic Inspection

Watertight inspection for valve seat	
Inlet side	1.51MPa[15.4kgf/cm²]
Outlet side	1.51MPa[15.4kgf/cm²]
	to 0.39MPa[4kgf/cm²]
Hydraulic inspection for body	2.06MPa[21kgf/cm²]

How to order: CODE

Screw down check angle valve, cast steel, 10 kgf/cm², JIS F-7472, TYPE of GUIDE, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Stem-Guide Type							
75 12 16	50	120	155	120	4	19	16.3
17	65	130	175	140	4	19	23.1
18	80	140	185	150	8	19	25.3
19	100	160	210	175	8	19	37.0
20	125	180	250	210	8	23	56.6
75 12 21	150	205	280	240	8	23	77.1
22	200	230	330	290	12	23	116
Piston-Guide Type							
75 12 26	150	205	280	240	8	23	81
27	200	230	330	290	12	23	123

Marine Cast Steel 20 kgf/cm² Screw Down Check Globe Valves F-7473 Angle Valves F-7474

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 350°C	2.55 [26]
Steam of 300°C	2.84 [29]
Steam of 220°C or less	3.04 [31]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	3.33 [34]

Hydraulic Inspection

Watertight inspection for valve seat	
Inlet side	3.66 MPa [37.4 kgf/cm²]
Outlet side at stem fully raised	3.66 MPa [37.4 kgf/cm²]
	to 0.98 MPa [10 kgf/v]
Hydraulic inspection for body	5.00 MPa [51.0 kgf/cm²]

How to order: CODE

Screw down check valve, GLOBE or ANGLE, cast steel, 20 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7473							
75 12 31	32	190	135	100	4	19	14.4
32	40	200	140	105	4	19	16.0
33	50	230	155	120	8	19	21.6
34	65	270	175	140	8	19	30.1
35	80	300	200	160	8	23	43.5
75 12 36	90	320	210	170	8	23	52.1
37	100	350	225	185	8	23	62.1
38	125	430	270	225	8	25	97.0
39	150	500	305	260	12	25	136
40	200	560	350	305	12	25	212
75 12 41	250	660	430	380	12	27	349

(to be continued)

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Angle Valve F-7474							
75 12 46	32	100	135	100	4	19	13.0
47	40	110	140	105	4	19	15.1
48	50	125	155	120	8	19	19.9
49	65	135	175	140	8	19	26.7
50	80	150	200	160	8	23	38.8
75 12 51	90	160	210	170	8	23	46.2
52	100	170	225	185	8	23	54.2
53	125	200	270	225	8	25	83
54	150	225	305	260	12	25	115
55	200	280	350	305	12	25	189
75 12 56	250	310	430	380	12	27	296

Marine Bronze 5 kgf/cm² Screw Down Check

Globe Valves Union Bonnet Type F-7411
Angle Valves Union Bonnet Type F-7412

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205°C or less	0.49 [5]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat Inlet side Outlet side	 0.76 MPa [7.7 kgf/cm²] 0.76 MPa [7.7 kgf/cm²] to 0.39 MPa [4 kgf/cm²]
Hydraulic inspection for body	1.04 MPa [10.5 kgf/cm²]

F-7411

F-7412

How to order: CODE

Screw down check valve, union bonnet type,
GLOBE or ANGLE, bronze, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7411							
75 12 61	15	100	80	60	4	12	2.12
62	20	110	85	65	4	12	2.91
63	25	120	95	75	4	12	3.82
64	32	140	115	90	4	15	5.09
65	40	160	120	95	4	15	6.71
Angle Valve F-7412							
75 12 66	15	55	80	60	4	12	2.07
67	20	60	85	65	4	12	2.81
68	25	65	95	75	4	12	3.67
69	32	80	115	90	4	15	4.85
70	40	85	120	95	4	15	6.17

Marine Bronze 16 kgf/cm² Screw Down Check

Globe Valves Union Bonnet Type F-7413
Angle Valves Union Bonnet Type F-7414

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Steam of 205°C or less	3.33 [31]
Air, gas, oil & pulsation water	
Non-shock water of 120°C or less	2.16 [22]

Hydraulic Inspection

Watertight inspection for valve seat Inlet side Outlet side	 2.38 MPa [24.2 kgf/cm²] 2.38 MPa [24.2 kgf/cm²] to 0.39 MPa [4 kgf/cm²]
Hydraulic inspection for body	3.24 MPa [33.0 kgf/cm²]

How to order: CODE

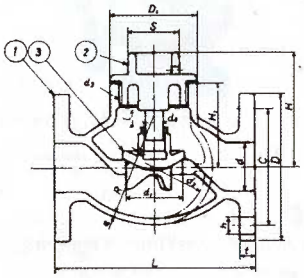
Screw down check valve, union bonnet type,
GLOBE or ANGLE, bronze, 16 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7413							
75 12 81	15	110	95	70	4	15	2.87
82	20	120	100	75	4	15	3.79
83	25	130	125	90	4	19	5.44
84	32	160	135	100	4	19	7.04
85	40	180	140	105	4	19	8.89
Angle Valve F-7414							
75 12 86	15	70	95	70	4	15	2.86
87	20	75	100	75	4	15	3.75
88	25	85	125	90	4	19	5.38
89	32	95	135	100	4	19	6.84
90	40	100	140	105	4	19	8.34

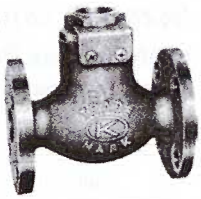
(h) Lift Check Valves

CODE	JIS No.	Material	Pressure kgf/cm²	Shape
75 13 01-03	F-7356	Bronze	5	-
75 13 11-16	F-7358	Cast Iron	5	Globe
21-26	F-7359			Angle
75 13 41-45	F-7415	Bronze	5	Globe
46-50	F-7416			Angle
75 13 61-65	F-7417		16	Globe
66-70	F-7418			Angle



No.	Component
1	Body
2	Bonnet
3	Disk

Marine Bronze 5 kgf/cm² Lift Check Valves F-7356



Pressure Rating

Fluid condition	Maximum working pressure MPa[kgf/ cm²]
Oil & pulsation water	0.49 [5]
Non-shock water of 120˚C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat	0.76 MPa [7.7 kgf/cm²] to 0.39 MPa [4 kgf/cm²]
Hydraulic inspection for body	1.03 MPa [10.5 kgf/cm²]

How to order: CODE

Lift check valve, bronze, 5 kgf/cm², JIS F-7356, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 13 01	25	120	95	75	4	12	2.39
02	32	140	115	90	4	15	3.80
03	40	160	120	95	4	15	4.95

Marine Cast Iron 5 kgf/cm² Lift Check Globe Valves F-7358 Angle Valves F-7359

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & pulsation water	0.49 [5]
Non-shock water of 120°C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat outlet side	0.76 MPa [7.7 kgfcm²] to 0.39 MPa [4 kgf/cm²]
Hydraulic inspection for body	1.03 MPa [10.5 kgf/cm²]

F-7358

F-7359

How to order: CODE

Lift check valve, GLOBE or ANGLE, cast iron, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7358							
75 13 11	50	210	130	105	4	15	11.3
12	65	250	155	130	4	15	16.8
13	80	280	180	145	4	19	23.2
14	100	340	200	165	8	19	32.5
15	125	410	235	200	8	19	48.1
16	150	480	265	230	8	19	67.9
Angle Valve F-7359							
75 13 21	50	100	130	105	4	15	9.5
22	65	115	155	130	4	15	13.8
23	80	130	180	145	4	19	18.9
24	100	150	200	165	8	19	25.6
25	125	170	235	200	8	19	36.7
26	150	190	265	230	8	19	50.9

Marine Bronze 5 kgf/cm² Lift Check Union Bonnet Type Globe Valves F-7415 Angle Valves F-7416

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/ cm²]
Air, gas, oil & pulsation water	0.49 [5]
Non-shock water of 120˚C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection upper side of valve seat	0.76 MPa [7.7 kgf/cm²] to 0.39 MPa [4 kgf/cm²]
Hydraulic inspection for body	1.04 MPa [10.5 kgf/cm²

F-7415

F-7416

How to order: CODE

Lift check valve, union bonnet type, GLOBE or ANGLE, bronze, 5 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7415							
75 13 41	15	100	80	60	4	12	1.62
42	20	110	85	65	4	12	2.17
43	25	120	95	75	4	12	2.80
44	32	140	115	90	4	15	3.92
45	40	160	120	95	4	15	5.49
Angle Valve F-7416							
75 13 46	15	55	80	60	4	12	1.57
47	20	60	85	65	4	12	2.07
48	25	65	95	75	4	12	2.65
49	32	80	115	90	4	15	3.68
50	40	85	120	95	4	15	4.95

Marine Bronze 16 kgf/cm² Lift Check Union Bonnet Type Globe Valves F-7417 Angle Valves F-7418

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Air, gas, oil & pulsation water	1.57 [16]
Non-shock water of 120°C or less	2.16 [22]

Hydraulic Inspection

Watertight inspection upper side of valve seat	2.38 MPa [24.2 kgf/cm²] to 0.39 MPa [4 kgf/cm²]
Hydraulic inspection for body	3.24 MPa [33.0 kgf/cm²]

How to order: CODE

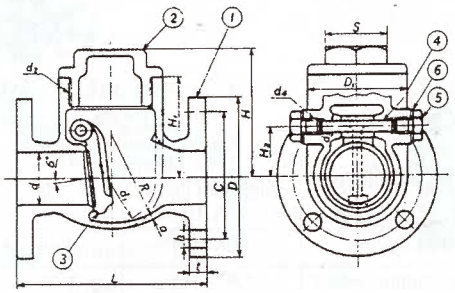
Lift check valve, union bonnet type, GLOBE or ANGLE, bronze, 16 kgf/cm², JIS F NO., SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Globe Valve F-7417							
75 13 61	15	110	95	70	4	15	2.37
62	20	120	100	75	4	15	3.05
63	25	130	125	90	4	19	4.42
64	32	160	135	100	4	19	5.87
65	40	180	140	105	4	19	7.67
Angle Valve F-7418							
75 13 66	15	70	95	70	4	15	2.36
67	20	75	100	75	4	15	3.01
68	25	85	125	90	4	19	4.36
69	32	95	135	100	4	19	5.67
70	40	100	140	105	4	19	7.12

(i) Swing Check Valves

CODE	JIS No.	Material	Pressure kgf/cm²
75 14 01-03	F-7371	Bronze	5
75 14 21-28	F-7372	Cast Iron	5
31-37	F-7373		10



No.	Component	No.	Component
1	Body	4	Hinge pin
2	Bonnet	5	Plug
3	Disc	6	Gasket

Marine Bronze 5 kgf/cm² Swing Check Valves F-7371

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/ cm²]
Oil & pulsation water	0.49 [5]
Non-shock water of 120°C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat	0.76 MPa [7.7 kgf/cm²] to 0.39 MPa [4 kgf/cm²]
Hydraulic inspection for body	1.04 MPa [10.5 kgf/cm²]

How to order: CODE

Swing check valve, bronze, 5 kgf/cm², JIS F-7371, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 14 01	25	110	95	75	4	12	2.24
02	32	130	115	90	4	15	3.07
03	40	140	120	95	4	15	4.34

7TH 75

Marine Cast Iron 5 kgf/cm² Swing Check Valves F-7372

F-7372

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & pulsation water	0.49 [5]
Non-shock water of 120°C or less	0.69 [7]

Hydraulic Inspection

Watertight inspection for valve seat outlet side	0.76 MPa [7.7 kgf/cm²] to 0.39 MPa [4kgf /cm²]
Hydraulic inspection for body	1.03 MPa [10.5 kgf/cm²]

How to order: CODE

Swing check valve, cast iron, 5 kgf/cm², JIS F-7372, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 14 21	50	190	130	105	4	15	9.06
22	65	220	155	130	4	15	13.9
23	80	250	180	145	4	19	19.1
24	100	280	200	165	8	19	27.1
25	125	330	235	200	8	19	39.0
75 14 26	150	380	265	230	8	19	53.7
27	200	460	320	280	8	23	94.4
28	250	550	385	345	12	23	150

Marine Cast Iron 10 kgf/cm² Swing Check Valves F-7373

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & pulsation water	0.98 [10]
Non-shock water of 120°C or less	1.37 [14]

Hydraulic Inspection	
Watertight inspection for valve seat outlet side	1.51MPa[15.4kgf/cm²] to 0.39MPa[4kgf/cm²]
Hydraulic inspection for body	2.06MPa[21.0kgf/cm²]

How to order: CODE

Swing check valve, cast iron, 10 kgf/cm², JIS F-7373, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
75 14 31	50	210	155	120	4	19	13.6
32	65	240	175	140	4	19	19.6
33	80	270	185	150	8	19	22.6
34	100	300	210	175	8	19	30.9
35	125	350	250	210	8	23	49.2
75 14 36	150	400	280	240	8	23	64.9
37	200	480	330	290	12	23	103

7TH 75

Spare Hand Wheels for Valve

Made of cast iron to be used for the JIS bronze, cast iron, or cast steel valves. This can be fixed to DIN or ANSI valves as long as the square hole size meets to the spindle of the valves.

Unit Per Pc.

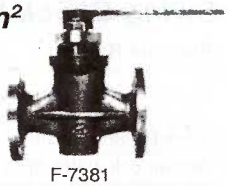
CODE	Size mm Outside Diam x Square Hole	Alligator No.
75 15 01	60 × 7	AD340006
02	80 × 8	AD340008
03	100 × 10	AD340010
04	125 × 10	AD340012
05	140 × 12	AD340014
75 15 06	160 × 14	AD340016
07	180 × 14	AD340018
08	200 × 17	AD340020
09	224 × 19	AD340022
10	250 × 22	AD340025
75 15 11	280 × 22	AD340028
12	315 × 22	AD340031
13	315 × 27	AD340032
14	355 × 27	AD340035
15	400 × 30	AD340040
75 15 16	450 × 36	AD340045

Name of Mfr.: Alligator

(j) Marine Cocks

CODE	JIS No.	Material	Pressure kgf/cm²
75 16 01-15	F-7381	Bronze	5
31-36	F-7387		16
51-54	F-7343		20
61-64	F-7390		w / Lock

Marine Bronze 5 kgf/cm² Flanged Cocks F-7381



F-7381

Pressure Rating	
Fluid condition	Maximum working pressure MPa [kgf/cm²]
Water & oil	0.49 [5]

Hydraulic Inspection	
Watertight inspection for plug	0.54 MPa [5.5 kgf/cm²]
Hydraulic inspection for body	0.74 MPa [7.5 kgf/cm²]

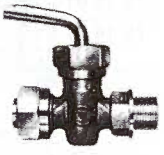
How to order: CODE

Flanged cock, bronze, 5 kgf/cm², JIS F-7381, TYPE, SIZE mm

Unit Per Pc.

CODE	Size mm	Dimensions mm					Weight Kgs
		Face to Face	Flange Diam.	Flange Bolt Hole			
				Pitch	Number	Hole	
Two -Way							
75 16 01	25	130	95	75	4	12	3.13
02	32	160	115	90	4	15	5.02
03	40	170	120	95	4	15	6.66
04	50	190	130	105	4	15	10.0
05	65	220	155	130	4	15	16.7
L-Type Three -Way							
75 16 06	25	130	95	75	4	12	3.81
07	32	160	115	90	4	15	6.13
08	40	170	120	95	4	15	7.93
09	50	190	130	105	4	15	11.8
10	65	220	155	130	4	15	19.0
T-Type Three -Way							
75 16 11	25	130	95	75	4	12	3.81
12	32	160	115	90	4	15	6.13
13	40	170	120	95	4	15	7.93
14	50	190	130	105	4	15	11.8
15	65	220	155	130	4	15	19.0

Marine Bronze 16 kgf/cm² Cocks F-7387



F-7387

Pressure Rating		
Fluid condition	Maximum working pressure MPa [kgf/ cm²]	
	Nominal Dia. 6 mm & 10 mm	Nominal Dia. 15 mm & 20 mm
Saturated steam	0.98 [10]	0.49 [5]
Oil & pulsation water	1.57 [16]	1.27 [13]
Non-shock water of 120°C or less	1.96 [20]	1.57 [16]

Hydraulic Inspection		
Nominal dia. mm	Test pressure MPa [kgf/cm²]	
	Watertight inspection for plug	Body
6 & 10	2.16 [22]	2.94 [30]
15 & 20	1.73 [17.6]	2.36 [24]

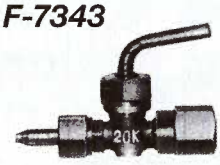
How to order: CODE

Cock, bronze, 16 kgf/cm², JIS F-7387, TYPE of CONNECTION, SIZE mm

Unit Per Pc.

CODE	Size mm	Pipe out diam. Copper	Pipe out diam. Steel	Thread	Weight kgs
Type S (Screwed Type)					
75 16 31	6	8 & 10	10.5	M20 x 1.5	0.46
32	10	15	17.3	M24 x 2	0.85
33	15	20	21.7	M30 x 2	1.46
34	20	25	27.2	M36 x 2	2.09
Type U (Union Type)					
75 16 35	6	8 & 10	10.5	M24 x 2	0.50
36	10	15	17.3	M30 x 2	1.00

Marine Bronze 20 kgf/cm² Pressure Gauge Cocks F-7343



F-7343

Pressure Rating

Maximum working pressure	1.96 MPa [20 kgf/cm²]

Hydraulic Inspection

Watertight inspection for plug	2.16 MPa [22.0 kgf/cm²]
Hydraulic inspection for body	2.94 MPa [30.0 kgf/cm²]

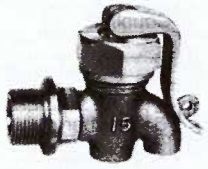
How to order: CODE

Pressure gauge cock, bronze, 20 kgf/cm², JIS F-7343, TYPE of CONNECTION, SIZE mm

Unit Per Pc.

CODE	Type	Union Nut Thread	For Copper Pipe	Weight kgs
75 16 51	3/8	3/8 PF	Union	0.41
52			Bite Type Union	
53	1/2	1/2 PF	Union	0.44
54			Bite Type Union	

Marine Bronze Cocks with Lock F-7390



Marine cocks with lock used for lubricating oil, daily service tanks, etc.

Hydraulic Inspection

Watertight inspection for cock plug	0.20 MPa [2 kgf/cm²]
Hydraulic inspection for body	

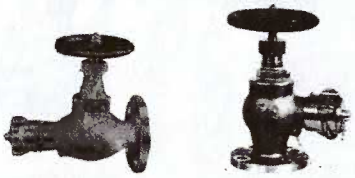
Unit Per Pc.

CODE	Size mm	Threads	Weight kgs
75 16 61	10	M 24 x 2	0.32
62	15	M 30 x 2	0.61
63	20	M 36 x 2	0.99
64	25	M 42 x 2	1.50

(k) Hose Valves

CODE	JIS No.	Material	Pressure kgf/cm²
75 17 01-23	F-7334	Bronze	5 • 10
75 17 31-37	F-7333	Cast Iron	5 • 10

Marine Bronze Hose Valves F-7334



Pressure Rating

Fluid Condition	Maximum working pressure MPa [kgf/cm²]					
	Nominal pressure 5 kgf/cm²			Nominal pressure 10 kgf/cm²		
	Nominal diameter mm			Nominal diameter mm		
	15	25	40/50	15	25	40~65
Steam of 205°C or less	0.49 [5]	-	-	0.981 [10]	-	-
Air		0.49 [5]			0.981 [10]	0.981 [10]
Pulsation water			0.49 [5]			
Non-shock water of 120°C or less	0.69 [7]			1.37 [14]		

Hydraulic Inspection

Nominal pressure kgf/cm²	Test pressure MPa [kgf/cm²]		
	Watertight inspection for valve seat	Hydraulic inspection for body	Hydraulic inspection for base connection
5	0.75 [7.7]	1.03 [10.5]	0.69 [7]
10	1.51 [15.4]	2.06 [21]	1.37 [14]

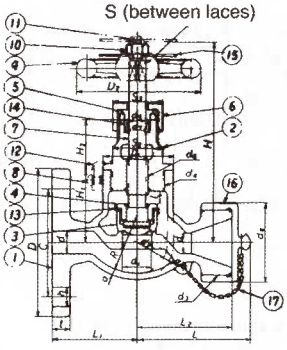
Classification

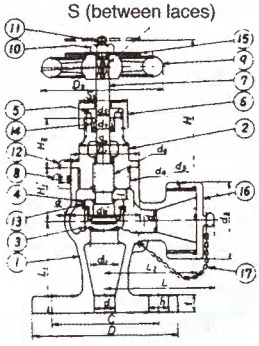
Class: Nominal pressure kgf/cm²	Class: Nominal Dia. mm	Shape		Application
5	15	Globe valve		Steam for cleaning sea chest strainer, boiler and machinery, and for soda boiling
		Angle valve		
	25	Globe valve		For air motor
		Angle valve		
	40	Globe valve		Fire extinguishing, deck washing, reserve water shifting, draining of boiler water, etc.
		Angle valve		
	50	Globe valve		
		Angle valve		
10	15	Globe valve		Steam for cleaning sea chest strainer, boiler and machinery, and for soda boiling
		Angle valve		
	25	Globe valve		For air motor
		Angle valve		
	40	Globe valve		Fire extinguishing, deck washing, reserve water shifting, draining of boiler water, etc.
		Angle valve		
	50	Globe valve		
		Angle valve		
	65	Globe valve		Fire extinguishing, deck washing, etc.
		Angle valve		
10	15	Screw-ed type	Globe valve	Steam or other fluid for cleaning boiler and machinery, and for soda boiling
			Angle valve	

F-7334 Globe

F-7334 Angle

Globe & Angle Valve diam. 15/25 mm





How to order: CODE

Hose valve, GLOBE or ANGLE, bronze, PRESSURE, JIS F-7334, SIZE mm

Unit Per Pc.

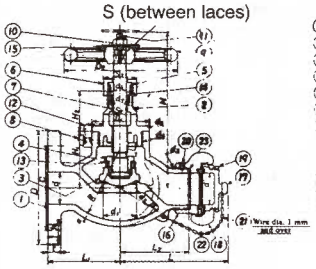
Globe Hose Valve

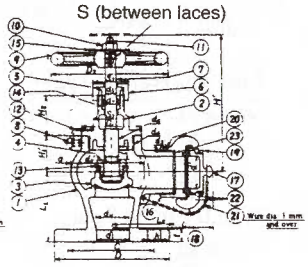
	CODE	75 17 01	75 17 02	75 17 03	75 17 04
Dimensions	Size	15 mm		25 mm	
	Pressure	5 kgf/cm²	10 kgf/cm²	5 kgf/cm²	10 kgf/cm²
	Threads	M42 x 2	M42 x 2	M42 x 2	M42 x 2
	L	73 mm	73 mm	78 mm	83 mm
	D	80 mm	95 mm	95 mm	125 mm
	Bolts Pitch	60 mm	70 mm	75 mm	90 mm
	Bolts Number	4	4	4	4
	Bolts Hole	12 mm	15 mm	12 mm	19 mm
	L_1	50 mm	55 mm	60 mm	65 mm
	L_2	60 mm	60 mm	65 mm	70 mm
	Weight	2.51 kgs	2.76 kgs	3.55 kgs	4.15 kgs

Angle Hose Valve

	CODE	75 17 06	75 17 07	75 17 08	75 17 09
Dimensions	Size	15 mm		25 mm	
	Pressure	5 kgf/cm²	10 kgf/cm²	5 kgf/cm²	10 kgf/cm²
	Threads	M42 x 2	M42 x 2	M42 x 2	M42 x 2
	L	68 mm	73 mm	78 mm	83 mm
	D	80 mm	95 mm	95 mm	125 mm
	Bolts Pitch	60 mm	70 mm	75 mm	90 mm
	Bolts Number	4	4	4	4
	Bolts Hole	12 mm	15 mm	12 mm	19 mm
	L_1	55 mm	70 mm	65 mm	85 mm
	L_2	55 mm	60 mm	65 mm	70 mm
	Weight	2.41 kgs	2.72 kgs	3.44 kgs	4.04 kgs

Globe & Angle Valve diam. 40 mm





How to order: CODE

Hose valve, GLOBE or ANGLE, bronze, PRESSURE, JIS F-7334, 40 mm

Unit Per Pc.

Valve Type		Globe		Angle	
CODE		75 17 11	75 17 12	75 17 13	75 17 14
Dimensions	Size	40 mm		40 mm	
	Pressure	5 kgf/cm²	10 kgf/cm²	5 kgf/cm²	10 kgf/cm²
	Coupling	Nakajima System Coupling			
	L	128.5 mm	133.5 mm	123.5 mm	123.5 mm
	D	120 mm	140 mm	120 mm	140 mm
	Bolts Pitch	95 mm	105 mm	95 mm	105 mm
	Bolts Number	4	4	4	4
	Bolts Hole	15 mm	19 mm	15 mm	19 mm
	L_1	80 mm	90 mm	85 mm	100 mm
	L_2	80 mm	85 mm	75 mm	75 mm
	Weight	6.26 kgs	8.43 kgs	5.91 kgs	8.19 kgs

Globe & Angle Valve diam. 50/65 mm

How to order: CODE

Hose valve, GLOBE or ANGLE, bronze, PRESSURE, JIS F-7334, SIZE mm

Unit Per Pc.

Globe Hose Valve

	CODE	75 17 16	75 17 17	75 17 18
Dimensions	Size	50 mm		65 mm
	Pressure	5 kgf/cm²	10 kgf/cm²	10 kgf/cm²
	Coupling	Nakajima System Coupling		
	L	159.8 mm	164.8 mm	199.8 mm
	D	130 mm	155 mm	175 mm
	Bolts Pitch	105 mm	120 mm	140 mm
	Bolts Number	4	4	4
	Bolts Hole	15 mm	19 mm	19 mm
	L_1	105 mm	110 mm	135 mm
	L_2	105 mm	110 mm	140 mm
	Weight	12.9 kgs	15.4 kgs	27.8 kgs

Angle Hose Valve

	CODE	75 17 21	75 17 22	75 17 23
Dimensions	Size	50 mm		65 mm
	Pressure	5 kgf/cm²	10 kgf/cm²	10 kgf/cm²
	Coupling	Nakajima System Coupling		
	L	154.8 mm	159.8 mm	179.8 mm
	D	130 mm	155 mm	175 mm
	Bolts Pitch	105 mm	120 mm	140 mm
	Bolts Number	4	4	4
	Bolts Hole	15 mm	19 mm	19 mm
	L_1	100 mm	120 mm	130 mm
	L_2	100 mm	105 mm	120 mm
	Weight	11 kgs	14.3 kgs	23.0 kgs

Marine Cast Iron Hose Valves F-7333

Pressure Rating

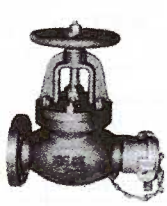
Fluid condition	Maximum working pressure MPa [kgf/cm²]	
	Nominal pressure 5 kgf/cm²	Nominal pressure 10 kgf/cm²
Pulsation water	0.49 [5]	0.98 [10]
Non-shock water of 120°C or less	0.69 [7]	1.37 [14]

Hydraulic Inspection

Nominal pressure kgf/cm²	Test pressure MPa [kgf/cm²]		
	Watertight inspection for valve seat	Hydraulic inspection for body	Hydraulic inspection for base connection
5	0.76 [7.7]	1.03 [10.5]	0.69 [7]
10	1.51 [15.4]	2.06 [21]	1.37 [14]

Classification

Class			Application
Nominal pressure kgf/cm²	Nominal Dia. mm	Shape	
5	50	Globe valve	Fire extinguishing, deck washing, water shifting etc.
		Angle valve	
10		Globe valve	
		Angle valve	
10	65	Globe valve	
		Angle valve	



How to order: CODE

Hose valve, GLOBE or ANGLE, cast iron, PRESSURE JIS F-7333, SIZE mm

Unit Per Pc.

Globe Hose Valve

CODE			75 17 31	75 17 32	75 17 33
Dimensions	Size		50 mm		65 mm
	Pressure		5 kgf/cm²	10 kgf/cm²	10 kgf/cm²
	Coupling		Nakajima System Coupling		
	L		165 mm	170 mm	200 mm
	D		130 mm	155 mm	175 mm
	Bolts	Pitch	105 mm	120 mm	140 mm
		Number	4	4	4
		Hole	15 mm	19 mm	19 mm
	L_1		105 mm	110 mm	135 mm
	L_2		110 mm	115 mm	140 mm
	Weight		14.7 kgs	18.9 kgs	28.2 kgs

Angle Hose Valve

CODE			75 17 35	75 17 36	75 17 37
Dimensions	Size		50 mm		65 mm
	Pressure		5 kgf/cm²	10 kgf/cm²	10 kgf/cm²
	Coupling		Nakajima System Coupling		
	L		155 mm	170 mm	185 mm
	D		130 mm	155 mm	175 mm
	Bolts	Pitch	105 mm	120 mm	140 mm
		Number	4	4	4
		Hole	15 mm	19 mm	19 mm
	L_1		100 mm	120 mm	130 mm
	L_2		100 mm	115 mm	125 mm
	Weight		12.8 kgs	17.0 kgs	24.3 kgs

Marine Hose Valves

with ANSI Screw Threads (ANSI-NFPA 1963)

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Pulsation water	0.98 [10]
Non-shock water of 120°C or less	1.37 [14]

Test Pressure

Nominal pressure kgf/cm²	Watertight inspection for valve seat	Hydraulic inspection for body
10	1.47 MPa [15 kgf/cm²]	2.35 MPa [24 kgf/cm²]

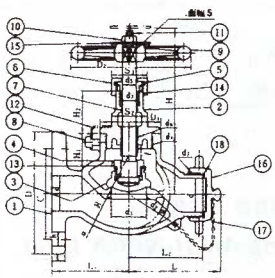
Classification

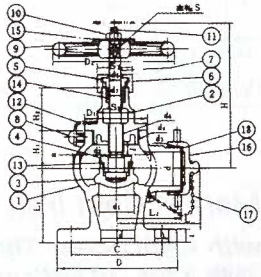
Type	Main material	Nominal diameter inch	Nominal pressure kgf/cm²	Nominal pressure kgf/cm²	Application
Globe	Bronze	1-1/2	10	Water	Fire Extinguishing
Angle					
Globe		2-1/2			Deck Washing
Angle					
Globe	Cast Iron	2-1/2			
Angle					

Marine Bronze Hose Valves

with ANSI Screw Threads ANSI-NFPA 1963 JMS7305–10 kgf/cm²

1. Nominal Size 1-1/2"





* JMS denotes Japan Marine Standards.

No.	Component	No.	Component
1	Body	10	Hexagon nut
2	Bonnet	11	Split pin
3	Disc	12	Bonnet lock plate
4	Disc nut	13	Disc lock washer
5	Packing gland	14	Packing
6	Gland nut	15	Name plate
7	Stem	16	Cap
8	Cross recessed pan head screw	17	Chain
9	Hand wheel	18	Gasket

How to order: CODE

Hose valve, with ANSI screw thread, GLOBE or ANGLE, bronze, 10 kgf/cm², 1-1/2"

Unit Per Pc.

CODE			75 17 51	75 17 52
Type			Globe	Angle
Nominal Size			1-1/2"	
Nominal Pressure			10 kg/cm²	
Thread (d3)	Size		1-1/2"	ANSI-NFPA 1963
	Per inch		9	
L			105 mm	95 mm
L_1			90 mm	100 mm
L_2			85 mm	75 mm
Flange	Diam (D)		140 mm	
	Bolt Hole	Pitch	105 mm	
		Number	4	
		Hole	19 mm	
Height Opened			190 mm	165 mm
Weight			8.22 kgs	7.98 kgs

* ANSI-NFPA denotes the Screw Threads and Gasket for the Fire Hose Connection.

2. Nominal Size 2-1/2"

How to order: CODE

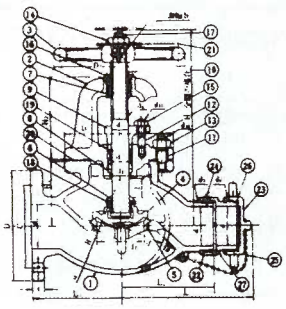
Hose valve, with ANSI screw thread, GLOBE or ANGLE, bronze, 10 kgf/cm², 2-1/2"

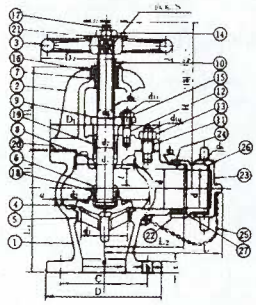
Unit Per Pc.

CODE			75 17 53	75 17 54
Type			Globe	Angle
Nominal Size			2-1/2"	
Nominal Pressure			10 kgf/cm²	
Thread (d3)	Size		2-1/2"	ANSI-NFPA 1963
	Per inch		7.5	
L			165 mm	145 mm
L_1			135 mm	130 mm
L_2			140 mm	120 mm
Flange	Diam.(D)		175 mm	
	Bolt Hole	Pitch	140 mm	
		Number	4	
		Hole	19 mm	
Height Opened			295 mm	255 mm
Weight			28.1 kgs	23.3 kgs

Marine Cast Iron Hose Valves

with ANSI Screw Threads ANSI-NFPA 1963 JMS 7305–10 kgf/cm²





No.	Component	No.	Component
1	Body	15	Hex nut
2	Bonnet	16	Lock pin
3	Hand wheel	17	Split pin
4	Disc	18	Disc lock washer
5	Valve seat	19	Packing
6	Disc nut	20	Gasket
7	Screwed bonnet bush	21	Name plate
8	Seat ring	22	Hose base connection
9	Packing gland	23	Cap
10	Stem	24	Set screw
11	Stud	25	Chain
12	Stud	26	Gasket
13	Hex nut	27	Gasket
14	Hex nut		

How to order: CODE

Hose valve, with ANSI screw thread, GLOBE or ANGLE, cast iron, 10 kgf/cm², 2-1/2"

Unit Per Pc.

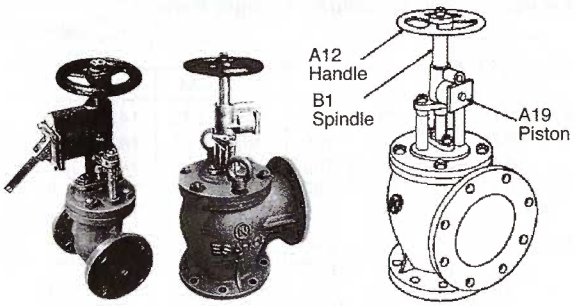
CODE			75 17 56	75 17 57
Type			Globe	Angle
Nominal Size			2-1/2"	
Nominal Pressure			10 kg/cm²	
Thread (d3)	Size		2-1/2"	ANSI-NFPA 1963
	Per inch		7.5	
L			200 mm	185 mm
L_1			135 mm	130 mm
L_2			140 mm	125 mm
Flange	Diam (D)		175 mm	
	Bolt Hole	Pitch	140 mm	
		Number	4	
		Hole	19 mm	
Height Opened			310 mm	270 mm
Weight			27.4 kgs	23.5 kgs

Emergency Shut-off Valves

Emergency Shut-off Valves

For marine use on tanks containing oil fuel, lub. oil and other flammable oil which are required to have valves closed from safe positions outside the space concerned.

Made of cast iron and available two types of style: Globe type and Angle type, and also available two types of operation: Pneumatic Control type and Wire Rope Pull type as shown below.



Shut-off Operation;

The Pneumatic Control Type:

Only open the compressed air supply valve connected from air reservoir. Air reservoir should be kept certain pressure between 0.39 MPa and 0.89 MPa.

The Wire Rope Pull Type:

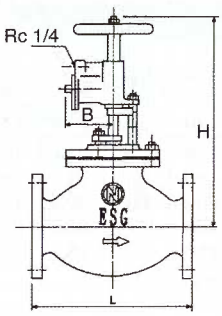
Only pull the lever connected with wire rope. For manual shut, these valves are able to close with handle wheel by rotating in clockwise direction.

Reset after Shut-off

1 Rotate clockwise until a head of piston is set in the grooving on spindle, and then rotate counterclockwise the handle to set valve in full open condition.
2 For small size valves (Max. 3") under the low level of liquid in tank (max. 5 mtr height), the valves can be reset with one touch by lifting the handle upward.

* Regarding Pneumatic Control Type, 1 or 2 should be applied after air supply valve is closed.

JIS 5 kgf/cm² Flanged End Globe Type



* Shut-off Operation: Pneumatic Control Type

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 01	ESG- 25-PC	120	265	82	7
02	ESG- 40-PC	160	270	82	11
03	ESG- 50-PC	210	270	82	15
04	ESG- 65-PC	250	320	82	20
05	ESG- 80-PC	280	325	82	25
87 45 06	ESG-100-PC	340	410	88	35
07	ESG-125-PC	410	430	88	45
08	ESG-150-PC	480	460	88	65
09	ESG-200-PC	570	615	95	100
10	ESG-250-PC	740	655	95	135

Name of Mfr.: Niikura Corporation

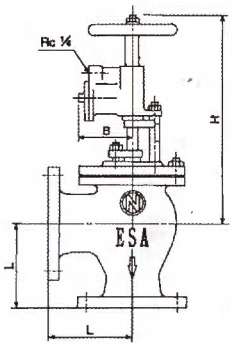
* Shut-off Operation : Wire Rope Pull Type

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 11	ESG - 25-WR	120	265	82	7
12	ESG - 40-WR	160	270	82	11
13	ESG - 50-WR	210	270	82	15
14	ESG - 65-WR	250	320	82	20
15	ESG - 80-WR	280	325	82	25
87 45 16	ESG-100-WR	340	410	88	35
17	ESG-125-WR	410	430	88	45
18	ESG-150-WR	480	460	88	65
19	ESG-200-WR	570	615	95	100
20	ESG-250-WR	740	655	95	135

Name of Mfr: Niikura Corporation

JIS 5 kgf/cm² Flanged End Angle Type



* Shut-off Operation: Pneumatic Control Type

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 21	ESA - 25-PC	65	245	82	7
22	ESA - 40-PC	80	240	82	10
23	ESA - 50-PC	100	240	82	14
24	ESA - 65-PC	115	280	82	18
25	ESA - 80-PC	130	280	82	22
87 45 26	ESA-100-PC	150	355	88	30
27	ESA-125-PC	170	370	88	42
28	ESA-150-PC	190	385	88	50
29	ESA-200-PC	220	535	95	85
30	ESA-250-PC	275	560	95	115

Name of Mfr: Niikura Corporation

* Shut-off Operation: Wire Rope Pull Type

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 31	ESA- 25-WR	65	245	82	7
32	ESA- 40-WR	80	240	82	10
33	ESA- 50-WR	100	240	82	14
34	ESA- 65-WR	115	280	82	18
35	ESA- 80-WR	130	280	82	22
87 45 36	ESA-100-WR	150	355	88	30
37	ESA-125-WR	170	370	88	42
38	ESA-150-WR	190	385	88	50
39	ESA-200-WR	220	535	95	85
40	ESA-250-WR	275	560	95	115

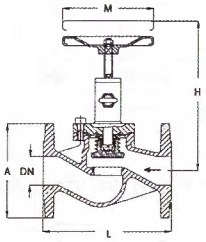
Name of Mfr.: Niikura Corporation

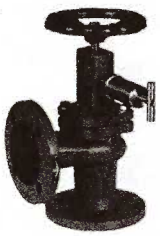
Quick-Closing Valves (DIN)

Ductile Cast Iron for Marine Service
Pressure Rating PN 16

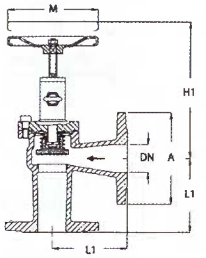
A quick closing valves for mechanical, hydraulic or pneumatic transmission. A reliable safety valve, providing for a remote shut-off from an accessible location. These valves comply with the requirements of the classification societies. Valves are mainly used on board ships and are suitable for fuel, oil etc.

Straight





Angle



Pressure and Temperature Range

Size	Max. Press. At 150°C	Flange Rate
DN 15 t/m 65	4 bar	PN16
DN 80 t/m 150	2 bar	PN16
DN 200	2 bar	PN10

Material Specification

Component	Material	EN and/or DIN
Body	Ductile Cast Iron	GJS-400-18-LT (GGG-40.3)
Bonnet	Ductile Cast Iron	GJS-400-18-LT (GGG-40.3)
Disc	Stainless Steel	-(X15Cr13)
Seat	Stainless Steel	-(X15Cr13)
Stem	Stainless Steel	-(X15Cr13)
Gland Packing (O-ring)	FPM (Viton)	
Cylinder	Brass	
Spring	Spring Steel	
Retainer Block	Brass	
Handwheel	Steel	

How to order: CODE

Quick-closing valve (DIN), ductile cast iron, pressure rating PN 10, TYPE of OPERATION, STRAIGHT or ANGLE, SIZE DN

Mechanical Transmission - Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	L	H	M	N	
87 46 01	15	95	130	188	125	142	5
02	20	105	150	188	125	142	6
03	25	115	160	200	125	142	6.5
04	32	140	180	200	125	142	9.5
05	40	150	200	232	150	147	12.5
87 46 06	50	165	230	234	150	147	17
07	65	185	290	277	150	157	28
08	80	200	310	293	150	157	31
09	100	220	350	350	200	162	45
10	125	250	400	383	200	162	66

Econosto Model No. : 100/247M

Mechanical Transmission - Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	L_1	H_1	M	N	
87 46 11	15	95	90	180	125	142	5
12	20	105	95	180	125	142	6
13	25	115	100	185	125	142	7.5
14	32	140	105	185	125	142	9
15	40	150	115	215	150	147	12
87 46 16	50	165	125	215	150	147	16
17	65	185	145	250	150	157	27
18	80	200	155	265	150	157	33
19	100	220	175	315	200	162	46
20	125	250	200	340	200	162	66

Econosto Model No. : 100/248M

Hydraulic or Pneumatic Transmission - Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	L	H	M	N	
87 46 21	15	95	130	188	125	165	5
22	20	105	150	188	125	165	6
23	25	115	160	200	125	165	6.5
24	32	140	180	200	125	165	9.5
25	40	150	200	232	150	170	12.5
87 46 26	50	165	230	234	150	170	17
27	65	185	290	277	150	180	28
28	80	200	310	293	150	180	31
29	100	220	350	350	200	185	45
30	125	250	400	383	200	185	66

Econosto Model No. : 100/247HP

Hydraulic or Pneumatic Transmission - Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	L_1	H_1	M	N	
87 46 31	15	95	90	180	125	165	5
32	20	105	95	180	125	165	6
33	25	115	100	185	125	165	7.5
34	32	140	105	185	125	165	9
35	40	150	115	215	150	170	12
87 46 36	50	165	125	215	150	170	16
37	65	185	145	250	150	180	27
38	80	200	155	265	150	180	33
39	100	220	175	315	200	185	46
40	125	250	200	340	200	185	66

Econosto Model No. : 100/248HP

Hydraulic Transmission - Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	M	L	H	N	
87 46 45	150	285	250	480	475	190	74.5
46	200	340	250	600	552	190	105

Econosto Model No. : 100/247H

Hydraulic Transmission - Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	M	L_1	H_1	N	
87 46 47	150	285	250	225	420	190	74.5
48	200	340	250	275	485	190	105

Econosto Model No. : 100/248H

Pneumatic Transmission - Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	M	L	H	N	
87 46 49	150	285	250	480	475	190	74.5
50	200	340	250	600	552	190	105

Econosto Model No. : 100/247P

Pneumatic Transmission - Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight kgs
		A	M	L_1	H_1	N	
87 46 51	150	285	250	225	420	190	74.5
52	200	340	250	275	485	190	105

Econosto Model No. : 100/248P

Screwed Valves

Bronze Screwed 5 kgf/cm² Globe Valves B-2011

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil, gas, air & pulsation water of 120°C or less	0.49 [5]
Saturated steam	0.29 [3]
Non-shock water of 120°C or less	0.69 [7]

Note: Small size of 1/4, 3/8 are available, but they are not of JIS Standard.

Unit Per Pc.

CODE	Size		Taper Pipe Thread	Distance Between Faces mm	Max. Extend Height mm
	Nominal	Diam. mm			
75 18 01	1/4	6	PT 1/4	40	65
02	3/8	10	3/8	50	87
03	1/2	15	1/2	60	90
04	3/4	20	3/4	70	105
05	1	25	1	80	120
75 18 06	1-1/4	32	PT1-1/4	100	135
07	1-1/2	40	1-1/2	110	145
08	2	50	2	135	175
09	2-1/2	65	2-1/2	160	200
10	3	80	3	190	230

(to be continued)

Bronze Screwed 10 kgf/cm² Globe Valves B-2011 Angle Valves B-2011

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & pulsation water of 120°C or less	0.98 [10]
Saturated steam	0.98 [10]
Non-shock water of 120°C or less	1.37 [14]

How to order: CODE

Screwed valve, GLOBE or ANGLE, bronze, 10 kgf/cm², JIS B-2011, SIZE mm

Unit Per Pc.

CODE	Size mm		Taper Pipe Thread	Distance Between Faces mm	Weight kgs
	Nominal	Diam. mm			
Globe Valves					
75 18 16	1/4	10	PT 1/4	50	90
17	3/8	12	3/8	55	95
18	1/2	15	1/2	65	110
19	3/4	20	3/4	80	125
20	1	25	1	90	140
75 18 21	1-1/4	32	PT 1-1/4	105	170
22	1-1/2	40	1-1/2	120	180
23	2	50	2	140	205
24	2-1/2	65	2-1/2	180	240
25	3	80	3	200	275
75 18 27	4	100	4	260	340
Angle Valves					
75 18 31	1/4	10	PT 1/4	28	90
32	3/8	12	3/8	30	100
33	1/2	15	1/2	32	105
34	3/4	20	3/4	40	130
35	1	25	1	45	145
75 18 36	1-1/4	32	PT 1-1/4	55	175
37	1-1/2	40	1-1/2	60	190
38	2	50	2	70	225
39	2-1/2	65	2-1/2	90	265
40	3	80	3	100	275
75 18 42	4	100	4	125	340

Bronze Screwed 5 kgf/cm² Gate Valves B-2011

Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & pulsation water of 120°C or less	0.49 [5]
Saturated steam	0.20 [2]
Non-shock water of 120°C or less	0.69 [7]

Unit Per Pc.

CODE	Size		Taper Pipe Thread	Distance Between Faces mm	Max. Extend Height mm
	Nominal	Diam. mm			
75 18 52	1/2	15	PT 1/2	50	145
53	3/4	20	3/4	60	165
54	1	25	1	65	190
55	1-1/4	32	1-1/4	75	225
56	1-1/2	40	1-1/2	85	255
75 18 57	2	50	PT 2	95	305
58	2-1/2	65	2-1/2	115	400
59	3	80	3	130	460

Bronze Screwed 10 kgf/cm² Gate Valves B-2011

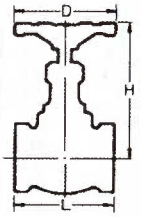
Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil & pulsation water of 120°C or less	0.98 [10]
Saturated steam	0.69 [7]
Non-shock water of 120°C or less	1.37 [14]

Unit Per Pc.

CODE	Size		Taper Pipe Thread	Distance Between Faces mm	Max. Extend Height mm
	Nominal	Diam. mm			
75 18 71	1/2	15	PT 1/2	55	150
72	3/4	20	3/4	65	175
73	1	25	1	70	205
74	1-1/4	32	1-1/4	80	245
75	1-1/2	40	1-1/2	90	275
75 18 76	2	50	PT 2	100	325
77	2-1/2	65	2-1/2	120	430
78	3	80	3	140	490

Bronze Screwed 100 Psi Globe Valves



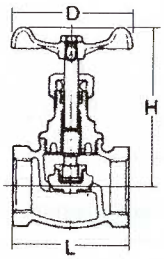
Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Saturated steam	0.78 [8]
Non-shock water of 100°C or less	0.98 [10]

Unit Per Pc.

CODE	Size	Dimensions mm		
		L	H	D
75 19 01	PT 1/2	48	69	55
02	3/4	53	80	60
03	1	63	94	70
04	1-1/4	73	104	80
05	1-1/2	81	127	90
75 19 06	PT 2	94	147	100
07	2-1/2	115	179	115
08	3	131	200	135
09	4	171	250	180

Bronze Screwed 150 Psi Globe Valves



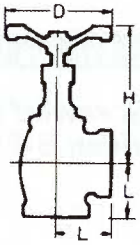
Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Saturated steam	0.98 [10]
Non-shock water of 120°C or less	1.37 [14]

Unit Per Pc.

CODE	Size	Dimensions mm		
		L	H	D
75 19 16	PT 1/4	44	66	50
17	3/8	44	68	50
18	1/2	53	79	60
19	3/4	65	93	70
20	1	77	104	80
75 19 21	PT 1-1/4	85	127	90
22	1-1/2	100	145	100
23	2	119	174	115
24	2-1/2	139	199	135
25	3	158	215	155

Bronze Screwed 150 Psi Angle Valves



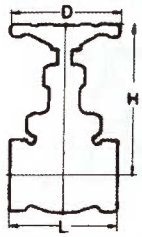
Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Saturated steam	0.98 [10]
Non-shock water of 120°C or less	1.37 [14]

Unit Per Pc.

CODE	Size	Dimensions mm		
		L	H	D
75 19 31	PT 1/4	21	66	50
32	3/8	24	68	50
33	1/2	28	79	60
34	3/4	34	93	70
35	1	40	104	80
75 19 36	PT 1-1/4	47	127	90
37	1-1/2	52	145	100
38	2	61	174	115
39	2-1/2	74	199	135
40	3	85	215	155

Bronze Screwed 125 Psi Gate Valves



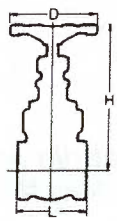
Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Saturated steam	0.88 [9]
Non-shock water of 120°C or less	1.18 [12]

Unit Per Pc.

CODE	Size	Dimensions mm		
		L	H	D
75 19 51	PT 3/8	38	75	50
52	1/2	42	75	50
53	3/4	47	86	55
54	1	50	97	60
55	1-1/4	60	117	70
75 19 56	PT 1-1/2	63	126	80
57	2	72	154	90
58	2-1/2	80	167	100
59	3	90	200	115

Bronze Screwed 150 Psi Gate Valves



Pressure Rating

Fluid condition	Maximum working pressure MPa [kgf/cm²]
Oil, gas, air & pulsation water of 120°C or less	0.49 [5]
Non-shock water of 120°C or less	0.98 [10]

Unit Per Pc.

CODE	Size	Dimensions mm		
		L	H	D
75 19 71	PT 1/2	48	98	55
72	3/4	53	113	60
73	1	62	124	70
74	1-1/4	69	143	80
75	1-1/2	75	167	90
75 19 76	PT 2	86	201	100
77	2-1/2	105	225	115
78	3	116	261	135

Air & Oil Cocks

Bronze Screwed 3-Way Gland Cocks

Unit Per Pc.

CODE	Size		Thread	Distance Between Faces mm	Height mm
	Nominal	Diam. mm			
75 20 21	1/2	15	PT 1/2	65	40
22	3/4	20	3/4	80	49
23	1	25	1	90	56
24	1-1/4	32	1-1/4	105	67
25	1-1/2	40	1-1/2	120	77
75 20 26	2	50	PT 2	140	91
27	2-1/2	65	2-1/2	180	110
28	3	80	3	200	125

Bronze Screwed Cocks with Lever Handle

Unit Per Pc.

CODE	Size		Thread
	Nominal	Diam. mm	
75 20 31	3/8	10	PT 3/8
32	1/2	15	1/2
33	3/4	20	3/4
34	1	25	1
35	1-1/4	32	1-1/4
75 20 36	1-1/2	40	1-1/2
37	2	50	2

Bronze Air Cocks with Lever Handle Male & Hose Ends

Unit Per Pc.

CODE	**75 20 41**	**75 20 42**	**75 20 43**
Nominal Size	PT-1/4	PT-3/8	PT-1/2
Thread Per Inch	9	10.5	14

Bronze Two Way Air Cocks with Lever Handle Male & Hose Ends

Unit Per Pc.

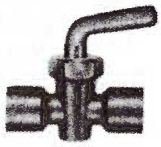
CODE	**75 20 46**	**75 20 47**
Nominal Size	PT-1/4	PT-3/8
Thread Per Inch	9	10.5

Brass Pee Cocks
with Tee Handle

Unit Per Pc.

CODE	75 20 51	75 20 52	75 20 53	75 20 54	75 20 55
Nominal Size	PT-1/8	PT-1/4	PT-3/8	PT-1/2	PT-3/4

Brass Meter Cocks
with Lever Handle
Both Female Ends

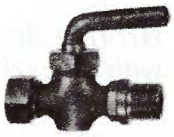


Unit Per Pc.

CODE	75 20 61	75 20 62	75 20 63
Nominal Size	PS-1/4	PS-3/8	PS-1/2

7TH 75

Bronze Drain Cocks
with Lever Handle
Male & Female Ends



Unit Per Pc.

CODE	75 20 66	75 20 67	75 20 68	75 20 69	75 20 70
Nominal Size	PT-1/4	PT-3/8	PT-1/2	PT-3/4	PT-1

Bronze Locking Bib Cocks
with Male End

Unit Per Pc.

CODE	75 20 76	75 20 77	75 20 78	75 20 79
Nominal Size	PT-3/8	PT-1/2	PT-3/4	PT-1

Bronze Union Valves
Male & Female Ends

Unit Per Pc.

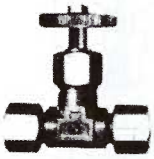
CODE	75 20 81	75 20 82	75 20 83	75 20 84
Nominal Size	PT-3/8	PT-1/2	PT-3/4	PT-1

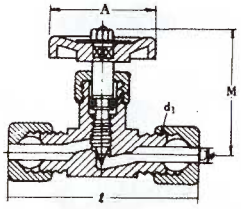
Needle Valves

Brass Needle Valves
with Ring Joint & Nut
For Copper Tubing

For controlling flow of liquids or gases requiring close regulating. Made of brass rods and brass except for the gland of "O" rings. Applicable temperature will be –20°C to 100°C and the maximum pressure will be 3.43 MPa [35 kgf/cm2]. Recommended for use at less than 80% of maximum load pressure at temperatures between 80°C and 100°C.

Brass Needle Straight Valves
with Ring Joint Nut Both Ends

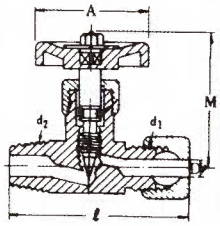




Unit Per Pc.

CODE	Nominal Size	For Tube OD "D" mm	Thread d_1	Length L mm	Height M mm
75 21 01	6 x 1/4	6	PF-1/4	57	37
02	8 x 3/8	8	" 3/8	68	42
03	10 x 3/8	10	" 3/8	85	50
04	12 x 1/2	12	" 1/2	91	50
05	14 x 1/2	14	" 1/2	93	50

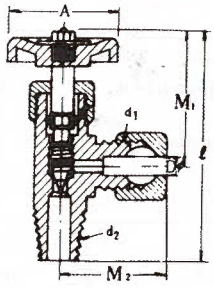
Brass Needle Straight Valves
with Ring Joint Nut and Male Thread



Unit Per Pc.

CODE	Nominal Size	For Tube OD "D" mm	Thread d_1	Thread d_2	Length L mm	Height M mm
75 21 06	6 x 1/8	6	PF-1/4	PT-1/8	52	37
07	6 x 1/4	6	" 1/4	" 1/4	53	37
08	8 x 1/4	8	" 3/8	" 1/4	66	42
09	10 x 3/8	10	" 3/8	" 3/8	77	50
10	12 x 1/2	12	" 1/2	" 1/2	80	50
75 21 11	14 x 1/2	14	PF-1/2	PT-1/2	81	50

Brass Needle Angle Valves
with Ring Joint Nut at Outlet



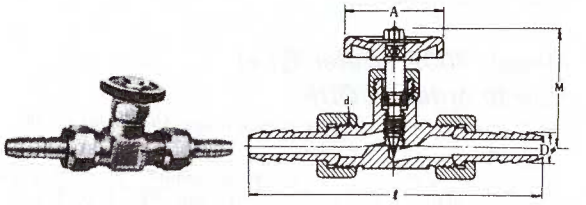
Unit Per Pc.

CODE	Nominal Size	For Tube OD "D" mm	Thread d_1	Thread d_2	Length L mm	Height M_2 mm
75 21 16	6 x 1/8	6	PF-1/4	PT-1/8	55	27
17	6 x 1/4	6	" 1/4	" 1/4	58	27
18	8 x 1/4	8	" 3/8	" 1/4	65	28
19	10 x 3/8	10	" 3/8	" 3/8	73	34
20	12 x 1/2	12	" 1/2	" 1/2	76	39
75 21 21	14 x 1/2	14	PF-1/2	PT-1/2	76	40

Brass Needle Valves
with Corrugated Hose Ends

For controlling flow of liquids or gases requiring close regulating. Brass rod material made body and bonnet except for the gland "O" rings. The applicable temperature will be –20°C to 100°C and the maximum pressure will be 1.47 MPa[15 kgf/cm²]. Recommended for use at less than 80% of maximum load pressure at temperatures between 80°C to 100°C.

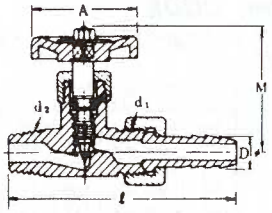
Brass Needle Straight Valves
with Both Corrugated Hose Ends



Unit Per Pc.

CODE	Nominal Size	For Hose ID. mm	Thread d_1	Wheel Dia.	Length L mm	Height M mm
75 21 36	8 x 1/4	8	PF-1/4	35	95	37
37	9.5 x 3/8	9.5	" 3/8	35	109	42
38	11 x 3/8	11	" 3/8	35	115	42

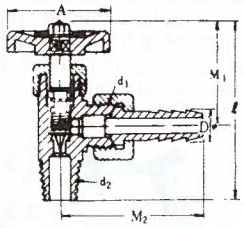
Brass Needle Straight Valves
with Corrugated Hose End & Male Thread



Unit Per Pc.

CODE	Nominal Size	For Hose ID. mm	Thread d_1	Thread d_2	Length L mm	Height M mm
75 21 41	8 x 1/8	8	PF-1/4	PT-1/8	72	37
42	8 x 1/4	8	" 1/4	" 1/4	73	37
43	9.5 x 1/4	9.5	" 3/8	" 1/4	87	42
44	11x 1/4	11	" 3/8	" 1/4	89	42

Brass Needle Angle Valves
with Corrugated Hose End & Male Thread



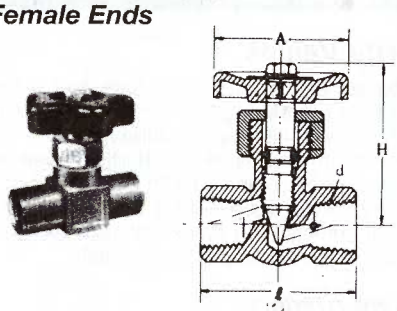
Unit Per Pc.

CODE	Nominal Size	For Hose ID. mm	Thread d_1	Thread d_2	Length L mm	Height M_2 mm
75 21 46	8 x 1/8	8	PF-1/4	PT-1/8	55	46
47	8 x 1/4	8	" 1/4	" 1/4	58	46
48	9.5 x 1/4	9.5	" 3/8	" 1/4	65	54
49	11x 1/4	11	" 3/8	" 1/4	65	56

Brass Needle Valves
Threaded

For controlling flow of liquids or gases requiring close regulating. Brass rod material made body and bonnet with nitrile "O" rings and heat-resist plastic handles. The applicable temperature is –20°C to 100°C and the maximum pressure is 5.88 MPa [60 kgf/cm²] at 80°C.

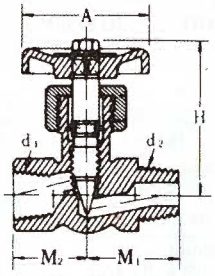
Brass Needle Straight Valves
Both Female Ends



Unit Per Pc.

CODE	Nominal Size	Thread d	Dimensions mm L	H	A
75 21 51	1/8	PF-1/8	35	37	35
52	1/4	" 1/4	40	45	35
53	3/8	" 3/8	50	50	45
54	1/2	" 1/2	70	65	55

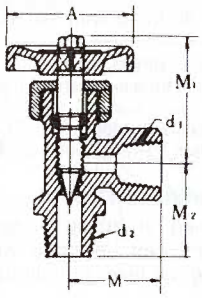
Brass Needle Straight Valves
Male & Female Ends



Unit Per Pc.

CODE	Nominal Size	Thread d_1	Thread d_2	Dimensions mm M_1+M_2	H	A
75 21 56	1/8 x 1/8	PT-1/8	PT-1/8	37	37	35
57	1/4 x 1/4	" 1/4	" 1/4	45	45	35
58	3/8 x 3/8	" 3/8	" 3/8	56	50	45
59	1/2 x 1/2	" 1/2	" 1/2	72	65	55

Brass Needle Angle Valves
Male & Female Ends



Unit Per Pc.

CODE	Nominal Size	Thread		Dimensions mm		
		d_1	d_2	M_1+M_2	M	A
75 21 61	1/8 x 1/8	PT-1/8	PT-1/8	56	20	35
62	1/4 x 1/4	" 1/4	" 1/4	64	25	35
63	3/8 x 3/8	" 3/8	" 3/8	75	30	45
64	1/2 x 1/2	" 1/2	" 1/2	97	38	55

Butterfly Valves

Butterfly Valves

Compared with conventional gate and globe valves, butterfly valves achieve high performance near to perfection with its pressure resistance and durability.

Especially in vessels, the Butterfly Valves enjoy high reliability and when compared with the conventional valves, the Butterfly Valves are excellent in the following aspects: (1) light and compact, (2) maintenance is easy, (3) labour-saving ease of operation, and (4) low cost.

7TH 75

Model 700G/705G

Standard Specifications

Nominal Size	40 to 300 mm	350 to 600mm
Applicable Flange Standard	JIS 5K/10K, ANSI 125/150 lb, DIN NP10/16, BS 4504 PN10/16, BS 10"E" *Model 700G: only JIS 5K/10K is available from 350-600 mm	
Face to Face Dimensions	JIS B2002 (46 series)/ ISO 5752 wafer butterfly valve(short)	
Max. Working Pressure	1.0 MPa	
Working Temperature Range	NBR : -10 to 80°C EPDM : -20 to 120°C (on request)	

Standard Materials

Body	Ductile iron, JIS FCD450	Cast iron, JIS FC 250
Disc	316 stainless steel, JIS SCS14	304 stainless steel, JIS SCS13
	PPS (40 to 200 mm)	
	Ductile iron, JIS FCD 450 (80 to 300 mm)	Ductile iron, JIS FCD 450 (with hard chrome plating)
Stem	SUS420J2	
Seat Ring	NBR, EPDM	

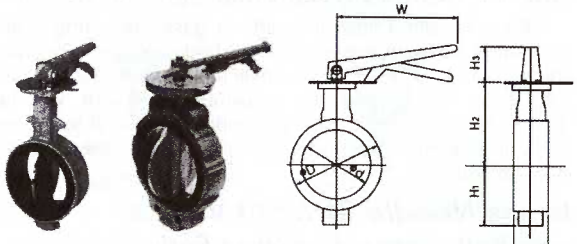
Actuators

Lock Lever	40 to 200mm	-
Worm Gear	40 to 300mm	350 to 600mm
Center Handle	40 to 300mm	-
Pneumatic Cylinder	40 to 300mm	350 to 600mm
Motorized	40 to 300mm	350 to 600mm

Remark: *Never use an EPDM rubber seat ring if the valve being used for oil or for a fluid containing even a slight amount of oil.
The 316 stainless steel (JIS SCS14) rib disc comes standard from 50 mm to 300 mm.

1. Lock Lever Actuator

Generally used in small diameters. Opening and closing operations can be done with a light one-touch device, by turning the lever to only 90 degrees. Moreover, flow regulation is available with a ten-step locking device. Opening degrees are indicated by the tip of the lever.



Wafer Type Model: 700G | Semi Lugged Type Model: 705G | Semi Lugged Type

Model: 700G (Wafer Type)

How to order: CODE

Butterfly valve, wafer type with lock lever, NOMINAL SIZE

Unit Per Pc.

CODE	Nom Size		Dimension (mm)							Weight
	mm	Inch	φd	φD	L	H1	H2	H3	W	kgs
75 22 08	40	1-1/2	45	80	35	61	132	66	200	2.1
01	50	2	56	90	43	68	138	66	200	2.4
02	65	2-1/2	69	115	46	79	151	66	200	3.1
03	80	3	84	126	46	86	156	66	200	3.2
04	100	4	104	146	52	103	167	66	200	4
75 22 05	125	5	130	181	56	118	191	92	300	6.7
06	150	6	153.5	211	56	135	202	92	300	8.3
07	200	8	199	256	60	177	227	97	350	12.1

Name of Mfr. : Tomoe Valve Co., Ltd. Model: 700G-1T

Model: 705G (Semi Lugged Type)

How to order: CODE

Butterfly valve, semi lugged type with lock lever, NOMINAL SIZE

Unit Per Pc.

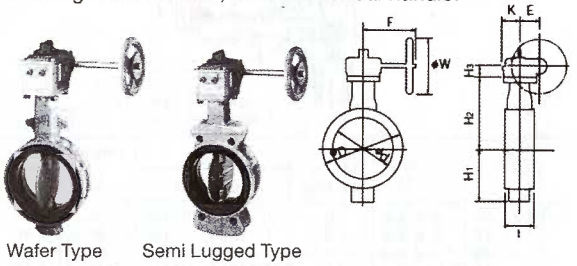
CODE	Nom Size		Dimension (mm)							Weight
	mm	Inch	φd	φD	L	H1	H2	H3	W	kgs
75 22 09	50	2	56	90	43	85	138	66	200	3.1
10	65	2-1/2	69	115	46	94	151	66	200	4.1
28	80	3	84	126	46	109	156	66	200	4.6
29	100	4	104	146	52	117	167	66	200	5.6
30	125	5	130	181	56	143	191	92	300	9.3
75 22 46	150	6	153.5	211	56	164	202	92	300	12.3
47	200	8	199	256	60	186	227	97	350	16.7

Name of Mfr. : Tomoe Valve Co., Ltd. Model: 705G-1T

2. Worm Gear Actuator

Gear reduction is available by the worm and worm wheels incorporated, opening the disc very lightly, leading to non-step adjustment of flow.

In addition, a stopper bolt is fitted to the fully closed and fully opened positions, hence accurate positions can be taken. Furthermore, the opening angle of the disc can be read by the indicator at the upper part of the gear box. "Close" is effected by revolving clockwise, and "Open" by revolving anticlockwise, with the manual handle.



Wafer Type Model: 700G | Semi Lugged Type Model: 705G

How to order: CODE

Butterfly valve, wafer type with worm gear, NOMINAL SIZE

Unit Per Pc.

CODE	Nom Size		Dimension (mm)								Weight
	mm	Inch	φd	φD	L	H1	H2	H3	F	W	kgs
75 22 27	40	1-1/2	45	80	35	61	132	29.5	160	100	3.8
11	50	2	56	90	43	68	138	29.5	160	100	4.1
12	65	2-1/2	69	115	46	79	151	29.5	160	100	4.8
13	80	3	84	126	46	86	156	29.5	160	100	4.9
14	100	4	104	146	52	103	167	29.5	160	100	5.7
75 22 15	125	5	130	181	56	118	191	34.5	173.5	160	9.6
16	150	6	153.5	211	56	135	202	34.5	173.5	160	11.2
17	200	8	199	256	60	177	227	41.5	198	200	18
18	250	10	253	322	68	215	280	41.5	198	200	26
19	300	12	302	367	78	253	312	48	222.5	200	39
75 22 20	350	14	337	410	78	276	348	48	222.5	280	58
21	400	16	394	469	102	338	383	50	266	280	80
22	450	18	441	525	114	368	413	50	266	280	103
23	500	20	492	580	127	403	453	50	266	280	130
24	550	22	540	608	154	410	523	-	392	450	199
75 22 25	600	24	584	682	154	458	528	61	352	400	222
61	650	26	634	708	170	468	647	-	421	390	350
62	700	28	684	756	165	496	722	-	454	390	410
63	750	30	731	810	190	540	762	-	454	390	495
64	800	32	781	860	190	570	792	-	454	390	575

Name of Mfr.: 40-500mm & 600mm - Tomoe Valve Co.,Ltd.
Model 700G-2U
550mm & 650-800mm - Okumura Engineering Corp.
Model 615X

Model: 705G (Semi Lugged Type)

How to order: CODE

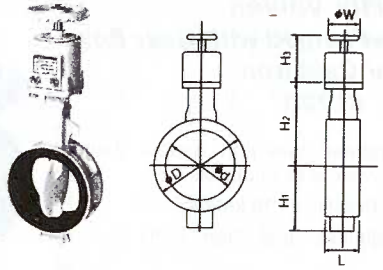
Butterfly valve, semi lugged type with worm gear, NOMINAL SIZE

Unit Per Pc.

CODE	Nom Size		Dimension (mm)								Weight
	mm	Inch	φd	φD	L	H1	H2	H3	F	W	kgs
75 22 65	50	2	56	90	43	85	138	29.5	160	100	4.8
66	65	2-1/2	69	115	46	94	151	29.5	160	100	5.8
67	80	3	84	126	46	109	156	29.5	160	100	6.3
68	100	4	104	146	52	117	167	29.5	160	100	7.3
69	125	5	130	181	56	143	191	34.5	173.5	160	12.2
75 22 70	150	6	153.5	211	56	164	202	34.5	173.5	160	16
71	200	8	199	256	60	186	227	41.5	198	200	23
72	250	10	253	322	68	215	280	41.5	198	200	32
73	300	12	302	367	78	253	312	48	222.5	200	45
74	350	14	337	410	78	276	348	48	222.5	280	63
75 22 75	400	16	394	469	102	338	383	50	266	280	91
76	450	18	441	525	114	368	413	50	266	280	115
77	500	20	492	580	127	403	453	50	266	280	145
78	550	22	540	608	154	410	523	-	392	450	199
79	600	24	584	682	154	458	528	61	352	400	225
75 22 80	650	26	634	708	170	468	647	-	421	390	350
81	700	28	684	756	165	496	722	-	454	390	410
82	750	30	731	810	190	540	762	-	454	390	495
83	800	32	781	860	190	570	792	-	454	390	575

Name of Mfr.: 50-500mm & 600mm - Tomoe Valve Co.,Ltd.
Model 705G-2U
550mm & 650-800mm - Okumura Engineering Corp.
Model 615X

3. Center Handle Actuator



How to order: CODE

Butterfly valve, wafer type with center handle, NOMINAL SIZE

Unit Per Pc.

CODE	Nom Size		Dimension (mm)							Weight
	mm	Inch	φd	φD	L	H1	H2	H3	W	kgs
75 22 31	40	1-1/2	45	80	35	61	132	136	100	4.4
32	50	2	56	90	43	68	138	136	100	4.7
33	65	2-1/2	69	115	46	79	151	136	100	5.4
34	80	3	84	126	46	86	156	136	100	5.5
35	100	4	104	146	52	103	167	136	100	6.3
75 22 36	125	5	130	181	56	118	191	133	100	9.2
37	150	6	153.5	211	56	135	202	133	100	10.8
38	200	8	199	256	60	177	227	151	200	17.5
39	250	10	253	322	68	215	280	151	200	25.1
40	300	12	302	367	78	253	312	161	200	32.1
75 22 41	350	14	337	410	78	276	348	409	355	75
42	400	16	394	469	102	338	383	409	355	97
43	450	18	441	525	114	368	413	409	355	121
44	500	20	492	580	127	403	453	409	355	148
45	600	24	584	682	154	458	528	498	450	244

Name of Mfr. : Tomoe Valve Co., Ltd.
Model: 700G-2G (40mm - 300 mm)
700G-2R (350 mm - 600 mm)

Besides the above types of actuator, the following types are also available on request:

1. Pneumatic Cylinder
2. Motorized

Double Flanged Large Diameter Butterfly Valves

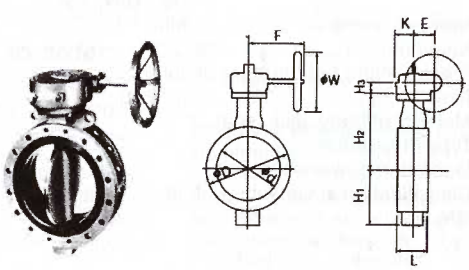
Model 700E

For various applications in water treatment, shipbuilding, air conditioning, petrochemical, power generation and other industries.

Standard Specifications	
Valve Nominal Size	650 to 1,350mm
Applicable Flange Standard	JIS 5K/10K
Face to face Dimensions	Manufactured standard
Max. Working Pressure	1.0 MPa
Working Temperature Range	NBR: -10 to 80 deg. C EPDM: -20 to 120 deg. C (on request)
Standard Materials	
Body	FC 250
Disc	FCD 450 (hard chrome plating), SCS13
Stem	SUS403
Seat Ring	EPDM* / NBR

Remark: *Never use an EPDM rubber seat ring if the valve being used for oil or for a fluid containing even a slight amount of oil.

Worm Gear Actuator



How to order: CODE

Butterfly valve, double flangd, wafer type with worm gear, NOMINAL SIZE

Unit Per Pc.

CODE	Nom Size		Dimension (mm)								Weight
	mm	Inch	φd	φD	L	H1	H2	H3	F	W	
75 22 51	650	26	627	845	170	558	510	65	400	450	363
52	700	28	670	905	180	629	560	75	457	500	487
53	750	30	723	970	190	659	590	75	457	500	547
54	800	32	772	1,020	200	679	620	75	457	500	617
55	850	34	822	1,070	210	709	650	100	490	500	780
75 22 56	900	36	858	1,120	230	759	685	100	490	500	855
57	1,000	40	975	1,235	250	819	745	100	490	500	1,384
58	1,100	44	1,070	1,345	280	874	820	100	490	500	1,584
59	1,200	48	1,170	1,465	300	948	880	100	490	500	1,984
60	1,350	54	1,314	1,630	330	1,030	960	151	675	600	2,436

Name of Mfr. : Tomoe Valve Co.,Ltd. Model: 700E-2S

Flange Dimensions

Nominal Size		JIS 5K		JIS 10K	
mm	Inch	Long Bolts & Nuts	Hex Bolts	Long Bolts & Nuts	Hex Bolts
650	26	16-M24x285x90	16-M24x65x54	16-M30x310x60	16-M30x80x66
700	28	16-M24x295x50	16-M24x65x54	16-M30x320x60	16-M30x80x66
750	30	16-M30x320x60	16-M30x75x66	16-M30x335x60	16-M30x80x66
800	32	16-M30x335x60	16-M30x75x66	20-M30x345x60	16-M30x80x66
850	34	16-M30x345x60	16-M30x75x66	20-M30x360x60	16-M30x80x66
900	36	16-M30x360x60	16-M30x75x66	20-M30x385x65	16-M30x85x66
1,000	40	20-M30x385x65	16-M30x85x66	20-M36x420x75	16-M36x100x78
1,100	44	20-M30x420x65	16-M30x85x66	20-M36x450x80	16-M36x100x78
1,200	48	24-M30x445x65	16-M30x85x66	24-M36x475x80	16-M36x100x78
1,350	54	24-M30x475x65	16-M30x85x66	24-M42x525x80	16-M42x100x90

Nominal Size		ASME B 16.47 Series A		BS 4504 NP10, DIN PN10	
mm	Inch	Long Bolts & Nuts	Hex Bolts	Long Bolts & Nuts	Hex Bolts
650	26	16-U1 1/4x390x70	16-U1 1/4x110x70	16-M20x200x45	-
700	28	20-U1 1/4x410x70	16-U1 1/4x110x70	16-M24x210x50	-
750	30	20-U1 1/4x425x70	16-U1 1/4x125x70	20-M24x250x50	-
800	32	20-U1 1/2x460x80	16-U1 1/4x125x80	16-M27x280x60	8-M27x60x50
850	34	24-U1 1/2x475x80	16-U1 1/4x135x80	16-M27x305x60	16-M27x65x54
900	36	24-U1 1/2x510x80	24-U1 1/2x510x80	16-M30x335x60	16-M30x65x54
1,000	40	28-U1 1/2x530x80	28-U1 1/2x530x80	20-M30x370x65	16-M30x75x66
1,100	44	32-U1 1/2x580x80	32-U1 1/2x580x80	20-M33x400x65	16-M33x90x72
1,200	48	36-U1 1/2x615x80	36-U1 1/2x615x80	24-M36x475x80	16-M36x100x78
1,350	54	-	-	-	-

Besides the above model, the following types of actuators are available on request:

1. Double-acting pneumaic cylinder type
2. Three phase motor actuator type

Guide of how to order

When ordering, please specify the following points:

How to order: 75 - 22 - 26

Butterfly valve, with the following information:

1. Type of pipe connection ..... Water Type, or Double Flanged Type
2. Flange standard ..... JIS (kgf/cm2), ANSI (lbs), BS, DIN, etc.
3. Nominal diameter ..... mm
4. Name of fluid .....
5. Pressure and temperature of fluid.....
6. Flow ..... m³/min.
7. Material of body, disk, seat....
8. Type of actuator.....
9. Operating power source.....
10. Classification society if required .....

Butterfly Valves

Double Flanged with Gear Box
Nodular Cast Iron, Undrilled
Model: KL700

A nodular cast iron double flanged butterfly valve with gear box. Flanges are undrilled.

Suitable for JIS 5K, 10K, PN10 & PN16.

Disc: Stainless steel, Seat: NBR

Unit Per Pc.

CODE	Size mm			Product No.
	Nom Size	Flange Dia	Face to Face	
75 23 02	50	165	41	KL700050
03	65	185	40	KL700065
04	80	200	60	KL700080
05	100	229	60	KL700100
06	125	254	100	KL700125
75 23 07	150	285	100	KL700150
08	200	343	100	KL700200
09	250	406	110	KL700250
10	300	483	110	KL700300

Name of Mfr.: Alligator

Butterfly Valves

Double Flanged with Gear Box
Nodular Cast Iron
Model: KL710

A nodular cast iron double flanged butterfly valve with gear box.

Nominal Pressure: 5 kgf/cm²

Disc: Stainless steel, Seat: NBR

Unit Per Pc.

CODE	Size mm	Dimensions mm					Product No.
		Face to Face	Flange Dia	Flange Bolt Hole			
				Pitch	Number	Hole	
75 23 11	50	43	165	105	4	15	KL710050
12	65	45	185	130	4	15	KL710065
13	80	46	200	145	4	19	KL710080
14	100	60	229	165	8	19	KL710100
15	125	100	254	200	8	19	KL710125
75 23 16	150	100	285	230	8	19	KL710150
17	200	100	343	280	8	23	KL710200
18	250	110	406	345	12	23	KL710250
19	300	110	483	390	12	23	KL710300

Name of Mfr.: Alligator

Butterfly Valves

Double Flanged with Gear Box
Nodular Cast Iron
Model: KL720

A nodular cast iron double flanged butterfly valve with gear box.

Nominal Pressure: 10 kgf/cm²

Disc: Stainless Steel, Seat: NBR

Unit Per Pc.

CODE	Size mm	Dimensions mm					Product No.
		Face to Face	Flange Dia	Flange Bolt Hole			
				Pitch	Number	Hole	
75 23 20	50	43	165	120	4	19	KL720050
21	65	45	185	140	4	19	KL720065
22	80	46	200	150	4	19	KL720080
23	100	60	229	175	8	19	KL720100
24	125	100	254	210	8	23	KL720125
75 23 25	150	100	285	240	8	23	KL720150
26	200	100	343	290	12	23	KL720200
27	250	110	406	355	12	25	KL720250

Name of Mfr.: Alligator

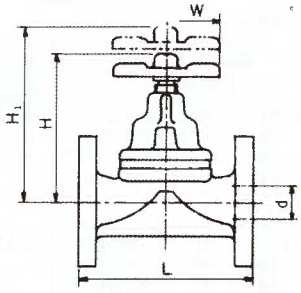
Diaphragm Valves

Diaphragm Valves

The basic construction of the diaphragm valve is quite simple. It is composed of three principal units called body, bonnet and diaphragm. It is particularly suitable for service lines handling corrosive, abrasive, viscous or fibrous fluids with the following advantages:

1. The most economical corrosion/abrasion resisting valve available today – versatile body and diaphragm materials.
2. Permanent bubble tightness against slurry, fiber and gases – resilient closure.
3. No contamination. The most suitable for the nuclear and food service – no gland packing.
4. Simple in-line maintenance – easy to disassemble and reassemble. Can be made without removing the body from the pipeline.

1. Weir Type Handwheel Operated Diaphragm Valves



Maximum Working Pressure at Room Temperature

Unit kgf/cm²

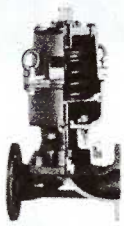
Diaphragm	Rubber Diaphragm		Teflon Diaphragm	
Body / Nominal Size	Cast Iron Stainless Steel Bronze Rubber Lined	Glass Lined	Cast Iron Stainless Steel	Glass Lined Rubber Lined TeflonLined
15	14	10	10	10
20	14	10	10	10
25	14	10	7	7
40	14	10	7	7
50	14	7	7	7
65	10	7	7	7
80	10	7	7	7
100	10	5	7	5

Size in mm

Nominal Size	Actual Diam. d	Face to Face		Wheel Diam.	Open Height
		Unlined	Rubber Lined		
15	13	102	107	63	115
20	19	118	123	63	125
25	25	127	132	80	129
40	38	159	165	100	155
50	51	191	197	125	172
65	64	216	222	125	209
80	76	254	260	160	235
100	102	305	313	224	297

2. Weir Type Piston Operated Reverse Acting Valves

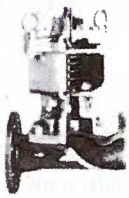
(Air-to-Open, Spring-to-Close)



When it is desirable to close the valve in case of a failure in the supply of operating pressure, this type of valve is recommended. Actuators are supplied in 2 kgf/cm² and 4 kgf/cm² operating pressure.

3. Weir Type Piston Operated Direct Acting Valves

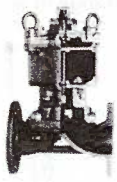
(Spring-to-Open, Air-to-Close)



When it is desirable to open the valve in case of a failure in the supply of operating pressure, this type of valve is recommended.

4. Weir Type Piston Operated Double Acting Valves

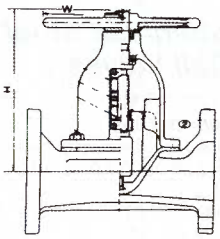
(Air-to-Open, Air-to-Close)



Being a springless type valve, the double acting valve is much more compact than the reverse acting valve and the direct acting valve. This type of valve may serve as either a normal open type or a normal closed type valve depending on the control scheme.

5. Straight Way Type Handwheel Operated Valves

The hand wheel operated valve has the usual features of the weir type diaphragm valve plus the features of the sluice valves. When fully opened, it forms a straight-transfer passage as in a pipeline.



Guide of how to order

When ordering, please specify the following points,

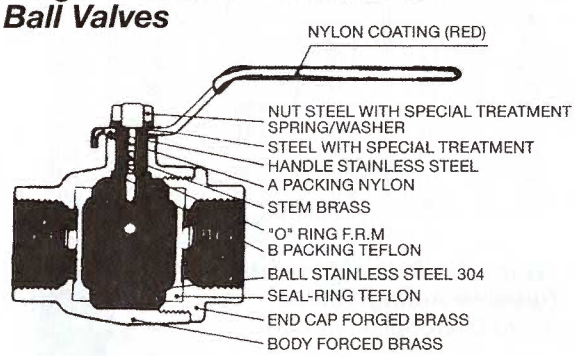
How to order: 75 - 23 - 01

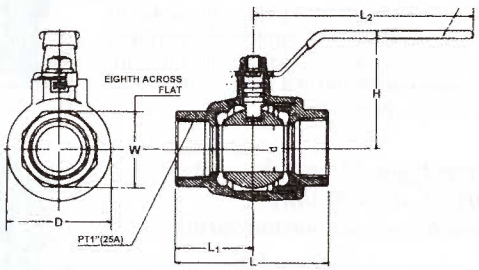
Diaphragm valve, with the following information:

1. Name of fluid to be used ...
2. Type of flow ..... Weir type, or straight way type
3. Size ..... Nominal size
4. End connection..... Screwed or flanged
5. Body material..... Cast iron, ductile iron, etc.
6. Diaphragm material ... Neoprene, natural rubber, etc.
7. Operation ..... Handwheel operated or pneumatically operated

Ball Valves

Forged Brass Screwed End Ball Valves





Service Fluid	Water, oil, gas, air, etc
Max. working pressure	1.96 MPa [20 kgf/cm²]
Range of temperature used	–10°C to +120°C

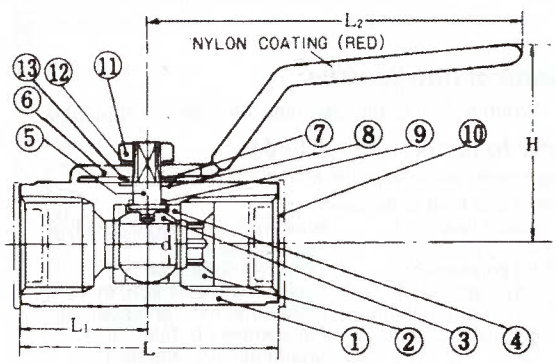
Unit Per Pc.

CODE	Size	Dimensions mm			
		d	L	H	W
75 24 01	PT 3/8	10	51.1	46	22
02	1/2	15	61	48	27
03	3/4	20	74.5	55	32
04	1	25	90.5	59	41
05	1-1/4	32	103.8	74	50
75 24 06	PT 1-1/2	40	117	80	55
07	2	50	135	88	70

* Screwed end available BSPT, NPT.

Stainless Steel Screwed End Ball Valves

Service Fluid	Oil, gas and corrosive chemical liquid
Max. working pressure	3.29 MPa [40 kgf/cm²]



Part No.	Description	Material
1	Valve Body	SUS 316
2	End Cap	SUS 316
3	Ball	SUS 316
4	Seat	Reinforced Teflon
5	Stem	SUS 316
6	Handle	SUS 430
7	Gland Washer	SUS 316
8	A Packing	Reinforced Teflon
9	B Packing	Reinforced Teflon
10	Dust Proof Cap	Polyethylene
11	Nut	SUS 316
12	Toothed Lock Washer	SUS 304
13	Conical Spring Washer	SUS 304

Unit Per Pc.

CODE	Size	Dimensions mm				
		d	L	L_1	L_2	H
75 24 11	PT 1/4	5	40	19	60	31
12	3/8	7.5	44.5	21.7	80	40
13	1/2	9	54.5	26.5	80	42
14	3/4	12.5	61	30	100	51
15	1	16	68.5	34.5	100	54
75 24 16	PT 1-1/4	21	78	39	150	66
17	1-1/2	24	82	41	150	69
18	2	32	100	50	150	75

* Screw end available BSPT, NPT.

Ball Valves

Reduced Bore Type

The stream through the reduced bore valve is one pipe size smaller than the valve's pipe size.

Suitable medium: Water, oil, air and corrosive liquid. Nominal pressure: 1.6-6.4 MPa. Blow out proofstem full port. Investment casting body. Locking device. Temperature: -20°C to +232°C

SUS304

Unit Per Pc.

CODE	Size BSPT Female	Alligator No.	CODE	Size BSPT Female	Alligator No.
75 33 01	1/4"	KR265006	**75 33 05**	1"	KR265025
02	3/8"	KR265010	**06**	1-1/4"	KR265032
03	1/2"	KR265015	**07**	1-1/2"	KR265040
04	3/4"	KR265020	**08**	2"	KR265050

SUS316

75 33 11	1/4"	KR270006	**75 33 15**	1"	KR270025
12	3/8"	KR270010	**16**	1-1/4"	KR270030
13	1/2"	KR270015	**17**	1-1/2"	KR270040
14	3/4"	KR270020	**18**	2"	KR270050

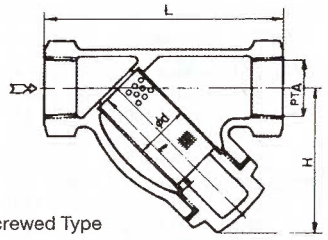
Name of Mfr.: Alligator

Y-strainers

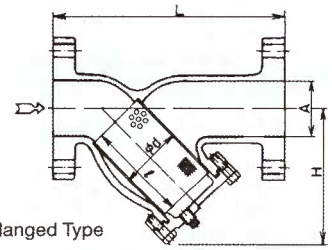
Pipeline Y-strainers

Installed into pipelines to protect traps, regulators, pumps, meters, burners and lubricators against damage caused by foreign matters such as scale, dirt, etc. Among the wide variety of types of sizes of strainers, the most common models have been coded with the undermentioned specifications.

Bronze Y-strainer



Screwed Type



Flanged Type

Standard Feature		
Max working pressure	Screwed type	16 kgf/cm²
	Flanged type	10 kgf/cm²
Max working temperature		205°C
Material	Body	Bronze Casting (BC6)
	Screen	Stainless Steel (SUS304)
Connection	Screw thread	PT
	Flange rating	JIS 10 kgf/cm²

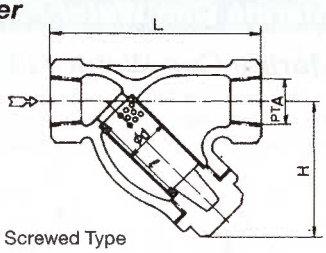
How to order: CODE

Pipeline Y-strainer, bronze, PRESSURE, TYPE of CONNECTION, SIZE mm

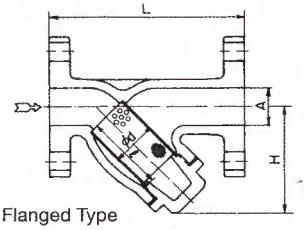
Unit Per Pc.

CODE	Size		Dimensions mm		Screen mm	
	mm(A)	Inch	L	H	ød	L
Screwed Type (16 kgf/cm²)						
75 24 21	8A	1/4	75	55	18	40
22	10A	3/8	75	55	18	40
23	15A	1/2	80	55	18	40
24	20A	3/4	100	65	23	50
25	25A	1	115	75	30	60
75 24 26	32A	1-1/4	135	95	39	70
27	40A	1-1/2	150	100	44	75
28	50A	2	180	120	56	90
Flanged Type (10 kgf/cm²)						
75 24 31	10A	3/8	125	60	18	45
32	15A	1/2	125	60	18	45
33	20A	3/4	140	70	23	50
34	25A	1	160	80	30	60
35	32A	1-1/4	180	100	39	70
75 24 36	40A	1-1/2	190	105	44	75
37	50A	2	220	125	56	90
38	65A	2-1/2	270	180	78	120
39	80A	3	290	200	88	130
40	100A	4	350	240	110	180
75 24 41	125A	5	390	260	140	200
42	150A	6	440	320	170	240
43	200A	8	540	380	210	300

Cast Iron Y-strainer



Screwed Type



Flanged Type

Standard Feature		
Max working pressure	Screwed type	16 kgf/cm²
	Flanged type	10 kgf/cm²
Max working temperature		220°C
Material	Body	Cast Iron (FC200)
	Screen	Stainless Steel (SUS304)
Connection	Screw thread	PT
	Flange rating	JIS 10 kgf/cm²

How to order: CODE

Pipeline Y-strainer, cast iron, PRESSURE, TYPE of CONNECTION, Size mm

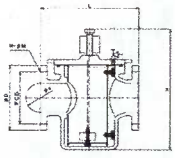
Unit Per Pc.

CODE	Size		Dimensions mm		Screen mm	
	mm(A)	Inch	L	H	ød	L
Screwed Type (16 kgf/cm²)						
75 24 46	8A	1/4	80	60	18	45
47	10A	3/8	80	60	18	45
48	15A	1/2	90	60	18	45
49	20A	3/4	105	75	23	50
50	25A	1	125	85	30	60
75 24 51	32A	1-1/4	145	105	39	70
52	40A	1-1/2	160	110	44	75
53	50A	2	180	130	56	90
54	65A	2-1/2	230	180	78	120
55	80A	3	240	190	88	130
Flanged Type (10 kgf/cm²)						
75 24 56	10A	3/8	125	70	18	45
57	15A	1/2	125	70	18	45
58	20A	3/4	140	75	23	50
59	25A	1	160	85	30	60
60	32A	1-1/4	180	105	39	70
75 24 61	40A	1-1/2	190	110	44	75
62	50A	2	220	130	56	90
63	65A	2-1/2	270	180	78	120
64	80A	3	290	200	88	130
65	100A	4	350	240	110	180
75 24 66	125A	5	390	260	140	200
67	150A	6	440	320	170	240
68	200A	8	540	380	210	300
69	250A	10	680	480	270	370
70	300A	12	840	600	320	480

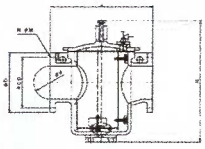
Marine Can Water Filters

Marine Can Water Filters

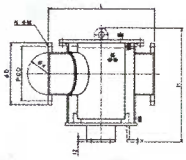
Made of casting steel and used for water pipelines in ship. Complete with inner strainer. Connecting flange size are conform to JIS 5K cm² standard.



25A-100A



125A-150A



200A-800A

Unit Per Set

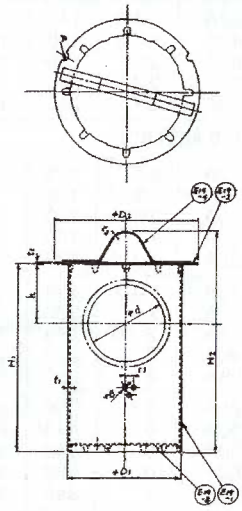
CODE	Nominal Diam. mm	Flange					Total Height mm	Weight kgs
		Face to Face mm	Diam. mm	Bolt P.C.D. mm	Bolt No.	Bolt Diam. mm		
87 20 01	25	170	95	75	4	M10	178	5.8
02	40	190	115	90	4	M12	211	8.2
03	40	190	120	95	4	M12	211	8.4
04	50	200	130	105	4	M12	258	11.4
05	65	250	155	130	4	M12	314	18.5
87 20 06	80	270	180	145	4	M16	335	25.4
07	100	320	200	165	8	M16	391	35.7
08	131	400	235	200	8	M16	480	52.4
09	156	460	265	230	8	M16	573	71.6
10	200	550	320	280	8	M20	600	95
87 20 11	250	680	385	345	12	M20	725	150
12	300	760	430	390	12	M20	820	185
13	350	820	480	435	12	M22	920	245
14	400	880	540	495	16	M22	1,010	290
15	450	1,040	605	555	16	M22	1,230	440
87 20 16	500	1,130	655	605	20	M22	1,320	530
17	550	1,220	720	665	20	M24	1,380	720
18	600	1,310	770	715	20	M24	1,455	830
19	650	1,410	825	770	24	M24	1,514	1,150
20	700	1,500	875	820	24	M24	1,574	1,200
87 20 35	750	1,600	945	880	24	M30	1,630	1,390
36	800	1,700	995	930	24	M30	1,900	1,690

Filter Elements

for Marine Can Water Filter

Suitable for use with marine can water filter based on JIS F-7121 specification.

Made of stainless steel with light weight and tough structure.



Unit Per Pc.

CODE	Model	Size mm				Weight kgs
		d	D1	D2	H1	
87 20 21	SWSII-FC-S-C- 25	33	50	68	109.1	0.17
22	SWSII-FC-S-C- 32	47	65	84	137	0.24
23	SWSII-FC-S-C- 40	47	65	84	137	0.28
24	SWSII-FC-S-C- 50	62	75	94	172	0.28
25	SWSII-FC-S-C- 65	78	100	125	218	0.42
87 20 26	SWSII-FC-S-C- 80	91	110	140	226	0.69
27	SWSII-FC-S-C-100	116	130	160	282	1.56
28	SWSII-FC-S-C-125	141	162	195	319	1.77
29	SWSII-FC-S-C-150	167	200	235	371	2.19
30	SWSII-SS-S-C-200	217	250	347	350	2.0
87 20 31	SWSII-SS-S-C-250	269	330	390	505	4.0
32	SWSII-SS-S-C-300	320	380	440	581	6.0
33	SWSII-SS-S-C-350	359	420	485	709	8.0
34	SWSII-SS-S-C-400	410	471	535	755	9.5
37	SWSII-SS-S-C-450	461	562	637	861	14.0
87 20 38	SWSII-SS-S-C-500	514	625	700	927	18.0
39	SWSII-SS-S-C-550	566	689	780	980	21.0
40	SWSII-SS-S-C-600	617	753	845	1,033	25.0
41	SWSII-SS-S-C-650	667	816	910	1,074	31.0
42	SWSII-SS-S-C-700	719	882	980	1,134	40.0
87 20 43	SWSII-SS-S-C-750	770	941	1,040	1,170	47.0
44	SWSII-SS-S-C-800	820	1,008	1,110	1,482	67.0

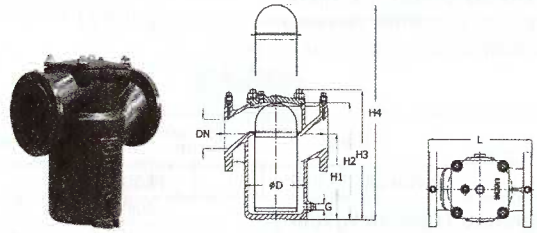
Name of Mfr. : Niikura Corporation

DIN Strainers

Strainers (DIN)

Single Basket, DIN Flanges PN10/16 Ductile Cast Iron

Simplex Basket Strainer for general use. Fitted with a fluid drain plug and suitable for use in horizontal pipe lines only. Ductile Cast Iron body with epoxy coating treatment on the surface (internal and external). Maximum differential pressure at 20°C is 1 bar.



Material specification

Component	Material	EN and/or (DIN)
Body and cover	Ductile cast iron	GJS-500-7(GGG-50)
Cover seal	NBR	
Drain plug	Stainless Steel	
Material bleed screw	Stainless steel	

How to order: CODE

Strainer (DIN), single, basket, Ductile cast iron, DIN flanges PN 10/16, SIZE DN

Unit Per Pc.

CODE	DN	L	D	H1	H2	H3	H4	G	Weiht Kgs
87 20 52	20	171	81	156	178	220	330	3/8"	6
53	25	171	81	156	178	220	330	3/8"	6
54	32	189	102	164	214	250	420	3/8"	15
55	40	189	102	164	214	250	420	3/8"	15
56	50	189	102	164	214	250	420	3/8"	15

(to be continued)

Unit Per Pc.

CODE	DN	L	D	H1	H2	H3	H4	G	Weiht Kgs
87 20 57	65	230	127	214	282	315	530	3/8"	25
58	80	279	168	235	313	350	610	3/8"	28
59	100	317	176	324	427	465	810	3/8"	42
60	125	379	222	324	452	510	900	3/8"	55
61	150	461	262	389	540	580	1,090	3/8"	75
87 20 62	200	605	322	489	694	745	1,340	3/8"	140
63	250	604	402	605	815	880	1,550	3/8"	195
64	300	719	472	730	974	1,035	1,860	3/8"	300

Econosto Model No. : 1096E

Mud Boxes

Cast Iron Mud Boxes(DIN)

Basket Type

Flat Flanged according to DIN PN 10

Mud boxes are installed in suction pipes aboard vessels to protect pumps against large solids. The standard perforation size of the strainer basket is 8 mm square; the cover is mounted with brass bow nuts. The cover is provided with a blind boss, suitable for mounting an air vent. These mud boxes are also used for application on shore, for example in swimming pool installations.

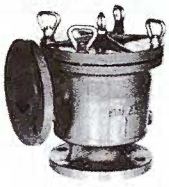
Material Specificatiom

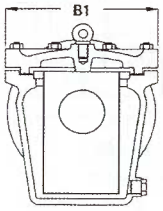
Component	Material	EN and/or (DIN)
Body and Cover	Cast Iron	GJL-250 (GG-25)
Cover Seal Ring	NBR	
Basket Strainer	Stainless Steel	X5CrNi 18-10
Bow Nut	Brass	
Drain Plug	Brass	

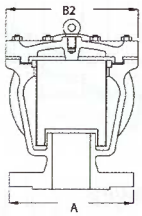
*Body and cover are internally and externally epoxy coated.

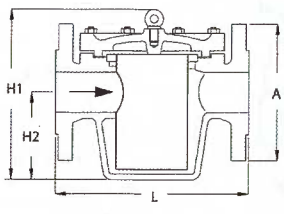
Pressure and Temperature Range

Pressure class : PN4 Temperature range : -10°C - -50°C

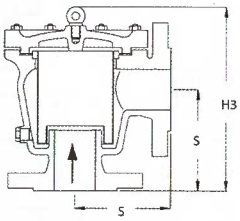








Straight



Angle

How to order: CODE

Mud box (DIN), basket type, cast iron, flat flanged according to DIN PN 10, STRAIGHT or ANGLE, SIZE DN

Straight

Features

- Connection: Flange
- Body material: Cast Iron
- Material quality: Cast iron GG 25
- Flange pressure rating: PN10
- Pressure rating: PN 4
- Filter element material: Stainless steel
- Surface treatment: Coated
- Right-angled model: No

Unit per Pc.

CODE	DN	Size mm					Weight kgs
		A	L	B_1	H_1	H_2	
87 20 65	40	150	200	130	208	95	12
66	50	165	230	160	220	106	18
67	65	185	290	197	260	136	23
68	80	200	310	215	299	155	33
69	100	220	350	255	343	191	39
87 20 70	125	250	400	291	406	230	63
71	150	285	480	340	462	265	91
73	200	340	600	472	580	335	149
74	250	395	600	472	605	345	240
84	300	445	700	542	705	395	245

Econosto Model No. : 1187N

Angle

Features

- Connection: Flange
- Body material: Cast Iron
- Material quality: Cast iron GG 25
- Flange pressure rating: PN10
- Pressure rating: PN 4
- Filter element material: Stainless steel
- Surface treatment: Coated
- Right-angled model: Yes

Unit per Pc.

CODE	DN	Size mm				Weight kgs
		A	B_2	H_3	S	
87 20 75	40	150	160	231	125	16
76	50	165	197	250	135	20
77	65	185	215	271	150	27
78	80	200	255	319	175	34
79	100	220	291	342	195	51
87 20 80	125	250	340	407	220	71
81	150	285	410	466	270	103
83	200	340	472	550	300	134
85	250	395	542	647	390	249
86	300	445	600	799	450	254

Econosto Model No. : 1188N

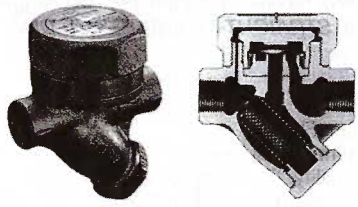
Steam Traps

Steam Traps

These steam traps automatically adjust themselves to operate at varying steam pressures, and feature a large condensate discharge capacity for such a compact design.

The small size of the traps means less heat and therefore energy is wasted by radiation. For protection against dirt and scale and to prolong trap service life, pipe strainers should be fitted on the inlet side of the trap. Among the wide variety of these traps in types and sizes, the most common types are described along with their specifications.

Thermodynamic Steam Trap



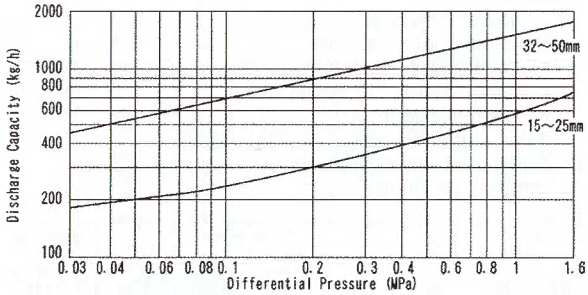
TLV A3N

Specifications

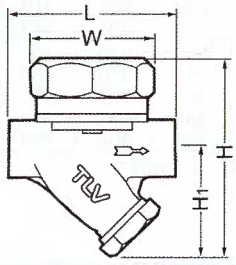
Operating Pressure		Maximum	1.6 MPaG
		Minimum	0.03 MPaG
Maximum Operating Temperature			220°C
Material	Size	15-25 mm	Malleable Cast Iron
		32-50 mm	Cast Iron
	Main Components		Stainless Steel
Connection	Screwed		Rc (PT)
	Flanged		JIS 10KFF/20KRF ASME/JPI Class 150RF/300RF

7TH 75

Discharge Capacity



Dimensions

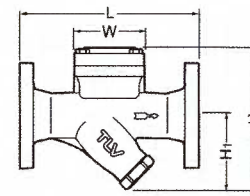


TLV A3N (Screwed)

A3N Screwed

Unit Per Pc.

CODE	Size mm (A)	Size Inch	L mm	H mm	H1 mm	W mm	Weight kgs
75 24 81	15	1/2	98	122	68	71	1.5
82	20	3/4	104	125	69		1.6
83	25	1	112	133	73		1.8
84	32	1-1/4	175	194	104	104	7.2
85	40	1-1/2	180	193	105		7.4
86	50	2	195	208	109		8.8



TLV AF3N (Flanged)

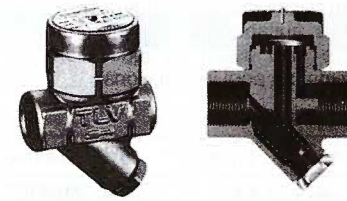
A3N Flanged

Unit Per Pc.

CODE	Size mm (A)	Size Inch	L mm	H mm	H1 mm	W mm	Weight kgs
75 24 91	15	1/2	175	120	67	71	3.5
92	20	3/4	195	125	71		4.3
93	25	1	215	131	73		5.7
94	32	1-1/4	245	194	104	104	11
95	40	1-1/2	260	198	106		13
96	50	2	265	208	109		13

* Weight is for JIS10KFF

Thermodynamic Steam Trap

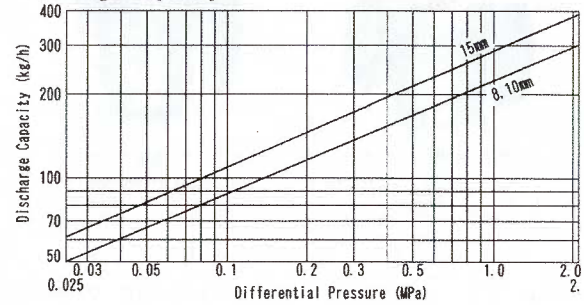


TLV P21S ver.C

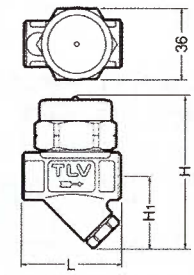
Specifications

Operating Pressure		Maximum	2.1 MPaG
		Minimum	0.25 MPaG
Maximum Operating Temperature			425°C
Material	Size	8-15 mm	Cast Stainless Steel
	Main Components		Stainless Steel
Connection	Screwed		Rc (PT)

Discharge Capacity



Dimensions

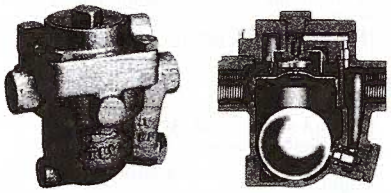


TLV P21S ver.C (Screwed)

P21S ver.C Screwed Unit Per Pc.

CODE	Size		L	H	H1	Weight
	mm (A)	Inch	mm	mm	mm	kgs
75 24 80	8	1/4	50	77	37	0.35
87	10	3/8				
88	15	1/2	68	82	39	0.46

Mechanical Steam Trap

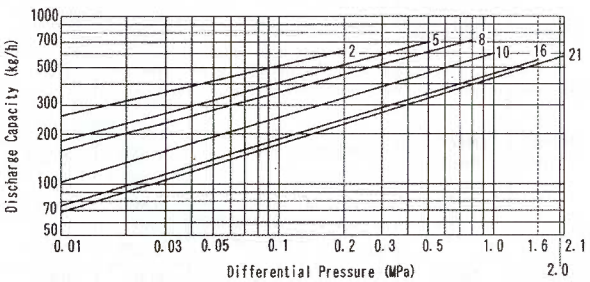


TLV J3X

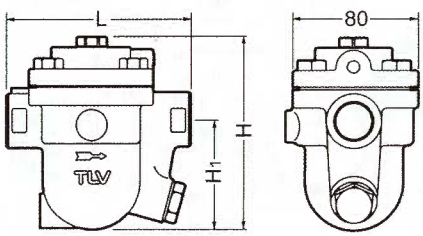
Specifications

Operating Pressure		Orifice No.	2, 5, 8, 10, 16, 21
		Maximum	0.2, 0.5, 0.8, 1.0, 1.6, 2.1 MPaG
		Minimum	0.01 MPaG
Maximum Operating Temperature			220°C
Material	Size	15-25 mm	Ductile Cast Iron /Cast Iron
Connection	Screwed		Rc (PT)
	Flanged		JIS 10KFF/20KRF ASME/JPI Class 150RF/300RF

Discharge Capacity



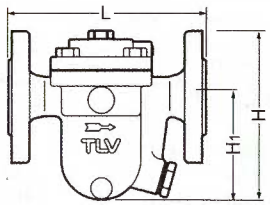
Dimensions



TLV J3X (Screwed)

J3X Screwed Unit Per Pc.

CODE	Size		L	H	H1	Weight
	mm (A)	Inch	mm	mm	mm	kgs
75 24 89	15	1/2	120	130	75	2.7
90	20	3/4			72.5	2.8
97	25	1		137	75	3.0



TLV JF3X (Flanged)

JF3X Flanged Unit Per Pc.

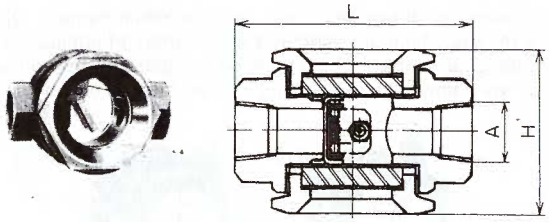
CODE	Size		L	H	H1	Weight
	mm (A)	Inch	mm	mm	mm	kgs
75 24 98	15	1/2	175	127	79	3.8
99	20	3/4	195	133	89	5.1
75 25 00	25	1	215	140	91	6.0

* Weight is for JIS10KFF

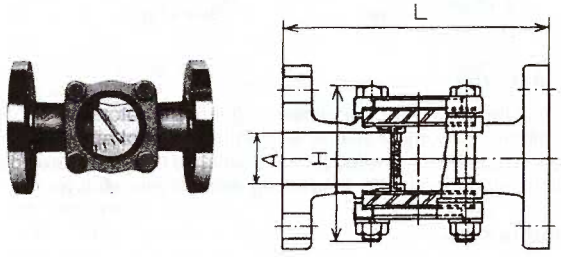
Flow Indicators

Flapper Type Sight Flow Indicators

Cast iron flow indicator used for the visual inspection of the level of liquid flow through pipes and valves. The indicator is comprised of a gravity loaded swing flap which is lifted when fluid flows through the line. Used in pipes where there is no back flow. Stainless steel indicators are also available upon request.



Screwed Type



Flanged Type

Standard Feature		
Maximum working pressure		10 kgf/cm^2
Maximum working temperature		150°C
Connection	Screw thread	PT
	Flange rating	JIS 10 kgf/cm^2

How to order: CODE

Flow indicator, flapper type, cast iron, SCREWED or FLANGED type, NOMINAL BORE

Unit Per Pc.

CODE	Size		Dimensions mm	
	mm(A)	Inch	L	H
Screwed Type				
75 25 01	8A	1/4	70	52
02	10A	3/8	70	52
03	15A	1/2	95	68
04	20A	3/4	100	73
05	25A	1	120	90
75 25 06	32A	1-1/4	140	110
07	40A	1-1/2	145	120
08	50A	2	160	135
Flanged Type				
75 25 11	15A	1/2	150	68
12	20A	3/4	150	73
13	25A	1	170	90
14	32A	1-1/4	200	110
15	40A	1-1/2	200	120
75 25 16	50A	2	220	135
17	65A	2-1/2	270	163
18	80A	3	270	176
19	100A	4	320	206
20	125A	5	380	250
75 25 21	150A	6	420	281
22	200A	8	500	343

Note : Max. working pressure for 150A = 7.5 kgf/cm^2
" for 200A = 4.5 kgf/cm^2

Oil Flowmeters

These oil flowmeters are positive displacement type flow meters which are used in a wide variety of applications including measuring of boiler fuel oil and diesel oil, as well as for transactions of kerosene, light oil and heavy oil.

Gear Type

Roots Type

Gear Type

This flowmeter employs a gear-type rotor for small-volume flow of low-viscosity oil in heat control applications, etc. It can be used without modification to measure kerosene, light oil, or heavy oil. Measuring accuracy is ±0.5 %.

Roots Type

This flowmeter is widely used for transaction and in other applications. The roots rotor rotates without physical contact, resulting in extremely low pressure loss. In addition, its accuracy remains virtually unchanged over a long period of time.

Standard Specifications

Accuracy	±0.5%
Max working pressure	10 kgf/cm^2
Hydraulic test pressure	20 kgf/cm^2
Max working temperature	50°C for kerosene and light oil, 100°C for heavy oil

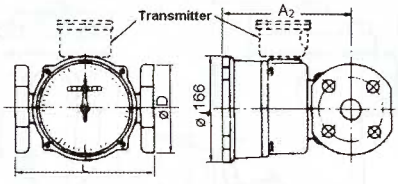
Flange rating		JIS 10 kgf/cm^2 FF
Material	Body	Cast Iron
	Rotor	Gear type : Bronze or phenol resin
		Roots type : Aluminium alloy casting
Counter unit		Integrating pointer and integrating counter (a reset counter is also available.)
Electrical transmitter unit	Transmitter	Reed switch (S) : Microswitch (M)
	Power supply	AC 100V 50/60Hz as standard
	Number of pulse	0 - 5 PPS
	Output signal	ON-OFF contact
	Transmission cable	2-core cabtyre cable
Flow direction		Right → Left

Specifications for each type-1

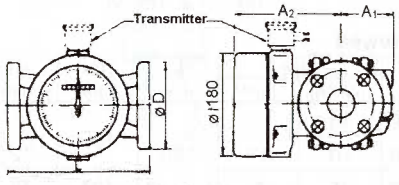
Type	Bore (mm)	Pointer (ltr / rev)	Integrating counter	
			Number of digits	Minimum unit (ltr)
Gear type	15	1	7	1
	20			
	25	10		10
Roots type	40	10	7	10
	50	10	7	10
	80	100	7	100

Specifications for each type-2

Type	Type of Transmitter	Flow range (ltr / h) (Accuracy : =0.5%)			
		Fluid		Kerosene. Light oil	A heavy oil
		Viscosity		1.2 - 3 cP	10 cP -
Gear type	Reed switch	Normal operation		10 - 200	5 - 200
				40 - 1,250	20 - 1,250
				150 - 3,000	50 - 3,000
Roots type	Micro switch	Normal operation	Intermittent	800 - 6,000	100 - 7,000
			Continuous	800 - 4,500	100 - 6,000
		Max.		7,000	8,000



Gear Type

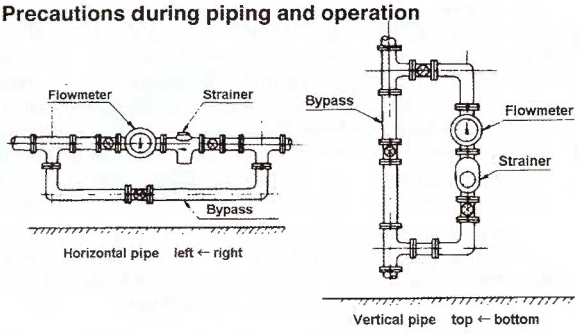


Roots Type

Dimension table

Type	Dimensions (mm)	Flange dimensions (mm)				Approx. weight (kgs)
		øD	L	A1	A2	
Gear type	15	95	130	-	181	6.0
	20	100	170	-	176	7.0
	25	125	200	-	187	10.0
Roots type	40	140	200	77	177	17.0
	50	155	250	99	190	20.0
	80	185	300	125	206	40.0

Precautions during piping and operation



Guide of how to order

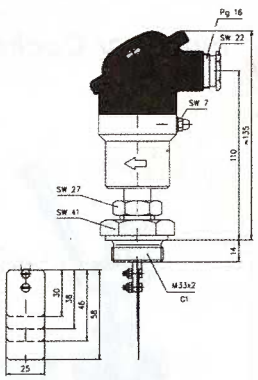
When ordering, please specify the following points,

How to order: 75 - 25 - 31

Flowmeter with the following information :

1. Type (Gear type or Roots type)
2. Fluid Name
3. Transmission Unit (In case of a flowmeter with transmitter)
4. Specify the following only when they deviate from the standard specifications.
   a. Flow direction
   b. Paint colour
   c. Power supply
   d. Cable connect standards
   e. Attachment for fitting counter unit by 45°

Paddle Type Liquid Flow Switches



For detecting the incoming flow or movement of the existing water or oil in the pipe, by utilizing the force of liquid flow to propel its paddle. Insert installation into pipe or T-pieces DN 25 to DN 50 or larger. Four paddles in different sizes included to be selected in accordance to the pipe size. Robust construction and vibration proof to 4g. Wide set point ranges and universally insertable. Setpoint adjustment by paddle size selection and by adjustment screw. Micro switch with high contact rating. Approved by German Lloyd, certificate no. 89 824-94 HH.

Technical Data

Max. pressure rating	: 6 bar	
Max. test pressure	: 10 bar	
Max. medium temperature	: 100°C	
Max. ambient temperature	: 85°C	
Change over contact, max. contact rating	: 24V DC,	8 A resistance load, 7 A inductive load
	60V DC	1 A resistance load, 0.5 A inductive load
	250V AC	10A resistance load, 10 A inductive load
Protection class	: IP 54	
Material	: Brass	

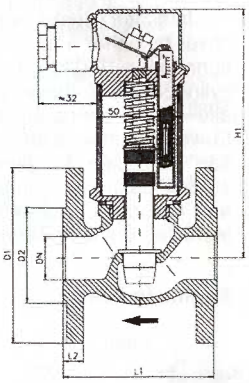
Unit Per Pc.

CODE	Size of Pipe	Target Plate mm	Set Point Ranges H_2O bis 2 Bar [m^3/h]*	
			ON	OFF
Thread Connection : 1" BSP Male (Code VH 500 NI)				
75 25 35	DN 25	25 x 30	1.10...1.25	1.05...1.20
36	DN 32	25 x 38	1.70...2.05	1.60...1.95
37	DN 40	25 x 46	2.20...2.55	2.10...2.45
38	DN 50	25 x 58	3.25...3.85	3.15...3.75
Thread Connection : M33 x 2 (Code VH 500 NM)				
75 25 41	DN 25	25 x 30	1.10...1.25	1.05...1.20
42	DN 32	25 x 38	1.70...2.05	1.60...1.95
43	DN 40	25 x 46	2.20...2.55	2.10...2.45
44	DN 50	25 x 58	3.25...3.85	3.15...3.75

Note: *) Higher set points selectable by use of smaller paddle sizes. Tolerance of the set point ranges: ± 15%, set points for bigger pipe sizes on request.

Name of Mfr. : SIKA

Piston Type Flow Switches



The piston type flow switch is installed on a standard valve body with internal thread connection. It is self-supporting and thus suitable for installation dimensions. Inline installation and end fittings are DN 15 ... DN 20 female thread, DN 25 ... DN 80 flange. The preferred installation position is vertically upright in horizontal pipelines. There is a flow direction arrow on the valve housing, which must always points in the flow direction. Approved by German Lloyd, Certificate No. 54 627 – 71 HH.

Thechnical Data

Pressure rating	: PN 16	
Max. medium temperature	: 100°C	
Change over contact	: 24 V DC ; 230 V AC	
Max. contact rating	0.5 A DC; 1 A AC	
	25 W: 36 VA	
PG - screwing	: M24 x 1.5 acc. to DIN 89280	
Protection class	: IP 44	
Hysteresis	: < 15 % of set point range	
Accuracy	: < 2 % of set point range	

Materials

Pipe section	: Gun metal RG5
Upper section	: Brass
Piston	: PPN Hostalen
Magnet	: Hand ferrite

Dimensions

Type	Dimensions mm				
	D1	D2	L1	L2	H1
VM 115	-	-	81	-	136
VM 120	-	-	81	-	136
VM 125	115	68	90	12	151
VM 132	140	78	95	13	161
VM 140	150	88	110	14	165
VM 150	165	102	125	14	165
VM 165	185	122	150	15	179
VM 180	200	138	170	16	185

Unit Per Pc.

7TH 75

CODE	Type	Pipe Size	Process Connection	Set Point ranges at decreasing flow, H_2O, 20°C [l/min]
75 25 51	VM 115	DN 15	G 1/2	2 ... 13
52	VM 120	DN 20	G 3/4	5 ... 28
53	VM 125	DN 25		15 ... 75
54	VM 132	DN 32		20 ... 125
55	VM 140	DN 40	Flange drilled in accordance to DIN 2527	30 ... 200
75 25 56	VM 150	DN 50		85 ... 280
57	VM 165	DN 65		65 ... 410
58	VM 180	DN 80		150 ... 550

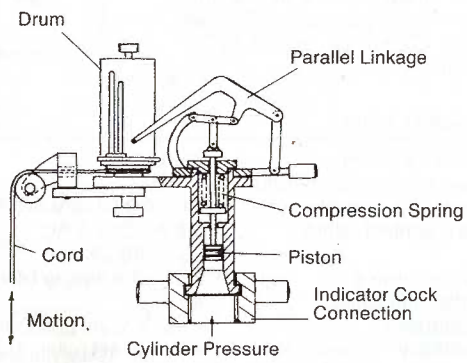
Name of Mfr. : SIKA

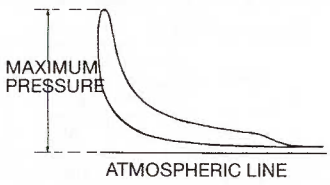
Indicator Cocks

Indicator Cocks

Indicator cocks are mounted directly on a cylinder cover by either a flanged connection (Sulzer) or a screwed connection (B+W). They are used to control the flow of cylinder gas to the engine indicator (2-way) and may also allow atmospheric pressure to act on the engine indicator (3-way) when measuring an engine cycle. Various readings can be taken to allow the engine operator to obtain engine balance, cylinder MIP (Mean Indicated Pressure) and cylinder power or to detect operating faults such as inefficiencies in fuel combustion.

Engine Indicator





Engine indicators display the change in cylinder gas pressure during each cycle of the diesel engine. This is achieved by connecting a piston/ cylinder assembly to the indicator cock and allowing the cylinder gas pressure to act on the piston. Movement of the piston by as pressure is opposed by a spring. The piston movement is magnified by the linkage to which a pen is attached. The pen will mark out a trace of the gas pressure variation on a card mounted on an oscillating drum driven from the camshaft.

The trace of gas pressure is recorded on pressure/ volume axes. The trace produced is an indication of work done per cycle. This can be converted into cylinder MIP and then into cylinder power. Distortion of the power card may indicate advanced/retarded injection timing and excessive after burning. A compression diagram is taken with fuel shut off from the cylinder shows maximum compression pressure and will detect low pressure caused by a worn cylinder liner, faulty piston rings, insufficient scavenge air, or a leaky exhaust valve, anything that would cause poor combustion.

Replacing standard "heavy" spring by a "light" spring allows the gas pressure variation during the scavenging process to be analysed. This allows early detection of fouled scavenge parts and a fouled exhaust system.

- early ignition
- late ignition
- after burning
- a leaking fuel injector
- a partly choked fuel valve
- an exhaust valve opening
- a choked exhaust
- worn cylinder liner
- faulty piston rings

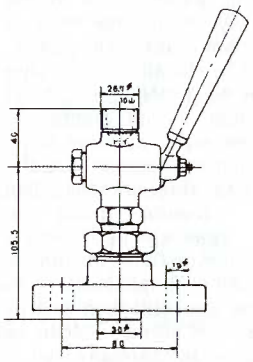
Sleeve Packed Indicator Cocks for Diesel Engines

Forged Steel

Designed to withstand high pressure gases. When ordering, please specify the following:

1. The type of diesel engine
2. Manufacturer
3. Threaded or flange size on the engine cylinder

Indicator Cocks for Sulzer Type



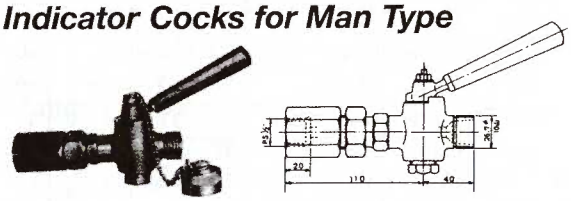
For URAGA Sulzer For MHI Sulzer For IHI Sulzer

The engine types of different manufacturers require different types of joints for the indicator cocks. Specify DIESEL ENGINE MAKER – TYPE OF ENGINE out of specified joints as shown.

How to order: 75 - 26 - 01

Indicator cock for Sulzer type, MANUFACTURER'S NAME and TYPE of ENGINE

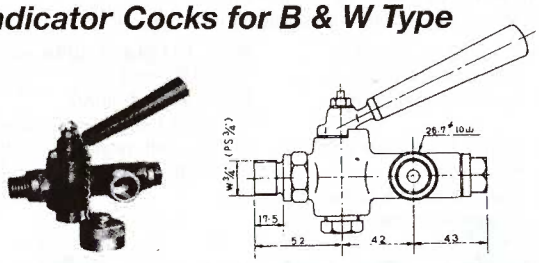
Indicator Cocks for Man Type



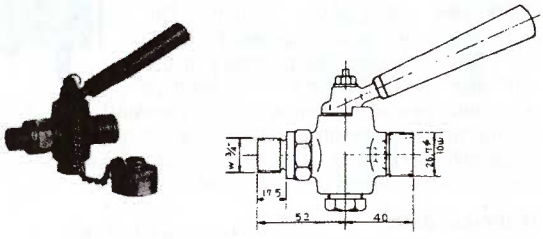
How to order: 75 - 26 - 06

Indicator cock for Man type, MANUFACTURER'S NAME and TYPE of ENGINE

Indicator Cocks for B & W Type



For Main Engine



For Auxiliary Engine

How to order: 75 - 26 - 11

Indicator cock for B & W type, MANUFACTURER'S NAME and TYPE of ENGINE

Spare Parts for Indicator Cocks

When ordering, specify diesel engine maker, type of engine, and cylinder bore.

Collar or Cover Bush Spindle Sleeve Packing Tightening Nut

75 26 16	Collar bush for indicator cock	Pc.
17	Spindle for indicator cock	Pc.
18	Tightening nut for indicator cock	Pc.

Engine Indicator Valves

The connection between the engine and the indicator for accurate measurement.

Images	Specifications
1715 Long	- Divided spindle - 3/4" connection for SKL engine - Option with thread cup - Height: 148 mm
1715	- With divided spindle - All connection thread customer wish - Option with thread cup - Height: 128 mm - Angle: 45°
1715/1	- Swinging, divided spindle - All connection thread customer wish - Option with thread cup - Height: 128 mm - Angle: 45°
1720	- Divided spindle - Corner Valve - All connection thread customer wish - Option with thread cup - Height: 116 mm
1725	- All connection thread customer wish - Option with thread cup - Height: 116 mm

Unit Per Pc.

CODE	Type	Max. Working Pressure	CODE	Type	Max. Working Pressure
75 26 21	1715 Long	250 bar	**75 26 24**	1720	250 bar
22	1715		**25**	1725	250 bar
23	1715/1				

Name of Mfr. : Baewert GmbH

Sleeve Packing
for Diesel Engine Indicator Cocks

Made of pressed non-asbestos joint sheets heat resisting. When ordering, specify packing size, if not, inner and outer diameters as well as height.

Unit Per Pc.

CODE	No.	Size mm ID x OD x H	CODE	Type	Size mm ID x OD x H
75 26 51	AB-12	12 x 18 x 22	**75 26 56**	AB-32H	32 x 45 x 84
52	18	18 x 26 x 32	**57**	40	45 x 58 x 94
53	22	22 x 33 x 37	**58**	50	50 x 70 x 106
54	28	28 x 38 x 54	**59**	70	70 x 94 x 134
55	32	32 x 45 x 74			

Sleeve Packing Replacing Instruments

2 pcs in a set. One is for extracting and another is for inserting sleeve packings.

75 26 71	Sleeve packing replacing instrument	Set

Automatic Controls for Refrigerant

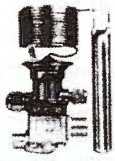
Thermostatic Expansion Valves

Thermostatic expansion valves regulate the injection of refrigerant liquid into evaporators. Injection is controlled by the superheat of the refrigerant.

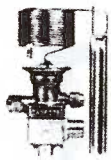
Maximum operating pressure points

Refrigerant	-40 to -5°C	-40 to -15°C	-60 to -25°C -55 to -25°C
	MOP point in evaporating temperature		
	app.- 0°C	app.-10°C	app.-20°C
R134a	3.1 bar (0.31 MPa)	2.1 bar (0.21 MPa)	-
R22	5.2 bar (0.52 MPa)	3.5 bar (0.35 MPa)	2.4 bar (2.4 MPa)
R502	5.9 bar (0.59 MPa)	4.2 bar (0.42 MPa)	3.1 bar (0.31 MPa)

T5
Flare, angleway



TE5
Solder, straightway



TE5
Solder, angleway

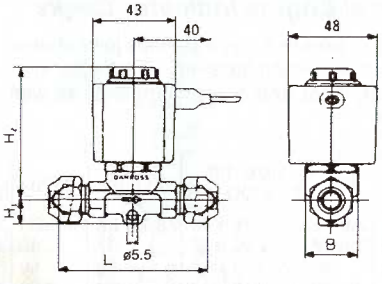
Guide of How to order

How to order: 75 - 27 - 01

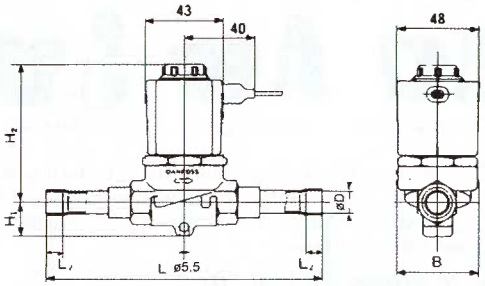
Thermostatic expansion valve, with the following information :

1. Kind of refrigerant ..... R-134a, R-22, etc.
2. Maximum operating pressure ..... bar (MPa)
3. Rated capacity ..... kW (kcal/h)
4. Type of pressure equalization ..... Internal, or external
5. Required type of valve connector ..... Flare (Angleway) or solder connections (straight way, or angle way)
6. Size of connection (inlet and outlet) ..... 1/4" x 1/2", 3/8" x 1/2", etc.
7. Length of capillary ..... 1.5 mtr, 3 mtr, etc.
8. Manufacturer's name .....
9. Type and model name .....

Solenoid Valves



Flare Connection



Solder Connection

Connection		Attachment (with)	Dimensions mm				
Size	Type		H_1	H_2	L	L_2	B
1/4 6.35 mm	Flare	Strainer	13	72	82	-	30
	Solder	Copper tube	13	72	174	7	30
3/8 9.52 mm	Flare	Strainer	13	72	81	-	30
	Solder	Copper tube	13	72	184	9	30
3/8 9.52 mm	Flare	Strainer	17	75	86	-	35
	Solder	Copper tube	17	75	187	9	35
1/2 12.7 mm	Flare	Strainer	18	77	106	-	52
	Solder	Copper tube	18	77	210	10	52

Guide of How to order

How to order: 75 - 28 - 01

Solenoid valve, with the following information:

1. Kind of refrigerant ..... R-22, R-134a, R-404A, etc.
2. Size of connection ..... 1/4", 3/8", or 1/2"
3. Type of connection ..... Flare (with strainer), or solder (with copper tube)
4. Power source voltage ..... AC 110 volt, or AC 220 volt
5. Frequency ..... 50 or 60 Hz
6. Manufacturer's name .....
7. Type and model name .....

Pressure Controls

A pressure control contains a single-pole changeover switch. The position of the contacts depends on the set scale value and the pressure in the inlet connection. This control is used as protection against too low a suction pressure or too high a discharge pressure on compressors for refrigeration and air conditioning plants. Also used for starting and stopping refrigeration compressors and condenser fans.

Technical data

Permissible ambient temperature
–40 to +65°C (+80°C for max. 2 hours).

DIN-approved units :
–25 to +65°C (+80°C for max. 2 hours).

Max. working pressure
LP: PB = 17 bar / 1.7 MPa
MWP = 245 psig
HP: PB = 30 bar / 3 MPa
MWP = 435 psig

Max. test pressure
LP: p' = 20 bar/290 psig
HP: p' = 33 bar/480 psig

Contact load
Alternating current:
AC 1 : 16A, 400V
AC 3 : 16A, 400V
AC 15 : 10A, 400V

Direct current :
DC13 : 12W, 220V control current

Max. starting current (L.R.) : 112 A, 400V

Pressure	Reset		Low pressure		High pressure	
	Low pressure	High pressure	Regulating range bar	Differential p bar	Regulating range bar	Differential p bar
Low	aut.		-0.2 to 7.5	0.7 to 4		
	man.		-0.9 to 7	fixed 0.7		
	aut.		-0.2 to 5	0.4 to 1.5		
High		aut.			8 to 28	1.8 to 6
		man.			8 to 28	fixed 3
Dual	aut.	aut.	-0.2 to 7.5	0.7 to 4	8 to 28	fixed 4
	aut.	man.	-0.2 to 7.5	0.7 to 4	8 to 28	fixed 4
	man.	man.	-0.9 to 7	fixed 0.7	8 to 28	fixed 4
	aut.	aut.	-0.2 to 7.5	0.7 to 4	8 to 28	fixed 4
	aut.	man.	-0.2 to 7.5	0.7 to 4	8 to 28	fixed 4

Guide of How to order

How to order: 75 - 29 - 01

Pressure control, with the following information:

1. Kind of refrigerant ..... R-22, R-134a, etc.
2. Regulating range of pressure ..... Low, high, or dual (low & high)
3. Actual regulating range of pressure..... bar (MPa)
4. Reset system..... Automatic, or manual
5. Size of connection ..... 1/4"
6. Coil voltage.....
7. Frequency.....
8. Manufacturer's name.....
9. Type and model name.....

Thermostats

A thermostat contains a single-pole changeover switch. The position of the contacts depends on the set scale value and the temperature of the sensor. This thermostat can be connected directly to single-phase alternating current motors up to 2 kW or inserted in the control circuit of direct current motors and larger alternating current motors.

Ambient temperature
–40 to +65°C (+80°C for max. 2 hours).

Switch
Single pole changeover switch

Contact load
Alternating current:
AC 1 : 16A, 400V
AC 3 : 16A, 400V
AC 15 : 10A, 400V
Max. starting current (L.R.) : 112 A, 400V

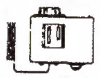
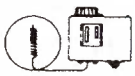
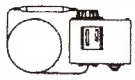
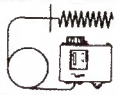
Direct current :
DC13: 12 W, 220 V control current

Cable connection
Cable entry for cables 6 to 14 mm dia.

A Pg 13.5 screwed cable entry can be used for 6 to 14 mm dia. cables.

With 8 to 16 mm cables a standard Pg 16 screwed cable entry can be used.

Thermostat Bulb Types

A		Straight capillary tube
B		ø9.5 x 70 mm remote air coil
C		C1 : ø40 x 25 mm air coil C2 : ø25 x 67 mm air coil (integral with thermostat)
D		D1 : ø10 x 70 mm double contact remote bulb D2 : ø16.5 x 160 mm double contact remote bulb
E		E1 : ø6.4 x 85 mm remote bulb E2 : ø9.5 x 100 mm remote bulb E3 : ø9.5 x 70 mm remote bulb
F		ø25 x 125 mm remote duct coil

Charging System	Bulb type	Setting range °C	Differential at lowest temp. setting °C	Differential at highest temp. setting °C	Reset	Max. bulb temp. °C	Capillary tube length m
Vapour	A	–30 - 15	4 - 15	1.5 - 7	aut.	120	2
	A	–30 - 15	4 - 15	1.5 - 7	aut.	120	5
	B	–30 - 13	3.5 - 14	1.2 - 5	aut.	120	2
	B	–30 - 15	4 - 15	1.5 - 7	aut.	120	2
	B	–30 - 15	4 - 15	1.5 - 7	aut.	120	2
	A	–30 - 15	fix 5	fix 3	min.	120	5
	B	–30 - 15	fix 5	fix 3	min.	120	2
	C1	–30 - 15	4 - 15	1.5 - 7	aut.	120	
	A	–50 - -10	7 - 20	2.8 - 12	aut.	120	2
	B	–50 - -10	7 - 20	2.8 - 12	aut.	120	2
	C1	–5 - 35	4 - 16	2 - 8	aut.	120	
	B	–5 - 35	4 - 16	2 - 8	aut.	120	2

Charging System	Bulb type	Setting range °C	Differential at lowest temp. setting °C	Differential at highest temp. setting °C	Reset	Max. bulb temp. °C	Capillary tube length m
Adsorption	E2	–5 - 20	2 - 10	2 - 10	aut.	80	2
	E2	–5 - 20	fix 3	fix 3	min.	80	2
	C2	–30 - 15	4 - 12	2 - 7	aut.	80	
	D2	–20 - 15	1.7 - 8	1.7 - 8	aut.	80	3
	D1	–25 - 15	2.5 - 20	2.5 - 20	aut.	80	2
	E1	–25 - 15	10 - 25	10 - 25	aut.	80	2
	E1	–25 - 15	10 - 25	10 - 25	aut.	80	5
	D1	–25 - 15	2.5 - 8	2.5 - 8	aut.	80	2
	D1	–25 - 15	fix 3.5	fix 3.5	min.	80	2
	F	0 - 35	2.5 - 10	2.5 - 10	aut.	110	2
	E3	0 - 35	2.5 - 10	2.5 - 10	aut.	110	2
	E3	20 - 60	3.5 - 10	3.5 - 10	aut.	140	2
	E3	20 - 60	3.5 - 10	3.5 - 10	aut.	140	3
	E3	50 - 100	5 - 15	5 - 15	aut.	150	2

(to be continued)

Charging System	Bulb type	Setting range °C	Differential at lowest temp. setting °C	Differential at highest temp. setting °C	Reset	Max. bulb temp. °C	Capillary tube length m
Adsorption	E3	80 - 150	7 - 20	7 - 20	aut.	200	2
	E3	80 - 150	fix 8	fix 8	max.	200	2
	E2	OIL:60 - 120	OIL:fix 14	OIL:fix 14	max.	150	1
	E2	HT:100 - 180	HT:fix 25	HT:fix 25	max.	250	2
	E2	OIL:0 - 30	OIL:fix 12	OIL:fix 12	aut.	100	1
	E2	HT:100 - 180	HT:fix 25	HT:fix 25	max.	250	2

Guide of How to order:

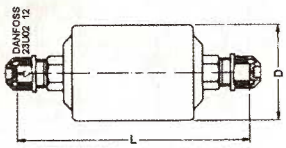
How to order: 75 - 30 - 01

Thermostat, with the following information:

1. Charging system..... Vapour, or absorption
2. Setting range of temperature..... C to C
3. Type of bulb ..... A, B, etc.
4. System of reset..... Automatic, minimum, or maximum
5. Length of capillary tube ..... mtr
6. Coil voltage.....
7. Frequency.....
8. Manufacturer's name.....
9. Type and model name .....

7TH
75

Filter Driers with Solid Core



Filter driers with a solid core are for use in liquid lines in refrigeration and air conditioning plants for fluorinated refrigerants.

An effective protection against moisture and acid in the refrigeration plant. Filter driers contain an optimum mixture of silicagel, Molecular Sieves and activated aluminium.

Filter driers ensure the greatest possible retention of impurities from the refrigeration plant, and are fitted with a new type of solid core composed of grains of uniform and optimum size.

Designed and dimensioned so that they produce only a slight pressure drop, and prevent capacity reduction because of flash-gas in the liquid line.

Max working pressure PB/M WP	Liquid capacity in kW. on pressure drop Δp = 0.7 bar			Drying capacity in gH_2O at 24°C			Connection in.	Dimensions mm		Weight kgs
	R22	R134a	R404A	R22	R134a	R404A		L1	øD	
35 bar / 3.5MPa	7.0	6.5	4.5	5.0	5.5	8.5	1/4	105	52	0.22
	19.0	17.0	12.5				3/8	113	52	0.25
	7.5	7.0	7.0	6.0	6.5	10.5	1/4	114	52	0.24
	19.0	17.5	14.0				3/8	127	52	0.27
35 bar / 3.5MPa	7.5	7.0	5.0	9.5	10.0	16.0	1/4	140	52	0.38
	21.0	19.0	14.0				3/8	153	52	0.41
	28.5	26.0	19.5				1/2	161	52	0.46
35 bar / 3.5MPa	7.5	7.0	5.0	21.5	23.5	36.5	1/4	154	74	0.71
	23.5	21.5	15.5				3/8	167	74	0.74
	32.5	29.5	21.5				1/2	175	74	0.79
	47.0	42.5	30.0				5/8	184	74	0.84
35 bar / 3.5MPa	23.0	21.0	15.0	44.0	47.0	76.5	3/8	243	74	0.99
	33.5	30.5	22.0				1/2	251	74	1.04
	49.0	44.5	32.5				5/8	261	74	1.08

Guide of How to Order

How to order : 75 - 31 - 01

Filter drier with solid core, with the following information:

1. Kind of refrigerant..... R-22, R-134a, or R-404A
2. Maximum working pressure..... bar (MPa)
3. Drying capacity ..... grm
4. Size of connection ..... 1/4", 3/8", 1/2" or 5/8"
5. Manufacturer's name.....
6. Type and model name .....

Pressure Regulators

Condensing pressure regulator :

Used to maintain a constant and sufficiently high condenser – and receiver pressure in refrigeration and air conditioning plants with air-cooled condensers.

Evaporating pressure regulator :

To be mounted in the suction line after the evaporator. Used to maintain a constant evaporating pressure and thereby a constant surface temperature on the evaporator. Also, regulators protect against too low an evaporating pressure. The regulator closes when the pressure in the evaporator falls below the set value.

Crankshaft pressure regulator :

To be fitted in the suction line ahead of the compressor. Protects the compressor motor against overload during start-up after long standstill periods or after defrost periods.

Condensing Pressure Regulator

Evaporating Pressure Regulator

Crankcase Pressure Regulator

Guide of How to order:

How to order : 75 - 32 - 01

Pressure regulator, TYPE, with the following information:

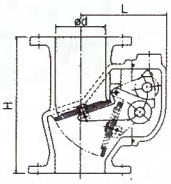
1. Kind of refrigerant..... R-22, R-134a, or R-404A
2. Regulation pressure range ..... bar (MPa)
3. Maximum temperature..... °C
4. Maximum working pressure..... bar(Mpa)
5. Manufacturer's name.....
6. Type and model name .....

Storm Valves

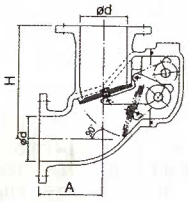
Storm Valves

Non-return valve for scupper, soil and sanitary discharge lines. Available 3 types of flange fitting. When ordering please specify type of flange fitting as listed below, and also please specify if the screw-down closing handle is required.

JIS 5K – F3060
Storm Valve Standard Ductile Cast Iron



Vertical Type Standard

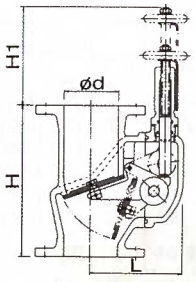


Angle Type Standard

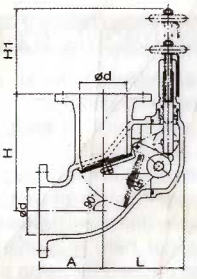
Unit Per Pc.

CODE	Model	Dimensions mm ød	H	L	A
Vertical Type, Standard					
75 42 01	SV II-FCD- 50	50	210	130	
02	SV II-FCD- 65	65	240	140	
03	SV II-FCD- 80	80	260	155	-
04	SV II-FCD-100	100	280	170	
05	SV II-FCD-125	125	330	185	
75 42 06	SV II-FCD-150	150	360	205	-
31	SV II-FCD-200	200	450	257	
Angle Type, Standard					
75 42 07	SV II-FCD-A- 50	50	170		90
08	SV II-FCD-A- 65	65	200		110
09	SV II-FCD-A- 80	80	220	-	120
10	SV II-FCD-A-100	100	250		130
11	SV II-FCD-A-125	125	270		150
75 42 12	SV II-FCD-A-150	150	310	-	165
32	SV II-FCD-A-200	200	400		190

Storm Valve with Handle, Ductile Cast Iron



Vertical Type with Handle



Angle Type with Handle

Unit Per Pc.

CODE	Model	Dimensions mm ød	H	L	A	H1
Vertical Type with Handle						
75 42 41	SV II-FCD-RMH- 50	50	210	130		180
42	SV II-FCD-RMH- 65	65	240	140		182
43	SV II-FCD-RMH- 80	80	260	155	-	170
44	SV II-FCD-RMH- 100	100	280	170		166
45	SV II-FCD-RMH- 125	125	330	185		190
75 42 46	SV II-FCD-RMH- 150	150	360	205	-	185
47	SV II-FCD-RMH- 200	200	450	257		239
Angle Type with Handle						
75 42 51	SV II-FCD-A-RMH- 50	50	170	130	90	180
52	SV II-FCD-A-RMH- 65	65	200	140	110	182
53	SV II-FCD-A-RMH- 80	80	220	155	120	170
54	SV II-FCD-A-RMH- 100	100	250	170	130	166
55	SV II-FCD-A-RMH- 125	125	270	185	150	190
75 42 56	SV II-FCD-A-RMH- 150	150	310	205	165	185
57	SV II-FCD-A-RMH- 200	200	400	257	190	239

7TH
75

Storm Valves with handle
Cast Steel, JIS 10 Kgs Type
AA 730/AA 740

Vertical Type

Angle Type

Vertical Type

Unit Per Pc.

CODE	Nom. Size mm	Dimensions mm Flange Diam	Face to Face	Pitch	Hole dia x No.	Item No.
75 42 29	50	155	210	120	19 x 4	AA730050
30	65	175	240	140	19 x 4	AA730065
40	80	185	260	150	19 x 8	AA730080
48	100	210	280	175	19 x 8	AA730100
49	125	250	330	210	23 x 8	AA730125
75 42 50	150	280	360	240	23 x 8	AA730150
58	200	330	450	290	23 x 12	AA730200

Name of Mfr. : Alligator

Angle Type

Unit Per Pc.

CODE	Nom. Size mm	Dimensions mm Flange Diam	Face to Face	Pitch	Hole dia x No.	Item No.
75 42 59	50	155	130	120	19 x 4	AA740050
60	65	175	140	140	19 x 4	AA740065
83	80	185	155	150	19 x 8	AA740080
84	100	210	170	175	19 x 8	AA740100
97	125	250	185	210	23 x 8	AA740125
75 42 98	150	280	205	240	23 x 8	AA740150
99	200	330	257	290	23 x 12	AA740200

Name of Mfr. : Alligator

Storm Valves (DIN)
Ductile Cast Iron
According to DIN-HNA Type
Flat Faced Flanged Ends to DIN PN 10

Storm valves are mainly installed in sanitary piping systems which have a ship's side exit. They will prevent sea

water entering this system during heavy sea. Model 1205 and 1208 can be equipped with a locking device in order to obtain model 1207 and 1209.

Maximum Operating Pressure
Strength tested at pressure 10 bar.

Material Specificatiom

Component	Material	EN and/or (DIN)
Disc Sealing Ring (Seawater resistant)	Rubber	
Disc	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Cover	Ductile cast iron	GJS-400-15 (GGG-40)
Body	Ductile cast iron	GJS-400-15 (GGG-40)

Model 1205: Angle, without Locking Device

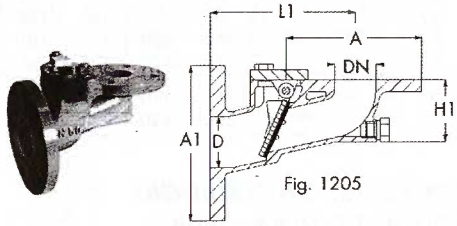


Fig. 1205

How to order: CODE

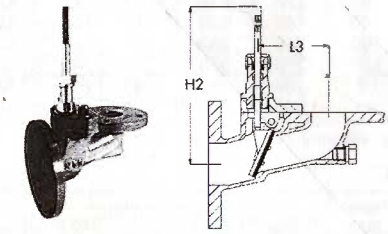
Storm valve (DIN), ductile cast iron, according to DIN-HNA type, flat faced flanged ends to DIN PN 10, angle, without locking device, SIZE DN

Unit Per Pc.

CODE	DN	Size mm						Weight kgs
		D	A	A1	L1	H1	Lift Height	
75 42 71	50	68	165	200	180	90	30	10.5
72	65	85	185	220	200	99	41	12.5
73	80	100	200	250	215	108	47	16.5
74	100	130	220	285	250	130	44	25.5
75	125	158	250	315	290	152	73	35.0
75 42 76	150	190	285	340	330	176	65	46.5

Econosto Model No. : 1205

Model 1207 : Angle, with Locking Device



How to order: CODE

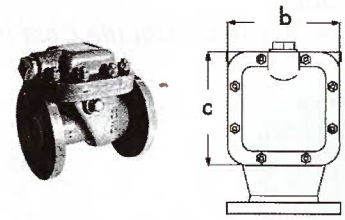
Storm valve (DIN), ductile cast iron, according to DIN-HNA type, flat faced flanged ends to DIN PN 10, angle, with locking device, SIZE DN

Unit Per Pc.

CODE	DN	Size mm						Weight kgs
		D	A1	L3	H1	H2	Lift Height	
75 42 77	50	68	200	106	90	333	30	12.0
78	65	85	220	118	99	341	41	14.0
79	80	100	250	135	108	352	47	18.0
80	100	130	285	154	130	413	44	27.0
81	125	158	315	188	152	438	73	37.0
75 42 82	150	190	340	210	176	465	65	49.0

Econosto Model No. : 1207

Model 1208 : Straight, without Locking Device



How to order: CODE

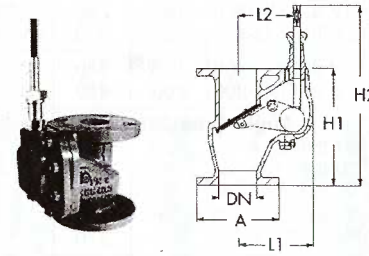
Storm valve (DIN), ductile cast iron, according to DIN-HNA type, flat faced flanged ends to DIN PN 10, straight, without locking device, SIZE DN

Unit Per Pc.

CODE	DN	Size mm						Weight kgs
		A	b	c	L1	H1	Lift Height	
75 42 85	50	165	160	165	137	200	55	15
86	65	185	180	175	148	240	55	19
87	80	200	195	190	174	260	55	27
88	100	220	220	205	195	300	42	36
89	125	250	270	240	216	350	58	54
75 42 90	150	285	300	255	242	400	77	65

Econosto Model No. : 1208

Model 1209 : Straight, with Locking Device



How to order: CODE

Storm valve (DIN), ductile cast iron, according to DIN-HNA type, flat faced flanged ends to DIN PN 10, straight, with locking device, SIZE DN

Unit Per Pc.

CODE	DN	Size mm						Weight kgs
		A	L1	L2	H1	H2	Lift Height	
75 42 91	50	165	137	110	200	369	55	17
92	65	185	148	120	240	407	55	21
93	80	200	174	139	260	418	55	29
94	100	220	195	154	300	508	42	38
95	125	250	216	175	350	541	58	56
75 42 96	150	285	242	195	400	583	77	67

Econosto Model No. : 1209

DIN Standard Valves

The following table are a cross comparison from JIS(Japan Industrial Standard) to DIN(Deutsche Industrie-Norm),and from DIN to JIS for your reference purpose.The tables are classified according to similar material,working pressure and general design.However as you understand,the basic specification of material, dimensions and flanges are essentially defferent between JIS standard and DIN standard. We are not held responsible for any possible accident or damage caused by using these tables.

Comparison List
JIS to equivalent design DIN Valves

Globe Valves

Material & W.P.	Type	JIS No.	Nom. Size	CODE	DIN Model	CODE	Flanged to	DN
Bronze 16 kgf/cm² Flanged	Straight	F-7303	15-40mm	**75 01 41 - 45**	275 1270	**75 51 21 - 29** **75 51 61 - 75**	PN 16 PN 6/10/16	15-100mm 15-300mm
	Angle	F-7304	15-40mm	**75 01 51 - 55**	276 1271	**75 51 31 - 38** **75 51 76 - 90**	PN 16 PN 6/10/16	15-80mm 15-300mm
Cast Iron 16 kgf/cm² Flanged	Straight	F-7309	50-200mm	**75 02 61 - 67**	241 268 263	**75 52 31 - 45** **75 52 61 - 75** **75 54 01 - 14**	PN 10/16 PN 10/16 PN 10/16	15-300mm 15-300mm 15-250mm
	Angle	F-7310	50-200mm	**75 02 71 - 77**	242 269 264	**75 52 46 - 60** **75 52 76 - 90** **75 54 16 - 29**	PN 10/16 PN 10/16 PN 10/16	15-300mm 15-300mm 15-250mm
Cast Steel 20 kgf/cm² Flanged	Straight	F-7313	32-250mm	**75 04 31 - 40**	398	**75 53 01 - 11** **75 51 94 - 99**	PN 10/16	15-400mm
	Angle	F-7314	32-250mm	**75 04 41 - 50**	399	**75 53 15 - 25** **75 52 94 - 99**	PN 10/16	15-400mm
Cast Steel 40 kgf/cm² Flanged	Straight	F-7317	32-150mm	**75 04 71 - 78**	417	**75 53 26 - 40**	PN 25/40	15-300mm
	Angle	F-7318	32-150mm	**75 04 81 - 88**	418	**75 53 41 - 55**	PN 25/40	15-300mm

Gate Valves

Material & W.P.	Type	JIS No.	Nom. Size	CODE	DIN Model	CODE	Flanged to	DN
Cast Iron 10 kgf/cm²	Flanged	F-7364	50-600mm	**75 08 21 - 35**	317 292 306 319 2406 293	**75 55 71 - 86** **75 56 01 - 14** **15 - 24** **32 - 40** **41 - 50** **51 - 60**	PN 10 PN 10 PN 10 PN 10 PN 10 PN 10/16	40-600mm 40-600mm 40-300mm 50-300mm 40-300mm 40-300mm
Cast Steel 10 kgf/cm²	Flanged	F-7366	50-400mm	**75 09 01 - 11**	315	**75 56 72 - 80**	PN 16	50-300mm

Lift Check Valves

Material & W.P.	Type	JIS No.	Nom. Size	CODE	DIN Model	CODE	Flanged to	DN
Bronze 16 kgf/cm² Flanged	Straight	F-7417	15-40mm	**75 13 61 - 65**	496 77 101	**75 58 11 - 21** **41 - 68** **71 - 98**	PN 16 PN 16 PN 16	15-150mm 15-300mm 15-300mm
	Angle	F-7418	15-40mm	**75 13 66 - 70**	497 78 102	**75 58 25 - 35** **55 - 67** **85 - 97**	PN 16 PN 16 PN 16	15-150mm 15-200mm 15-200mm

Swing Check Valves

Material & W.P.	Type	JIS No.	Nom. Size	CODE	DIN Model	CODE	Flanged to	DN
Cast Iron 10 kgf/cm² Flanged	Straight	F-7373	50-200mm	**75 14 31 - 37**	83GU	**75 59 11 - 20**	PN 10/16	40-300mm

Hose Valves

Material & W.P.	Type	JIS No.	Nom. Size	CODE	DIN Model	CODE	Flanged to	DN
Bronze 10 kgf/cm² Flanged	Straight	F-7334	15 / 25 mm	**75 17 02 / 04**	908	**75 60 41**	PN 16	25 mm
Bronze 10 kgf/cm² Flanged	Straight	F-7334	40 mm	**75 17 12**	908	**75 60 43**	PN 16	40 mm
Bronze 10 kgf/cm² Flanged	Straight	F-7334	50 / 65 mm	**75 17 17 / 18**	908	**75 60 44 / 46**	PN 16	50/65 mm

Screwed Valves

Material & W.P.	Type	JIS No.	Size	CODE	DIN Model	CODE	Pressure Rating	Size
Bronze 10 kgf/cm²	Straight	B-2011	1/4" - 4"	**75 18 16 - 27**	250	**75 51 01 - 10**	12/16 bar	1/4" - 3"
	Angle	B-2011	1/4" - 4"	**75 18 31 - 42**	250H	**75 51 11 - 18**	12/16 bar	1/4" - 2"

Needle Valves

Material & W.P.	Type	JIS No.	Size	CODE	DIN Model	CODE	Pressure Rating	Size
Brass w/Ring Joint	Straight	-	6x1/4"-14x1/2"	**75 21 01 - 05**	718	**75 62 02 - 06**	100/40 bar	1/4" - 1"
Brass w/Ring Joint	Angle	-	6x1/8"-14x1/2"	**75 21 16 - 21**	719	**75 62 12 - 16**	100/40 bar	1/4" - 1/2"

Butterfly Valves

Material & W.P.	Type	JIS No.	Size	CODE	DIN Model	CODE	Flanged to	DN
FC250 10 kgf/cm²		-	1-1/2" - 8" 1-1/2" - 24"	**75 22 01 - 08** **75 22 11 - 27** **75 22 --**	4620 5720 6020 6110	**75 63 01 - 14** **31 - 44** **45 - 55** **56 - 66**	PN 10/16 PN 10/16 PN 10/16 PN 10	50-600mm 50-600mm 50-400mm 50-400mm

Diaphragm Valves

Material & W.P.	Type	JIS No.	Size	CODE	DIN Model	CODE	Pressure Rating	D
Cast Iron, Ductile Iron, etc. (To be indicated)		-	-	**75 23**	5603 5651 5652	**75 64 12 - 17** **15 - 26** **31 - 42**	10 bar PN 16 PN 16	1/2" - 2" 15-200m 15-200m

Ball Valves

Material & W.P.	Type	JIS No.	Size	CODE	DIN Model	CODE	Pressure Rating	D
Forged Brass 20 kgf/cm²	Screwed	-	3/8" - 2"	**75 24 01-07**	1607	**75 66 01 - 11**	See spec.	1/4" - 4"

Y-Strainers

Material & W.P.	Type	JIS No.	Size	CODE	DIN Model	CODE	Pressure Rating	D
Bronze 16 kgf/cm²	Screwed	-	1/4" - 2"	**75 24 21 - 28**	1013	**75 68 01 - 10**	16 bar	1/4" - 3"
Cast Iron 16 kgf/cm²	Screwed	-	1/4" - 3"	**75 24 46 - 55**	1019	**75 68 25 - 38** **75 69 15**	PN 16	15-400mm

Storm Valves

Material & W.P.	Type	JIS No.	Size	CODE	DIN Model	CODE	Flanged to	DN
Ductile Cast Iron	Angle	-	50-200mm	**75 42 07 - 12** **75 42 32**	1205	**75 42 71 - 76**	PN 10	50-150mm
Ductile Cast Iron w/Handle	Vertical	F-3060	50-200mm	**75 42 41 - 47**	1209	**75 42 91 - 96**	PN 10	50-150mm
Ductile Cast Iron w/Handle	Angle	-	50-200mm	**75 42 51 - 57**	1207	**75 42 77 - 82**	PN 10	50-150mm

Remark : DIN model is referred to Econosto products.

Comparison List
DIN to equivalent design JIS Valves

Globe Valves

Material & W.P.	Type	DIN Model	Size	CODE	JIS No.	CODE	Max. W/P	Size
Bronze 12 - 16 bar Screwed	Straight	250	1/4" - 3"	**75 51 01 - 10**	B-2011	**75 18 16 - 27**	10 kgf / cm2	1/4" - 4"
	Angle	250H	1/4" - 2"	**75 51 11 - 18**	B-2011	**75 18 31 - 42**	10 kgf / cm2	1/4" - 4"
Bronze 16 - 12 bar Flanged	Straight	275	15-100mm	**75 51 21 - 29**	F-7303	**75 01 41 - 45**	16 kgf / cm2	15-40mm
	Angle	276	15- 80mm	**75 51 31 - 38**	F-7304	**75 01 51 - 55**	16 kgf / cm2	15-40mm
Bronze 16 - 6 bar Flanged	Straight	1270	15-300mm	**75 51 61 - 75**	F-7303	**75 01 41 - 45**	16 kgf / cm2	15-40mm
	Angle	1271	15-300mm	**75 51 76 - 90**	F-7304	**75 01 51 - 55**	16 kgf / cm2	15-40mm
Cast Iron 16 - 10 bar Flanged	Straight	241	15-300mm	**75 52 31 - 45**	F-7309	**75 02 61 - 67**	16 kgf / cm2	50-200mm
	Angle	242	15-300mm	**75 52 46 - 60**	F-7310	**75 02 71 - 77**	16 kgf / cm2	50-200mm
Cast Iron 16 - 10 bar Flanged	Straight	268	15-300mm	**75 52 61 - 75**	F-7309	**75 02 61 - 67**	16 kgf / cm2	50-200mm
	Angle	269	15-300mm	**75 52 76 - 90**	F-7310	**75 02 71 - 77**	16 kgf / cm2	50-200mm
Carbon Steel 16 - 10 bar Flanged	Straight	398	15-400mm	**75 53 01 - 11** **75 51 94 - 99**	F-7313	**75 04 31 - 40**	20 kgf / cm2	32-250mm
	Angle	399	15-400mm	**75 53 15 - 25** **75 52 94 - 99**	F-7314	**75 04 41 - 50**	20 kgf / cm2	32-250mm
Cast Steel 40 - 25 bar Flanged	Straight	417	15-300mm	**75 53 26 - 40**	F-7317	**75 04 71 - 78**	40 kgf / cm2	32-150mm
	Angle	418	15-300mm	**75 53 41 - 55**	F-7318	**75 04 81 - 88**	40 kgf / cm2	32-150mm
Ductile Cast Iron 16 - 10 bar Flanged	Straight	263	15-250mm	**75 54 01 - 14**	F-7309	**75 02 61 - 67**	16 kgf / cm2	50-200mm
	Angle	264	15-250mm	**75 54 16 - 29**	F-7310	**75 02 71 - 77**	16 kgf / cm2	50-200mm

Gate Valves

Material & W.P.	Type	DIN Model	DN	CODE	JIS No.	CODE	Max. W/P	Size
Cast Iron 10 - 2 bar	Flanged	317	40-600mm	**75 55 71 - 86**	F-7364	**75 08 21 - 35**	10 kgf / cm2	50-600mm
Cast Iron 10 - 2 bar	Flanged	292	40-600mm	**75 56 01 - 14**	F-7364	**75 08 21 - 35**	10 kgf / cm2	50-600mm
Cast Iron 10 - 2 bar	Flanged	306	40-300mm	**75 56 15 - 24**	F-7364	**75 08 21 - 35**	10 kgf / cm2	50-600mm
Cast Iron 10 - 8 bar	Flanged	319	50-300mm	**75 56 32 - 40**	F-7364	**75 08 21 - 35**	10 kgf / cm2	50-600mm
Cast Iron 10 - 8 bar	Flanged	2406	40-300mm	**75 56 41 - 50**	F-7364	**75 08 21 - 35**	10 kgf / cm2	50-600mm
Cast Iron 10 bar	Flanged	293	40-300mm	**75 56 51 - 60**	F-7364	**75 08 21 - 35**	10 kgf / cm2	50-600mm
Cast Iron 10 bar	Flanged	315	50-300mm	**75 56 72 - 80**	F-7366	**75 09 01 - 11**	10 kgf / cm2	50-400mm

Lift Check Valves

Material & W.P.	Type	DIN Model	DN	CODE	JIS No.	CODE	Max. W/P	Size
Bronze 16 - 8 bar Flanged	Straight	496	15-150mm	**75 58 11 - 21**	F-7417	**75 13 61 - 65**	16 kgf / cm²	15-40mm
Bronze 16 - 8 bar Flanged	Angle	497	15-150mm	**75 58 25 - 35**	F-7418	**75 13 66 - 70**	16 kgf / cm²	15-40mm
Cast Iron 16 - 13 bar Flanged	Straight	77	15-300mm	**75 58 41 - 68**	F-7417	**75 13 61 - 65**	16 kgf / cm²	15-40mm
Cast Iron 16 - 13 bar Flanged	Angle	78	15-200mm	**75 58 55 - 67**	F-7418	**75 13 66 - 70**	16 kgf / cm²	15-40mm
Cast Iron 16 - 13 bar Flanged	Straight	101	15-300mm	**75 58 71 - 98**	F-7417	**75 13 61 - 65**	16 kgf / cm²	15-40mm
Cast Iron 16 - 13 bar Flanged	Angle	102	15-200mm	**75 58 85 - 97**	F-7418	**75 13 66 - 70**	16 kgf / cm²	15-40mm

Swing Check Valves

Material & W.P.	Type	DIN Model	DN	CODE	JIS No.	CODE	Max. W/P	Size
Cast Iron 10 - 8 bar Flanged	Straight	83GU	40-300mm	**75 59 11 - 20**	F-7373	**75 14 31 - 37**	10 kgf / cm²	50-200mm

Globe Fire and Deckwash Valves

Material & W.P.	Type	DIN Model	DN	CODE	JIS No.	CODE	Max. W/P	Size
Bronze 10 bar	Straight	908	25-80mm	**75 60 41 - 47**	F-7334	**75 17 04** **75 17 12** **75 17 17 - 18**	10 kgf / cm² 10 kgf / cm² 10 kgf / cm²	25mm 40mm 50/65mm

Needle Valves

Material & W.P.	Type	DIN Model	Size	CODE	JIS No.	CODE	W/P	Size
Brass 100-40 bar Screwed	Straight	718	1/4" - 1"	**75 62 02 - 06**	-	**75 21 01 - 05**	-	6x1/4"-14x1/2"
Brass 100-40 bar Screwed	Angle	719	1/4" - 1/2"	**75 62 12 - 16**	-	**75 21 16 - 21**	-	6x1/8"-14x1/2"

Butterfly Valves

Material & W.P.	Type	DIN Model	DN	CODE	JIS No.	CODE	Max. W/P	Size
Ductile Cast Iron 10 bar	-	4620	50-600mm	**75 63 01 - 14**	-	**75 22 01 - 08**	10 kgf / cm²	1-1/2" - 8"
Cast Iron 10/16 bar	-	5720	50-600mm	**75 63 31 - 44**	-	**75 22 11 - 27**	10 kgf / cm²	1-1/2"- 24"
Cast Iron 10/16 bar	-	6020	50-400mm	**75 63 45 - 55**	-			
Cast Iron 10 bar	-	6110	50-400mm	**75 63 56 - 66**	-			

Diaphragm Valves

Material & W.P.	Type	DIN Model	Size	CODE	JIS No.	CODE	W/P	Size
Bronze 10 bar Threaded	Straight	5603	1/2" - 2"	**75 64 12 - 17**	-	**75 23 --**	-	-
Cast Iron 10 - 4 bar Flanged	Straight	5651	15-200mm	**75 65 15 - 26**	-	**75 23 --**	-	-
Cast Iron 10 - 4 bar Flanged	Straight	5652	15-200mm	**75 65 31 - 42**	-	**75 23 --**	-	-

Ball Valves

Material & W.P.	Type	DIN Model	Size	CODE	JIS No.	CODE	Max. W/P	Size
Brass Nickel Plate (See spec.)	Screwed	1607	1/4" - 4"	**75 66 01 - 11**	-	**75 24 01 - 07**	20 kgf / cm²	3/8" - 2"

Y-Strainers

Material & W.P.	Type	DIN Model	Size	CODE	JIS No.	CODE	Max. W/P	Size
Bronze 16 bar	Screwed	1013	1/4" - 3"	**75 68 01 - 10**	-	**75 24 21 - 28**	16 kgf / cm²	1/4" - 2"
Cast Iron 16 bar	Flanged	1019	15-400mm	**75 68 25 - 38** **75 69 15**	-	**75 24 46 - 55**	16 kgf / cm²	1/4" - 3"

Storm Valves

Material & W.P.	Type	DIN Model	DN	CODE	JIS No.	CODE	Nom. /P	Size
Ductile Cast Iron 10 bar	Angle	1205	50-150mm	**75 42 71 - 76**	-	**75 42 07 - 12** **75 42 32**	5 kgf / cm²	50-200mm
Ductile Cast Iron 10 bar	Angle	1207	50-150mm	**75 42 77 - 82**	-	**75 42 51- 57**	5 kgf / cm²	50-200mm
Ductile Cast Iron 10 bar	Vertical	1209	50-150mm	**75 42 91 - 96**	F-3060	**75 42 41 - 47**	5 kgf / cm²	50-200mm

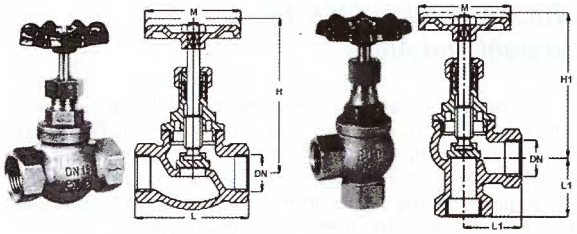
Remark : DIN model is referred to Econosto Products.

DIN Globe Valves

Globe Valves (DIN)
Bronze, BSP Female Threaded
Threaded Bonnet, Metal Seated
Fixed Disc, Max 16 bar
Straight and Angle

Bronze globe valves with threaded bonnet, metal seated, straight and angle pattern, BSP female threaded connection, inside screwed stem and rising handwheel.

Application : water, oil, air and gas.



Straight Angle

Pressure and Temperature Range

Bore	20°C	200°C
3/8" - 3"	16 bar	12 bar

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet	Brass	- (CuZn41Pb62)
Disc	Brass	- (CuZn41Pb62)
Stem	Brass	- (CuZn41Pb62)
Gland Packing	PTFE	
Bonnet Gasket	Asbestos-free	
Handwheel	Aluminium	

How to order: CODE

Globe valve (DIN), bronze, BSP female threaded, threaded bonnet, metal seated, STRAIGHT or ANGLE, MODEL NO., SIZE DN

Unit Per Pc.

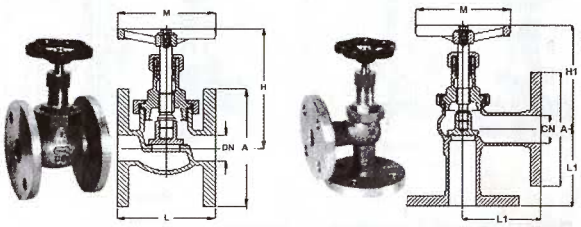
Straight					Angle					Weight kgs
CODE	DN	Size mm L	H	M	CODE	DN	Size mm L_1	H	M	
75 51 01	1/4"	50	95	50	**75 51 11**	1/4"	28	85	50	0.3
02	3/8"	50	95	50	**12**	3/8"	28	85	50	0.3
03	1/2"	60	95	60	**13**	1/2"	32	95	60	0.5
04	3/4"	70	110	70	**14**	3/4"	40	115	70	0.6
05	1"	80	120	70	**15**	1"	46	120	70	1.0
75 51 06	1-1/4"	95	145	70	**75 51 16**	1-1/4"	51	135	70	1.3
07	1-1/2"	105	155	80	**17**	1-1/2"	58	140	80	1.7
08	2"	130	185	110	**18**	2"	61	165	110	2.9
09	2-1/2"	155	245	130						
10	3"	180	280	150						

Same weight for straight type and angle type.
Econosto model No. : Straight pattern - 250
: Angle pattern - 250H

Globe Valves (DIN)
Bronze, DIN Flanges
Secured Bonnet, Metal Seated
Fixed Disc, Pressure Rating PN 16
Straight and Angle

Bronze globe valves with bronze disc and seat, pressure rating PN16, straight and angle pattern, flat faced flanges acc. to DIN PN 16, threaded and secured bonnet, inside screwed stem and rising handwheel.

Primary application area is aboard ships where a light bronze construction is desirable, but it also complies with all requirements related to maritime inspection and classification societies, which in certain instances specify a dependable securing of threaded bonnets.



Straight Angle

Pressure and Temperature Range

Bore	0/120°C	200°C
DN 15 - DN 100	16 bar	12 bar

Material Specification

Component	Material	EN and/or (DIN)
Body, Seat, Bonnet, Bonnet Nut and Disc	Bronze Brass	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5)) CuZn35Ni3Mn2AlPb (CuZn35Ni)
Stem		
Gland Packing	Asbestos-free	
Bonnet Gasket	PTFE	
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), bronze, DIN flanges, secured bonnet, metal seated, pressure rating PN 16 STRAIGHT or ANGLE, MODEL NO., SIZE DN

Unit Per Pc.

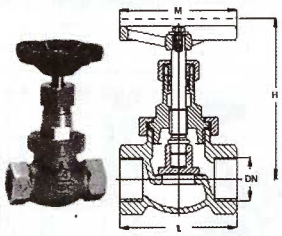
Straight					Angle					Weight kgs
CODE	DN	Size mm A	L	H	CODE	DN	Size mm A	L1	H	
75 51 21	15	95	70	95	**75 51 31**	15	95	65	86	1.8
22	20	105	80	110	**32**	20	105	70	100	2.1
23	25	115	90	115	**33**	25	115	75	105	2.6
24	32	140	105	135	**34**	32	140	90	120	4.2
25	40	150	120	145	**35**	40	150	100	135	5.2
75 51 26	50	165	140	165	**75 51 36**	50	165	105	150	7.5
27	65	185	180	230	**37**	65	185	115	210	11.0
28	80	200	200	250	**38**	80	200	125	230	14.5
29	100	220	230	260						21.0

Same weight for straight type and angle type.
Econosto Model No. : Straight pattern - 275
Angle pattern - 276

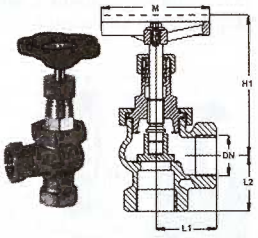
Globe Valves (DIN)
Bronze, BSP Female Threaded
Secured Bonnet, Metal Seated
Fixed Disc, Pressure Rating PN 16
Straight and Angle

Bronze globe valves with threaded and secured bonnet, metal seated, straight and angle pattern, BSP female threaded ends, inside screwed stem and rising handwheel.

Application area is aboard ships where a light bronze construction is desirable, but it also complies with all requirements related to marine inspection and classification societies, which in certain instances specify a dependable securing of threaded bonnets.



Straight



Angle

Pressure and Temperature Range

Bore	0/120°C	200°C
3/8" - 3"	16 bar	12 bar

Material Specification

Component	Material	EN and/or (DIN)
Body, Seat, Bonnet, Bonnet Nut and Disc	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Gland Packing	Asbestos-free	
Bonnet Gasket	PTFE	
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), bronze, BSP female threaded, secured bonnet, pressure rating PN 16, fixed disc, STRAIGHT or ANGLE, MODEL NO., SIZE DN

Unit Per Pc.

Straight					Angle						
CODE	D	Size mm			CODE	D	Size mm				Wgt
	Inch	L	H	M		Inch	L1	L2	H1	M	Kgs
75 51 41	3/8	60	95	60	**75 51 51**	3/8	35	30	86	60	0.6
42	1/2	65	95	60	**52**	1/2	40	35	86	60	0.6
43	3/4	75	110	80	**53**	3/4	45	40	100	80	0.8
44	1	90	115	80	**54**	1	50	45	105	80	1.2
45	1-1/4	105	135	90	**55**	1-1/4	55	50	120	90	1.9
75 51 46	1-1/2	120	145	100	**75 51 56**	1-1/2	65	55	135	100	2.5
47	2	145	165	120	**57**	2	75	65	150	120	4.0
48	2-1/2	170	230	160	**58**	2-1/2	90	75	230	160	7.5
49	3	200	250	200	**59**	3	110	90	250	200	11.5

Same weight for straight type and angle type.
Econosto Model No. : Straight pattern - 1275
Angle pattern - 1276

Globe Valves (DIN)
Bronze, BSP Female Threaded
PN 32

Unit Per Pc.

CODE	Size	Item No.	CODE	Size	Item No.
75 51 30	1/4"	AA040006	**75 51 60**	1"	AA040025
39	3/8"	AA040010	**91**	1-1/4"	AA040032
40	1/2"	AA040015	**92**	1-1/2"	AA040038
50	3/4"	AA040020			

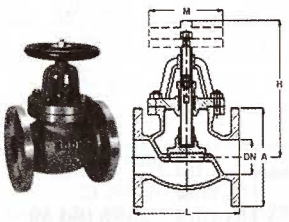
Name of Mfr.: Alligator

Globe Valves (DIN)
Bronze, DIN Flanges
Bolted Bonnet, Outside Screw and Yoke
Metal Seated, Fixed Disc
Pressure Rating PN 6-10-16
Straight and Angle

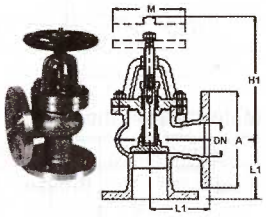
Bronze globe valves with bronze disc and seat, pressure rating PN 6/10/16, straight and angle pattern, flat faced flanges according to DIN PN 10/16, bolted bonnet, outside screw & yoke. Heavy pattern for ship building industry.

Application: the valves offer good resistance to corrosive action of seawater, fresh water and waste water.

Application area: aboard ships, etc. but also in installations where internal or external corrosion is undesirable.



Straight



Angle

Pressure and Temperature Range

Bore	Pressure Rating	Pressure and Temperature Range
DN 15 - 150	PN 16	16 bar - 120°C 12 bar - 200°C
DN 200	PN 10	10 bar - 120°C 8 bar - 200°C
DN 250 - 300	PN 6	6 bar - 120°C

Material Specification

Component	Material	EN and/or (DIN)
Body, Bonnet, Disk Grand	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Stud Bolts, Nuts	Stainless steel	
Bonnet Gasket	Graphite	
Gland Packing		
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), bronze, DIN flanges, bolted bonnet, outside screw and yoke, metal seated, fixed disc, STRAIGHT or ANGLE, PRESSURE RATING, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Pressure Rating	Size mm A	L	H	M	Weight Kgs
75 51 61	15		95	120	175	100	4.3
62	20		105	120	175	100	5.0
63	25	PN16	115	140	178	125	6.0
64	32		140	150	200	125	8.7
65	40		150	155	220	140	10.0
75 51 66	50		165	180	250	140	13.2
67	65		185	200	260	140	23.0
68	80	PN16	200	240	300	180	31.9
69	100		220	270	350	200	42.8
70	125		250	320	380	220	62.0
75 51 71	150	PN16	285	370	440	280	88.0
73	200	PN10	340	500	620	315	136.0
74	250	PN 6	395	730	670	400	165.0
75	300		445	850	750	400	295.0

Econosto Model No. : 1270

Angle Type

Unit Per Pc.

CODE	DN	Pressure Rating	Size mm A	L1	H1	M	Weight Kgs
75 51 76	15		95	65	175	100	4.0
77	20		105	65	175	100	5.5
78	25	PN16	115	70	178	125	6.2
79	32		140	90	200	125	8.4
80	40		150	90	220	140	10.0
75 51 81	50		165	105	250	140	12.8
82	65		185	115	260	140	23.2
83	80	PN16	200	125	300	180	31.0
84	100		220	145	350	200	41.0
85	125		250	170	380	220	65.0
75 51 86	150	PN16	285	200	440	280	89.0
88	200	PN10	340	250	570	315	127.0
89	250	PN 6	395	325	550	400	155.0
90	300		445	375	620	400	225.0

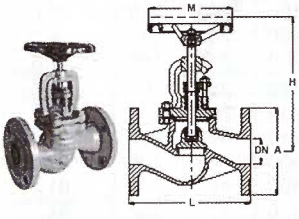
Econosto Model No. : 1271

Globe Valves (DIN)

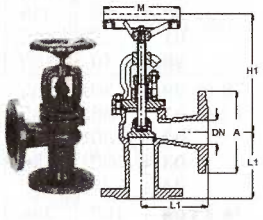
Cast Iron, DIN Flanges
Pressure Rating PN16
Stainless Steel Trim, Fixed Disc
Straight and Angle

Cast iron globe valves with stainless steel trim, PN 16, straight and angle pattern, flanged ends acc. To DIN PN 10/16. Outside screw & yoke.

Application : steam, cold and hot water, oil, air gases etc.



Straight



Angle

Pressure and Temperature Range

	-10/120°C	150°C	180°C	200°C	230°C	250°C	300°C
PN 16	16 bar	14.4	13.4	12.8	11.8	11.2	9.6

Material Specification

Component	Material	EN and/or (DIN)
Body, Bonnet and Gland	Cast iron	GJL-250 (GG-25)
Disc and Stem	Stainless steel	X20Cr13
Seat	Stainless steel	X12Cr13 (X10Cr13)
Gland Packing	Graphite	
Bonnet Gasket (SS insert)	Graphite	
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), cast iron, DIN flanges, pressure rating PN 16, stainless steel trim, fixed disc STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm A	L	H	M	Weight Kgs
75 52 31	15	95	130	172	100	3.3
32	20	105	150	173	100	3.9
33	25	115	160	182	120	5.0
34	32	140	180	200	120	6.6
35	40	150	200	255	160	8.4
75 52 36	50	165	230	273	160	12.0
37	65	185	290	295	180	17.3
38	80	200	310	332	200	22.7
39	100	220	350	369	250	35.8
40	125	250	400	432	250	52.8
75 52 41	150	285	480	483	320	74.2
43	200	340	600	606	360	126.0
44	250	405	730	758	360	200.0
45	300	460	850	830	500	315.0

Econosto Model No. : 241

Angle Type

Unit Per Pc.

CODE	DN	Size mm A	L1	H1	M	Weight Kgs
75 52 46	15	95	90	168	100	3.1
47	20	105	95	166	100	3.5
48	25	115	100	180	120	4.8
49	32	140	105	187	120	6.6
50	40	150	115	234	160	8.7
75 52 51	50	165	125	236	160	11.8
52	65	185	145	271	180	14.0
53	80	200	155	291	200	20.5
54	100	220	175	332	250	32.2
55	125	250	200	387	250	46.0
75 52 56	150	285	225	437	320	62.0
58	200	340	275	532	360	106.0
59	250	405	325	651	360	-
60	300	460	375	830	500	-

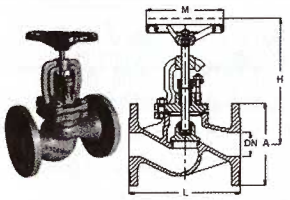
Econosto Model No. : 242

Globe Valves (DIN)

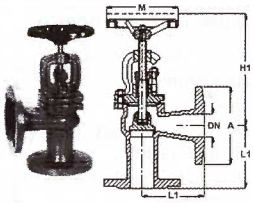
Cast Iron, DIN Flanges
Pressure Rating PN16
Bronze Trim, Fixed Disc
Straight and Angle

Cast iron globe valves with low-zinc bronze seat, pressure rating PN 16, straight and angle pattern, flanged ends acc. to DIN PN 10/16. Outside screw & yoke and rising handwheel.

Application: Aboard ships for hot and cold water, oil, air, steam etc.



Straight



Angle

Pressure and Temperature Range

	-10/120°C	150°C	180°C	200°C	225°C
PN 16	16 bar	14.4	13.4	12.8	12

Material Specification

Component	Material	EN and/or (DIN)
Body, Bonnet and Gland	Cast iron	GJL-250 (GG-25)
Disc, Seat	Low-zinc bronze	- (G-CuSn10Zn (Rg
Stem	Brass	10))
Gland Packing	Graphite	- (CuZn41Pb62)
Body Gasket	Graphite	
(SS insert)		
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), cast iron, DIN flanges, pressure rating PN 16, bronze trim, fixed disc, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm				Weight
		A	L	H	M	Kgs
75 52 61	15	95	130	172	100	3.3
62	20	105	150	173	100	3.9
63	25	115	160	182	120	5.0
64	32	140	180	200	120	6.6
65	40	150	200	255	160	8.4
75 52 66	50	165	230	273	160	12.0
67	65	185	290	295	180	17.3
68	80	200	310	332	200	22.7
69	100	220	350	369	250	35.8
70	125	250	400	432	250	52.8
75 52 71	150	285	480	483	320	74.2
73	200	340	600	606	360	126.0
74	250	395	730	758	360	200.0
75	300	445	850	830	500	315.0

Econosto Model No. : 268

Angle Type

Unit Per Pc.

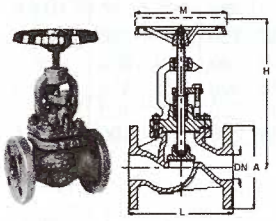
CODE	DN	Size mm				Weight
		A	L1	H1	M	Kgs
75 52 76	15	95	90	168	100	3.1
77	20	105	95	166	100	3.5
78	25	115	100	180	120	4.8
79	32	140	105	187	120	6.6
80	40	150	115	234	160	8.7
75 52 81	50	165	125	236	160	11.8
82	65	185	145	271	180	14.0
83	80	200	155	291	200	20.5
84	100	220	175	332	250	32.2
85	125	250	200	387	250	46.0
75 52 86	150	285	225	437	320	62.0
88	200	340	275	532	360	106.0
89	250	395	325	651	360	-
90	300	445	375	830	500	-

Econosto Model No. : 269

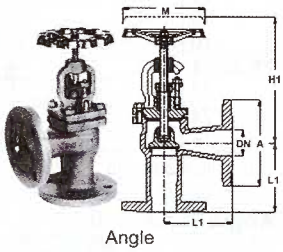
Globe Valves (DIN)
Cast Steel, DIN Flanges
Pressure Rating PN 16
Bronze Trim, Fixed Disc
Straight and Angle

Cast steel globe valves with bronze trim, pressure rating PN 16, straight and angle pattern, flanged ends acc. to DIN PN 10/16, outside screw & yoke and rising handwheel.

Application : steel valves are frequently used aboard ships, e.g. as ships side valve.



Straight



Angle

Pressure and Temperature Range

	-10/120°C	200°C	225°C
PN 16	16 bar	14.7	13.9

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast steel	GP240GH + N (GS-C25N)
Bonnet (DN 15 - 80)	Forged steel	C22G2 (C 22.8)
Bonnet (DN 100 - 400)	Cast steel	GP240GH + N (GS-C25N)
Disc	Bronze	CuSn5Zn5Pb5-C (G-CuSN5ZnPb (Rg 5))
Seat	Bronze	CuSn5Zn5Pb5-C (G-CuSN5ZnPb (Rg 5))
Stem	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Yoke Bush	Steel	- (9S20)
Gland Packing	Graphite	
Bonnet Gasket	Graphite	
(SS insert)		
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), cast steel, DIN cast steel, DIN flanges, pressure rating PN 16, bronze trim, fixed disc, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm				Weight
		A	L	H	M	Kgs
75 51 94	15	95	130	189	120	4.8
95	20	105	150	189	120	5.4
96	25	115	160	203	140	7.1
97	32	140	180	203	140	8.0
98	40	150	200	246	160	11.5
75 51 99	50	165	230	254	160	13.5
75 53 01	65	185	290	294	180	21
02	80	200	310	322	200	27. 5
03	100	220	350	381	225	40
04	125	250	400	427	250	61
75 53 05	150	285	480	521	400	84
07	200	340	600	643	520	160
08	250	405	730	780	520	265
09	300	460	850	890	520	377
10	350	520	980	976	640	510
75 53 11	400	580	1,100	1,006	640	780

Econosto Model No. : 398

Angle Type

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L1	H1	M	
75 52 94	15	95	90	159	120	5.2
95	20	105	95	159	120	7.2
96	25	115	100	178	140	7.4
97	32	140	105	178	140	8.4
98	40	150	115	221	160	12.4
75 52 99	50	165	125	229	160	13.6
75 53 15	65	185	145	263	180	20
16	80	200	155	297	200	25
17	100	220	175	336	225	34
18	125	250	200	387	250	53
75 53 19	150	285	225	466	400	70
21	200	340	275	588	520	148
22	250	405	325	690	520	188
23	300	460	375	785	520	327
24	350	520	425	876	640	383
75 53 25	400	580	475	886	640	690

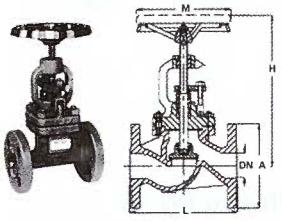
Econosto Model No. : 399

Globe Valves (DIN)

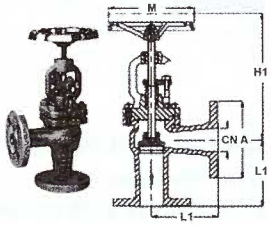
Cast Steel, DIN Flanges
Pressure Rating PN 25 - 40
Stainless Steel Trim
Fixed Disc, Straight and Angle

Cast Steel globe valves with stainless steel trim, pressure rating PN 25 – 40, straight and angle pattern, flanged ends acc. to DIN PN 25 / 40, outside screw & yoke and rising handwheel.

Application : steam, hot/cold water, oil, etc. For thermal oil, the use of bellow sealed globe valve is preferred.



Straight



Angle

Pressure and Temperature Range

	-10/20°C	100°C	150°C	200°C	250°C	300°C	350°C	400°C	450°C
PN 25	25 bar	23.3	21.7	19.4	17.8	16.1	15	14.4	13.9
PN 40	40 bar	37.3	34.7	30.2	28.4	25.8	24	23.1	22.2

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast steel	GP240GH + N (GS-C25N)
Bonnet (DN 15 - 80)	Forged steel	C22G2 (C 22.8)
Bonnet (DN 100 - 300)	Cast steel	GP240GH + N (GS-C25N)
Disc (DN 15 - 200)	Stainless Steel	X20Cr13
Disc (DN 250 - 300)	Stainless Steel	- (X8CrTi18)
Seat (DN 15-50)	Stainless Steel	X20Cr13
Seat (DN 65 - 300)	Stainless Steel	- (X5CrNiNb 19 9)
Stem	Stainless Steel	X20Cr13
Yoke Bush	Steel	- (9S20)
Gland Packing & Bonnet Gasket (SS insert)	Graphite	
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), cast steel, DIN flanges, pressure rating PN 25-40, stainless steel trim, fixed disc, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	M	
75 53 26	15	95	130	189	120	4.8
27	20	105	150	189	120	5.4
28	25	115	160	203	140	7.1
29	32	140	180	203	140	8.0
30	40	150	200	246	160	11.5
75 53 31	50	165	230	254	160	13.5
32	65	185	290	293	180	23.5
33	80	200	310	322	200	28
34	100	235	350	381	225	40
35	125	270	400	427	250	61
75 53 36	150	300	480	521	400	84
38	200	375	600	643	520	170
39	250	450	730	780	520	283
40	300	515	850	890	520	414

Econosto Model No. : 417

Angle Type

Unit Per Pc.

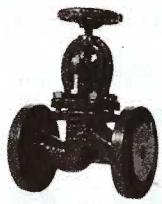
CODE	DN	Size mm				Weight Kgs
		A	L1	H1	M	
75 53 41	15	95	90	159	120	5.2
42	20	105	95	159	120	7.2
43	25	115	100	178	140	7.4
44	32	140	105	178	140	8.4
45	40	150	115	221	160	12.4
75 53 46	50	165	125	229	160	13.6
47	65	185	145	263	180	20
48	80	200	155	297	200	25
49	100	235	175	336	225	34
50	125	270	200	387	250	53
75 53 51	150	300	225	466	400	70
53	200	375	275	588	520	148
54	250	450	325	690	520	188
55	300	515	375	785	520	327

Econosto Model No. : 418

Globe Valves (DIN)

Cast Iron, DIN Flanges, Screw down check,
Pressure Rating PN 16
Stainless Steel Trim, Straight and Angle

Cast iron screw down check globe valves with stainless steel stem 13% Cr. Maximum working pressure is 16 bar, maximum working temperature is 100°C.



Straight

Angle

Straight Type

Unit Per Pc.

CODE	DN	Size mm				Item No.
		Flange Diam.	Face to Face	Pitch	Hole Dia × No. mm	
75 53 12	15	95	130	65	4×14	AA210015
13	20	105	150	75	4×14	AA210020
14	25	115	160	85	4×14	AA210025
69	32	140	180	100	4×18	AA210032
70	40	150	200	110	4×18	AA210040

(to be continued)

Unit Per Pc.

CODE	DN	Size mm				Item No.
		Flange Diam.	Face to Face	Pitch	Hole Dia x No. mm	
75 53 78	50	165	230	125	4x18	AA210050
79	65	185	290	145	4x18	AA210065
80	80	200	310	160	8x18	AA210080
95	100	220	350	180	8x18	AA210100
96	125	250	400	210	8x18	AA210125

Name of Mfr. : Alligator

Angle Type

Unit Per Pc

CODE	DN	Size mm				Item No.
		Flange Diam.	Face to Face	Pitch	Hole Dia x No mm	
75 53 97	15	95	130	65	4x14	AA225015
98	20	105	150	75	4x14	AA225020
99	25	115	160	85	4x14	AA225025
75 54 00	32	140	180	100	4x18	AA225032
88	40	150	200	110	4x18	AA225040
75 54 89	50	165	230	125	4x18	AA225050
90	65	185	290	145	4x18	AA225065
91	80	200	310	160	8x18	AA225080
92	100	220	350	180	8x18	AA225100

Name of Mfr. : Alligator

7TH 75

Globe Valves (DIN)
Steel, Pressure PN 640
BSP Female Thread End
Straight

Maximum working pressure/temperature: 100 bar -100°C / 640 bar -20 °C.

Unit Per Pc

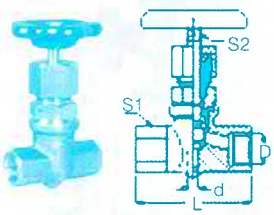
CODE	Size	Face to Face mm	Alligator No.
75 53 56	1/4"	80	AA250006
57	3/8"	80	AA250010
58	1/2"	80	AA250015
59	3/4"	100	AA250020
60	1"	130	AA250025

Name of Mfr. : Alligator - Model AA250

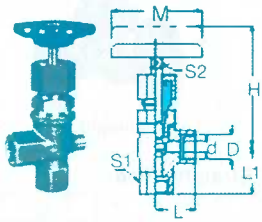
Globe Valves (DIN)
Stainless Steel
Pressure Rating PN 200, BSP Female Threaded Ends, Straight and Angle

Forged steel globe valves with threaded bonnet, SS trim and inside screwed stem.

Application : liquids, gases and steam.



Straight



Angle

Pressure and Temperature Range

	Pressure rating PN 200
Maximum Operating Pressure	200 bar
Minimum Temperature	-10 °C
Maximum Temperature	300 °C

Material Specification

Component	Material	EN and/or (DIN)
Body	Stainless steel	X20Cr13
Bonnet	Carbon steel	C35E (Ck 35)
Stem	Stainless steel	X14CrMoS17 (X12CrMoS17)
Disc	Stainless steel	X39CrMo17-1 (X35CrMo17)
Butt Welding Stub	Steel	- (St.37-1)
Bonnet Nut	Steel	
Handwheel	PF (Bakelite)	

How to order: CODE

Globe valve (DIN), stainless steel, pressure rating PN 200 BSP female threaded ends,STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc

CODE	D ["]	d mm	Size mm					Weight Kgs
			H max.	L	M	S1	S2	
75 53 62	R3/8	6	130	80	90	30	9	0.87
63	R1/2	8	130	80	90	30	9	0.82
64	R3/4	10	135	100	90	36	9	1.02
65	R3/4	15	160	130	150	46	9	2
66	R1	20	160	130	150	46	9	1.82
75 53 67	R1-1/4	25	170	160	150	60	10	3.88
68	R1-1/2	32	170	160	150	60	10	3.46

Econosto Model No. : 358

Angle Type

Unit Per Pc

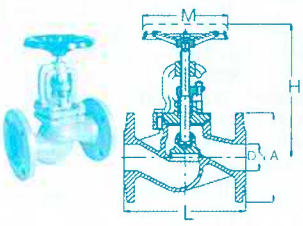
CODE	D ["]	d mm	Size mm						Weight Kgs
			H max.	L	L1	M	S1	S2	
75 53 72	R3/8	6	123	42	42	90	30	9	0.99
73	R1/2	8	123	42	42	90	30	9	0.96
74	R3/4	12	125	38	50	90	36	9	1.02
75	R3/4	15	125	38	50	150	46	9	1.02

Econosto Model No. : 354

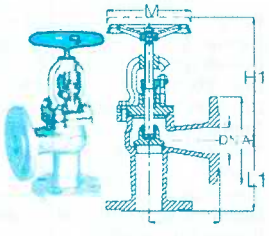
Globe Valves (DIN)
Ductile Cast Iron
DIN Flanges, Pressure Rating PN 16
Bronze Trim, Fixed Disc, Straight and Angle

Ductile cast iron globe valve with bronze trim, pressure rating PN 16, straight and angle pattern, flanged ends acc. to DIN PN 10/16, outside screw & yoke and rising handwheel.

Application: ductile cast iron valves are frequently used aboard ships, especially in places where safety considerations prohibit the use of ordinary cast iron.



Straight



Angle

Pressure and Temperature Range

	-10/120°C	200°C	225°C
PN 16	16 bar	14.7	13.9

Material Specification

Component	Material	EN and/or (DIN)
Body	Ductile cast iron	GJS-400-18-LT (GGG-40.3)
Bonnet	Ductile cast iron	GJS-400-18-LT (GGG-40.3)
Disc	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Seat	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Gland Packing	Graphite	
Bonnet Gasket (SS insert)	Graphite	
Handwheel	Cast iron	

How to order: CODE

Globe valve (DIN), ductile cast iron, DIN flanges, pressure rating PN 16, bronze trim, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc

CODE	DN	Size mm A	L	H	M	Kv-Values**	Weight Kgs
75 54 01	15	95	130	189	120	4.2	3.9
02	20	105	150	189	120	7.4	4.3
03	25	115	160	203	140	12	5.4
04	32	140	180	203	140	19	7.0
05	40	150	200	246	160	31	9.5
75 54 06	50	165	230	254	160	47	12.9
07	65	185	290	293	180	77	18.4
08	80	200	310	322	200	120	24.5
09	100	220	350	381	225	188	36.0
10	125	250	400	427	250	288	56.0
75 54 11	150	285	480	521	400	410	78.0
13	200	340	600	643	520	725	122.0
14	250	405	730	780	520	1,145	247.0

Note: Kv-Values** denotes in m³/h, water at 20°C, Δp = 1 bar and valve fully opened.
Kv-Values is the number presenting the capacity in cubic meters water per hour (between 5 and 30 degrees Celsius) which can flow through a valve with a pressure drop Δp of 1 bar.
Econosto Model No. : 263

Angle Type

Unit Per Pc

CODE	DN	Size mm A	L1	H1	M	Kv-Values**	Weight Kgs
75 54 16	15	95	90	159	120	5.2	4.0
17	20	105	95	159	120	9.2	4.5
18	25	115	100	178	140	15	5.6
19	32	140	105	178	140	24	6.6
20	40	150	115	221	160	37	9.2
75 54 21	50	165	125	229	160	58	11.6
22	65	185	145	263	180	96	17.0
23	80	200	155	297	200	150	22.6
24	100	220	175	336	225	235	33.0
25	125	250	200	387	250	360	46.0
75 54 26	150	285	225	466	400	510	68.0
28	200	340	275	588	520	905	100.0
29	250	405	325	690	520	1,430	204.0

Note Econosto Model No : 264

Globe Valves (DIN)

Forged Steel and Cast Steel

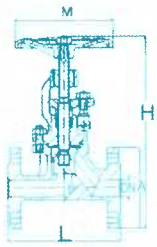
DIN Flanges

Pressure Rating PN 40-63-100-160

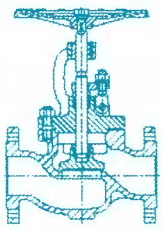
Fixed Disc, Straight

Forged and cast steel globe valves, pressure rating PN 40/63/100/16, straight pattern, flanged ends acc. to DIN PN 40/63/100/160, hard-faced seats, outside screw & yoke and rising handwheel.

Application: steam, water, oil, air, etc.



DN 10 - 50



DN 65 - 200

Pressure and Temperature Range

	100°C	150°C	200°C	250°C	300°C	350°C	400°C	450°C
PN 40 (DN10-50)	40 bar	37	35	32	28	24	21	10
PN 40 (DN65-200)	40	37	35	32	28	24	21	-
PN 63 (DN10-50)	63	58	50	45	40	36	32	24
PN 63 (DN65-150)	63	53	50	45	40	36	32	-
PN 100 (DN10-50)	100	90	80	70	60	56	50	38
PN 100 (DN65-150)	100	83	80	70	60	56	50	-
PN 160 (DN10-50)	160	145	130	112	96	90	80	60
PN 160 (DN65-100)	160	135	130	112	96	90	80	-

Material Specification

Component	Material	EN and/or (DIN)
Body (DN 10-50) with armoured seat	Forged steel	C22G2 (C 22.8)
Body (DN 65 - 200) with armoured seat	Cast steel	GP240GH + N (GS-C 25N)
Bonnet (DN 10 - 50)	Forged steel	C22G2 (C 22.8)
Bonnet (DN 65 - 200)	Cast steel	GP240GH + N(GS-C25N)
Disc (DN 10 - 50) with hard-faced seat	Stainless Steel	X20Cr13
Disc (DN65-200) with armoured seat	Forged steel	C22G2 (C 22.8)
Stem	Stainless steel	X20Cr13
Yoke Bush	Steel	11SMnPb30 (9SMnPb 28)
Gland Packing	Graphite	
Bonnet Gasket	Graphite	
Handwheel	Ductile cast iron	GJS-400-15 (GGG-40)

PN 40

How to order: CODE

Globe valve (DIN), FORGED or CAST STEEL, DIN flanges, pressure rating PN 40, straight type, SIZE DN

Unit Per Pc.

CODE	DN	Size mm A	L	H	M	Weight Kgs
Forged Steel						
75 54 51	10	90	130	215	140	4.5
52	15	95	130	215	140	5.0
53	20	105	150	220	140	5.7
54	25	115	160	220	140	6.3
55	32	140	180	245	180	10.0
75 54 56	40	150	200	250	180	11.2
57	50	165	230	260	180	15.5
Cast Steel						
75 54 58	65	185	290	310	225	23.5
59	80	200	310	360	280	28.0
60	100	235	350	400	280	40.0
61	125	270	400	465	360	61.0
62	150	300	480	530	360	84.0
75 54 63	200	275	600	575	450	170.0

Econosto Model No : 1202

PN 63

How to order: CODE

Globe valve (DIN), FORGED or CAST STEEL, DIN flanges, pressure rating PN 63, straight type, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	M	
Forged Steel						
75 54 64	10	100	210	220	180	8.7
65	15	105	210	220	180	8.6
66	20	130	230	220	180	10.4
67	25	140	230	220	180	10.9
68	32	155	260	285	225	19.0
75 54 69	40	170	260	285	225	21.0
70	50	180	300	345	225	24.1
Cast Steel						
75 54 71	65	205	340	360	280	34.0
72	80	215	380	400	280	47.0
73	100	250	430	410	360	72.0
74	125	295	500	535	360	117.0
75	150	345	550	555	450	160.0

Econosto Model No : 1202

7TH 75

PN 100

How to order: CODE

Globe valve (DIN), FORGED or CAST STEEL, DIN flanges, pressure rating PN 100, straight type, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	M	
Forged Steel						
75 54 76	10	100	210	220	180	8.7
77	15	105	210	220	180	8.6
78	20	130	230	220	180	10.4
79	25	140	230	220	180	10.9
80	32	155	260	285	225	19.0
75 54 81	40	170	260	285	225	21.0
82	50	195	300	345	225	24.1
Cast Steel						
75 54 83	65	220	340	360	280	34.0
84	80	230	380	400	280	47.0
85	100	265	430	410	360	72.0
86	125	315	500	535	360	120.0
87	150	355	550	555	450	166.0

Econosto Model No : 1202

PN 160

How to order: CODE

Globe valve (DIN), FORGED or CAST STEEL, DIN flanges, pressure rating PN 160, straight type, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	M	
Forged Steel						
75 54 31	10	100	210	220	180	8.7
32	15	105	210	220	180	8.6
33	20	130	230	220	180	10.4
34	25	140	230	220	180	10.9
35	32	155	260	285	225	19.0
75 54 36	40	170	260	285	225	21.0
37	50	195	300	345	225	25.0
Cast Steel						
75 54 38	65	220	340	360	280	39.0
39	80	230	380	400	280	51.0
40	100	265	430	410	360	80.0

Econosto Model No : 1202

(to be continued)

Globe Valves (DIN)

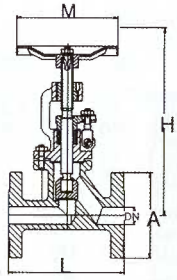
Heat-resistant Steel

DIN Flanges

Pressure Rating PN 160

Forged and cast heat-resistant steel globe valves, pressure rating PN 160, straight pattern, flanged ends acc. to DIN PN 160, stellited seat, outside screw & yoke and rising handwheel.

Application: steam, water, oil. air etc.



Pressure and Temperature Range

	-10/300°C	350°C	400°C	450°C	500°C
PN 160	160 bar	153	146	139	118
	510°C	520°C	530°C	540°C	550°C
PN 160	100	79	62	46	35

Material Specification

Component	Material	EN and/or (DIN)
Body (with stellited seat)	Heat-resistant steel	13CrMo4-5 (13CrMo4 4)
Bonnet	Heat-resistant steel	13CrMo4-5 (13CrMo4 4)
Disc (with stellited seat)	Heat-resistant steel	13CrMo4-5 (13CrMo4 4)
Stem	Stainless steel	X20Cr13
Yoke Bush	Steel	11SMnPb30 (9SMnPb 28)
Bonnet Gasket, Gland Packing	Graphite	
Handwheel	Ductile cast iron	GJS-400-15 (GGG-40)

How to order: CODE

Globe valve (DIN), heat-resistant steel DIN flanges, pressure rating PN 160, straight type, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	M	
75 54 41	10	100	210	232	180	8.7
42	15	105	210	232	180	8.6
43	20	130	230	232	180	10.4
44	25	140	230	232	180	10.9
45	32	155	260	300	225	19.0
75 54 46	40	170	260	300	225	21
47	50	195	300	363	225	25

Econosto Model No : 1216

DIN Gate Valves

Gate Valves (DIN)

Bronze and Brass

BSP Female Threaded Ends

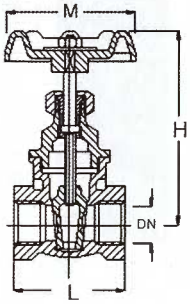
Inside Screwed Stem

Bronze and brass gate valves with BSP female threaded ends connection, solid wedge, threaded bonnet, inside screwed stem, non-rising stem and handwheel.

290

290A

290AA



Pressure and Temperature Range

Model Number	Water, oil, air	Steam
290	32 bar - 100°C	14.5 bar - 200°C
290A	12 bar - 120°C	8 bar - 175°C
290AA	20 bar - 100°C	7 bar - 170°C

Material Specification

Component	Material	EN and/or (DIN)
Model 290		
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet (1/4" thru 3")	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet (4")	Brass	- (CuZn41Pb62)
Wedge	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	- (CuZn41Pb62)
Model 290A		
Body, Wedge	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem, Bonnet	Brass	- (CuZn41Pb62)
Model 290AA		
Body, Bonnet, Wedge, Stem	Brass	- (CuZn41Pb62)

How to order: CODE

Gate valve (DIN), bronze, BSP female threaded ends, Inside screwed stem, TYPE, SIZE DN

Type 290

Unit Per Pc.

CODE	D	Size mm H	L	M	Weight Kgs
75 55 01	1/4"	95	52	60	0.4
02	3/8"	95	52	60	0.4
03	1/2"	102	64	70	0.5
04	3/4"	117	65	75	0.7
05	1"	137	75	85	1.1
75 55 06	1-1/4"	148	90	95	1.6
07	1-1/2"	178	97	120	2.3
08	2"	203	105	120	3.4
09	2-1/2"	257	127	155	6.0
10	3"	286	151	180	9.0
75 55 11	4"	387	111	230	18.0

Type 290A

Unit Per Pc.

CODE	D	Size mm H	L	M	Weight Kgs
75 55 15	3/8"	77	42	52	0.3
16	1/2"	77	43	52	0.3
17	3/4"	90	48	59	0.4
18	1"	102	53	59	0.6
19	1-1/4"	114	60	69	0.9
75 55 20	1-1/2"	133	63	75	1.2
21	2"	163	71	85	1.9
22	2-1/2"	202	87	102	2.8
23	3"	224	97	119	4.3

How to order: CODE

Gate valve (DIN), brass, BSP female threaded ends, Inside screwed stem, 290AA, SIZE DN

Type 290AA

Unit Per Pc.

CODE	D	Size mm H	L	M	Weight Kgs
75 55 26	3/8"	50	71	40	0.18
27	1/2"	55	80	44	0.245
28	3/4"	60	95	48	0.375
29	1"	65	101	54	0.5
30	1-1/4"	75	120	60	0.75
75 55 31	1-1/2"	80	135	64	0.99
32	2"	90	150	72	1.43
33	2-1/2"	110	185	80	2.44
34	3"	120	205	85	3.5
35	4"	140	260	97	6.05

Gate Valves (DIN)

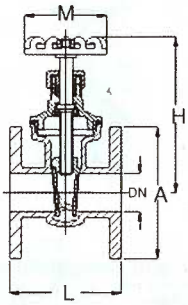
Bronze

DIN Flanged Ends

Threaded Bonnet Inside Screwed Stem

Pressure Rating PN 16

Bronze gate valve with bronze wedge and seat, pressure rating PN 16, flat faced flange acc. to DIN PN 10/16, threaded bonnet, inside screwed stem, non-rising stem and handwheel, face to face acc. to EN 558-1, 47 (DIN 3202-F19). Heavy duty construction with flat faced flanges. Possible certification by various classification societies. Application : cold and hot water, saturated steam and other neutral media. Application area : general; but primarily used in shipbuilding.



Pressure and Temperature Range

Bore	Pressure and temperature Range
DN 15 - 100	16 bar - 120°C 10 bar - 150°C 6 bar - 200°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet Gasket	Asbestos-free	
Gland Packing	Asbestos-free	

How to order: CODE

Gate valve (DIN), bronze, DIN flanged ends, threaded bonnet inside screwed stem, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	H	L	M	
75 55 41	15	95	85	75	55	1.7
42	20	105	105	75	55	1.9
43	25	115	117	80	70	2.5
44	32	140	130	90	70	3.5
45	40	150	150	100	80	4.5
75 55 46	50	165	180	110	110	5.1
47	65	185	220	130	110	8.9
48	80	200	251	150	150	11.4
49	100	220	344	160	170	19.0

Econosto Model No 291

7TH 75

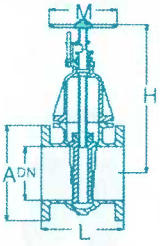
Gate Valves (DIN)

Bronze, DIN Flanged Ends
Bolted Bonnet Inside Screwed Stem

Bronze gate valve with bronze wedge and seat, pressure rating PN 4/6/10/16, flat faced flanges acc. to DIN PN 10/16, bolted bonnet, position indicator, inside screwed stem, non-rising stem and handwheel, face to face acc. to EN 558-1, 14 (DIN 3202-F4)

Heavy duty construction with flat faced flanges. A position indicator is a standard feature of the valve. Possible certification by various classification societies.

Application : especially suitable for use in shipbuilding.



Pressure and Temperature Range

Bore	Pressure and Temperature Range
DN 40 thru DN 150	16 bar - 100°C, 11bar - 225°C
DN 200	10 bar - 100°C, 6bar - 225°C
DN 250	6 bar - 100°C, 4bar - 225°C
DN 300	4 bar - 100°C, 2.5bar - 225°C

Material Specification

Component	Material	EN and/or (DIN)
Body Bonnet and Wedge	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Bonnet Gasket	Asbestos-free	
Gland Packing	Asbestos-free	
Position Indicator	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)

How to order: CODE

Gate valve (DIN), bronze, DIN flanged ends, bolted bonnet inside screwed stem, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	H	L	M	
75 55 51	40	150	260	140	140	11.5
52	50	165	260	150	140	14
53	65	185	320	170	160	18
54	80	200	350	180	160	21
55	100	220	410	190	200	29
75 55 56	125	250	440	200	200	38
57	150	285	520	210	250	50
59	200	340	630	230	250	79
60	250	395	720	250	315	108
61	300	445	820	270	400	187

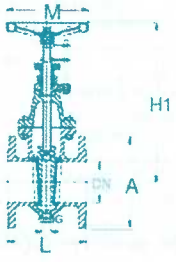
Econosto Model No. : 1317

Gate Valves (DIN)

Cast Iron, DIN Flanged Ends
Inside Screwed Stem
Short Face to Face, Bronze Seat

Cast iron gate valve with bronze seat, pressure rating PN 2.5/6/10, flanged ends acc. to DIN PN 10, bolted bonnet, inside screwed stem, non-rising stem, non-rising handwheel, solid wedge, short Face To Face acc. to EN 558-1, 14 (DIN 3202-F4). This model has standard a position indicator and drain plug.

Application: cold and hot fresh water, seawater, lubricating oil, steam, etc.



Pressure and Temperature Range

Bore	Stem and Hot Water	Other Media
DN 40 thru DN 300	8 bar - 150°C	10 bar - 120°C
DN 350 thru DN500	2 bar - 150°C	6 bar - 120°C
DN 600	-	2.5 bar - 120°C

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Body Seat Rings	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN40-DN100)	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN125-DN600)	Cast iron	GJL-250 (GG-25)
Wedge Set Rings (DN125-600)	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	- (CuZn41Pb62)
Handwheel	Cast iron	
Bonnet Gasket	Novus 34	
Gland Packing	PTFE	
Position Indicator	Brass	- (CuZn41Pb62)

How to order: CODE

Gate valve (DIN), cast iron, DIN flanged ends, inside screwed stem, short face to face, bronze seat, with position indicator and drain plug, SIZE DN

Unit Per Pc

CODE	DN	Size mm A	L	M	G	Weight Kgs
75 55 71	40	150	140	125	-	10
72	50	165	150	150	1/2"	12
73	65	185	170	175	1/2"	17
74	80	200	180	175	1/2"	22
75	100	220	190	200	1/2"	27
75 55 76	125	250	200	200	1/2"	33
77	150	285	210	225	1/2"	43
78	200	340	230	225	3/4"	65
79	250	395	250	250	3/4"	100
80	300	445	270	300	3/4"	142
75 55 81	350	505	290	400	1"	207
82	400	565	310	400	1"	246
84	500	670	350	500	1"	416
86	600	780	390	500	1"	624

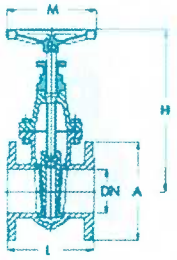
Econosto Model No. : 317

Gate Valves (DIN)

Cast Iron, DIN Flanged Ends
Inside Screwed Stem
Short Face to Face, Bronze Seat

Cast iron gate valve with bronze seat, pressure rating PN 2.5/6/10, flanged ends acc. to DIN PN 10, bolted bonnet, inside screwed stem, non-rising handwheel, solid wedge, short Face To Face acc. to EN 558-1, 14 (DIN 3202-F4). Application: cold and hot fresh water, seawater, lubricating oil steam etc.

*Drain Plug is available in option.



Pressure and Temperature Range

Bore	Stem and Hot Water	Other Media
DN 40 thru DN 300	8 bar - 150°C	10 bar - 120°C
DN 350 thru DN500	2 bar - 150°C	6 bar - 120°C
DN 600	-	2.5 bar - 120°C

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Body Seat Rings	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN40-DN100)	Bonze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN125-DN600)	Cast iron	GJL-250 (GG-25)
Wedge Set Rings (DN125-600)	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	- (CuZn41Pb62)
Handwheel	Cast iron	
Bonnet Gasket	Novus 34	
Gland Packing	PTFE	

How to order: CODE

Gate valve (DIN), cast iron, DIN flanged ends, inside screwed stem, short face to face, bronze seat, SIZE DN

Unit Per Pc

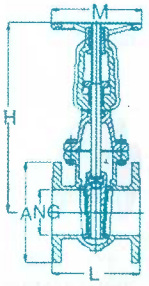
CODE	DN	Size mm A	L	H	M	Weight Kgs
75 56 01	40	150	140	230	125	10
02	50	165	150	245	150	12
03	65	185	170	290	175	17
04	80	200	180	315	175	22
05	100	220	190	355	200	27
75 56 06	125	250	200	415	200	33
07	150	285	210	460	225	43
08	200	340	230	545	225	65
09	250	395	250	635	250	100
10	300	445	270	728	300	142
75 56 11	350	505	290	888	400	207
12	400	565	310	964	400	246
13	500	670	350	1,150	500	416
14	600	780	390	1,320	500	624

Econosto Model No. : 292

Gate Valves (DIN)

Cast Iron, DIN Flanged Ends
Outside Screw & Yoke,
Short Face to Face
Bronze Seat

Cast iron gate valve with bronze seat, pressure rating PN 10, flanged ends acc. to DIN PN 10, bolted bonnet, outside screwed stem and yoke, rising stem, non-rising handwheel, solid wedge, short face to face acc. to EN 558-1, 14 (DIN 3202-F4). Purpose: cold and hot fresh water, saltwater, lubricating oil, steam etc.



Pressure and Temperature Range

Bore	Pressure and Temperature Range	Max. Temperature
DN 40 thru DN 300	8 bar - 150°C 10 bar - 120°C	150°C

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Body Seat Rings	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN40-DN100)	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN125-DN300)	Cast iron	GJL-250 (GG-25)
Wedge Set Rings (DN125-300)	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	-(CuZn41Pb62)
Handwheel	Cast iron	
Bonnet Gasket	Novus 34	
Gland Packing	PTFE	

How to order: CODE

Gate valve (DIN), cast iron, DIN flanged ends, outside screw & yoke, short face to face, bronze seat, SIZE DN

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L	H	H Open	M	
75 56 15	40	150	140	265	310	150	10
16	50	165	150	275	330	150	12
17	65	185	170	335	405	175	17
18	80	200	180	355	440	175	22
19	100	220	190	400	505	200	27
75 56 20	125	250	200	495	625	200	33
21	150	285	210	585	740	225	43
22	200	340	230	700	910	225	65
23	250	395	250	830	1,090	250	100
24	300	445	270	960	1,270	300	142

Econosto Model No. : 306

Gate Valves (DIN)

Cast Iron, DIN Flanged Ends
Outside Screw & Yoke
Short Face to Face
Bronze Seat

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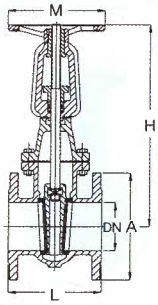
75

Cast iron gate valves with bronze seat, pressure rating PN 10, flanged ends acc. to DIN PN 10, bolted bonnet, outside screwed stem and yoke, rising stem, non-rising handwheel, solid wedge, short face to face acc. to EN558-1, 14 (DIN 3202-F4). This model has a double pitch threaded stem (fast opening/closing) and drain plug.

Purpose: cold and hot fresh water, saltwater, lubricating oil, steam etc.



Pressure and Temperature Range

Bore	Pressure and Temperature Range	Max. Temperature
DN 40 thru DN 300	8 bar - 150°C 10 bar - 120°C	150°C

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Body Seat Rings	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN40-DN100)	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Wedge (DN125-DN300)	Cast iron	GJL-250 (GG-25)
Wedge Set Rings (DN125-300)	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem	Brass	-(CuZn41Pb62)
Handwheel	Cast iron	
Bonnet Gasket	Novus 34	
Gland Packing	PTFE	

How to order: CODE

Gate valve (DIN), cast iron, DIN flanged ends, outside screw & yoke, short face to face, bronze seat, with double pitch threaded stem and drain plug SIZE DN

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L	H	M	Drain Plug	
75 56 32	50	165	150	275	150	1/2"	12
33	65	185	170	335	175	1/2"	17
34	80	200	180	355	175	1/2"	22
35	100	220	190	400	200	1/2"	27
36	125	250	200	495	200	1/2"	33
75 56 37	150	285	210	585	225	1/2"	43
38	200	340	230	700	225	3/4"	65
39	250	395	250	830	250	3/4"	100
40	300	445	270	960	300	3/4"	142

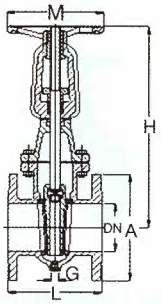
Econosto Model No. : 319

Gate Valves (DIN)

Cast Iron, DIN Flanged ends
Outside Screw & Yoke
Short Face to Face
Stainless Steel Seat
Pressure Rating PN 10

Cast iron gate valves with stainless steel seat, pressure rating PN 10, flanged ends acc. to DIN PN 10, bolted bonnet, outside screwed stem and yoke, rising stem, non-rising handwheel, solid wedge, drain plug, grease nipple, short face to face acc. to EN 558-1, 14 (DIN 3202-F4).

Application : cold and hot fresh water, lubricating oil, steam etc. Application due to the absence of cupriferous parts, these valves are especially suitable for aggressive media.



Pressure and Temperature Range

Bore	Pressure and Temperature Range	Max. Temperature
DN 40 thru DN 300	8 bar - 150°C 10 bar - 120°C	150°C

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Body Seats	Stainless steel	X5CrNi18-10
Wedge (DN40-DN100)	Cast steel	GP240GH + N (GS-C25N)
Wedge (DN125-DN300)	Cast iron	GJL-250 (GG-25)
Wedge Seats	Stainless steel	X5CrNi18-10
Stem	Stainless steel	X5CrNi18-10
Handwheel	Cast iron	
Bonnet Gasket	Novus 34	
Gland Packing	PTFE	

How to order: CODE

Gate valve (DIN), cast iron, DIN flanged ends, outside screw & yoke, short face to face, stainless steel seat, SIZE DN

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L	H	M	G	
75 56 41	40	150	140	265	150	-	10
42	50	165	150	275	150	1/2"	12
43	65	185	170	335	175	1/2"	17
44	80	200	180	355	175	1/2"	22
45	100	220	190	400	200	1/2"	27
75 56 46	125	250	200	495	200	1/2"	33
47	150	285	210	585	225	1/2"	43
48	200	340	230	700	225	3/4"	65
49	250	395	250	830	250	3/4"	100
50	300	445	270	960	300	3/4"	142

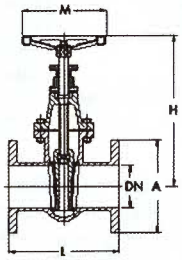
Econosto Model No. : 2406

Gate Valves (DIN)

Cast Iron, DIN Flanged Ends
Inside Screwed Stem
Long Face to Face
Bronze Seat

Cast iron gate valve with brass seat, pressure rating PN 16, flanged ends acc. to DIN PN 10/16, bolted bonnet, inside screwed stem, non-rising stem, non-rising handwheel, solid wedge, long face to face acc. to EN 558-1, 15 (DIN 3202-F5).

Application: as standard, these valves can be used for cold and warm water.



Pressure and Temperature Range

Bore	Pressure and Temperature Range	Max. Temperature
DN 40 thru DN 300	16 bar - 80°C	80°C (due to NBR bonnnet gasket)
For higher temperatures, use a different bonnet gasket		

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Body Seats	Brass	- (CuZn41Pb62)
Wedge (DN40-DN65)	Brass	- (CuZn41Pb62)
Wedge (DN80-DN300)	Cast iron	GJL-250 (GG-25)
Wedge Seats (DN80-DN300)	Brass	- (CuZn41Pb62)
Stem	Brass	- (CuZn41Pb62)
Handwheel	Cast iron	
Bonnet Gasket	NBR	
Gland Packing	PTFE	

How to order: CODE

Gate valve (DIN), cast iron, DIN flanged ends, inside screwed stem, long face to face, bronze seat, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	M	
75 56 51	40	150	240	230	180	10
52	50	165	250	245	180	13
53	65	185	270	290	225	17
54	80	200	280	315	225	24
55	100	220	300	355	280	31
75 56 56	125	250	325	415	320	41
57	150	285	350	460	320	55
58	200	340	400	545	400	89
59	250	395	450	635	500	140
60	300	445	500	725	500	180

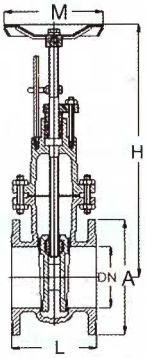
Econosto Model No : 293

Gate Valves (DIN)

Cast Iron, DIN Flanged Ends
Inside Screwed Stem
Short Face to Face
Pressure Rating PN16

Cast steel gate valve with stainless steel seat, pressure rating PN 16, flanged ends acc. to DIN PN 16, bolted bonnet, inside screwed stem, non-rising stem, non-rising handwheel, flexible wedge, position indicator, short face to face acc. to EN 558-1, 14 (DIN 3202-F4).

Application suitable for general applications; due to the special trim, these valves are especially suitable for seawater, and they are used aboard ships as ship-side valve and in cooling water systems.



Pressure and Temperature Range

	-10/20°C	100°C	150°C	200°C	250°C
PN 16	16 bar	16	16	13.3	12.2
	300°C	350°C	400°C	425°C	450°C
PN 16	11	10.3	9.9	9.7	9.5

Material Specification

Component	Material	EN and/or (DIN)
Body, Bonnet and Wedge	Cast steel	GP240GH + N (GS-C 25N)
Wedge Seats	Stainless steel	- (X2CrNiMo19 12)
Body Seats	Stainless steel	- (X2CrNiMo19 12)
Stem	Stainless steel	X6CrNiMoTi17-12-2
Handwheel	Steel	
Bonnet Gasket, Gland Packing (SS insert)	Graphite	
Position Indicator	Brass	

How to order: CODE

Gate valve (DIN), cast steel, DIN flanged ends, inside screwed stem, short face to face, pressure rating PN 16, SIZE DN

Unit Per Pc.

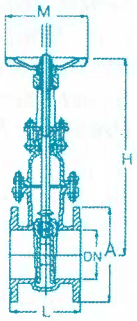
CODE	DN	Size mm				Weight Kgs
		A	H	L	M	
75 56 72	50	165	330	150	200	16
73	65	185	390	170	200	23
74	80	200	420	180	200	26
75	100	220	440	190	200	32
76	125	250	490	200	250	39
75 56 77	125	285	580	210	250	52
78	200	340	690	230	300	84
79	250	405	860	250	400	160
80	300	460	930	270	400	190

Econosto Model No : 315

(to be continued)

Gate Valves (DIN)

Cast steel, DIN Flanged Ends
Outside Screwed stem
Short Face to Face
Pressure Rating PN16



Cast steel gate valves with stainless steel seat, pressure rating PN 16, flanged ends acc. to DIN PN 16, bolted bonnet with yoke, outside screwed stem and yoke, rising stem, non-rising handwheel, flexible wedge, short face to face acc. to EN 558-1, 14 (DIN 3202-F4).

Application: suitable for general use within the specified pressure and temperature range.

7TH 75

Pressure and Temperature Range

	-10/20°C	100°C	150°C	200°C	250°C
PN 16	16 bar	16	16	13.3	12.2
	300°C	350°C	400°C	425°C	450°C
PN 16	11	10.3	9.9	9.7	9.5

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast steel	GP240GH +N(GS-C25N)
Wedge	Cast steel	GP240GH +N(GS-C25N)
Wedge Seats	Stainless steel	- (X8CrTi18)
Body Seats	Stainless steel	- (X8CrTi18)
Stem	Stainless steel	X20Cr13
Handwheel	Steel	
Bonnet Gasket, Gland Packing (SS insert)	Graphite	

How to order: CODE

Gate valve (DIN), cast steel, DIN flanged ends, outside screwed stem, short face to face, pressure rating PN 16, SIZE DN

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	H	H Open	L	M	
75 56 82	50	165	315	375	150	200	15
83	65	185	370	450	170	200	25
84	80	200	410	500	180	200	27
85	100	220	450	560	190	200	35
86	125	250	525	660	200	250	40
75 56 87	150	285	600	765	210	250	55
88	200	340	760	975	230	300	82
89	250	405	990	1,255	250	400	155
90	300	460	1,095	1,415	270	400	195

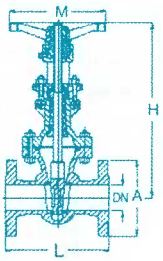
Econosto Model No. : 309

Gate Valves (DIN)

Cast Steel, DIN Flanged Ends
Outside Screw & Yoke
Long Face to Face
Pressure Rating PN 16-25

Cast steel globe valve with stainless steel seat, pressure rating PN 16 and 25, flanged ends acc. to DIN PN 16 and 25, bolted bonnet with yoke, outside screwed stem and yoke, rising stem, non-rising handwheel, flexible wedge, long face to face acc. to EN 558-1, 15 (DIN 3202-F5).

Application: steam, hot and cold water, oil, air, gas etc. Remark : the gland packing can be replaced during operation with the wedge in fully-open position.



Pressure and Temperature Range

Model	Pressure Raiting	0/20°C	50°C	100°C	150°C	200°C
3816	PN 16	16 bar	14.9	13.6	12.7	11.4
3825	PN 25	25 bar	23.2	21.4	19.8	17.8
Model	Pressure Raiting	250°C	300°C	350°C	375°C	400°C
3816	PN 16	10.4	9.4	8.8	8.6	8.4
3825	PN 25	16.2	14.7	13.7	13.5	13.2

Material Specification

Component	Material	EN and/or (DIN)
Body, Bonnet and Wedge	Cast steel	GP240GH (GS-C 25)
Wedge Seats	Stainless steel	X20Cr13
Body Seats	Stainless steel	X20Cr13
Stem	Stainless steel	X20Cr13
Handwheel	Steel	
Bonnet Gasket (SS insert)	Graphite	
Gland Packing	Graphite	

How to order: CODE

Gate valve (DIN), cast steel, DIN flanged ends, outside screw & yoke, long face to face, PRESSURE RAITING PN, SIZE DN

PN 16

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	H	H Open	L	M	
75 57 09	50	165	400	460	250	200	23
01	65	185	430	505	270	200	30
02	80	200	500	590	280	225	40
03	100	220	520	630	300	250	54
04	125	250	590	725	325	250	80
75 57 05	150	285	690	850	350	300	86
06	200	340	850	1,060	400	400	195
07	250	405	1,000	1,260	450	500	285
08	300	460	1,200	1,510	500	500	440

Econosto Model No. : 3816

PN 25

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	H	H Open	L	M	
75 57 19	50	165	400	460	250	200	23
11	65	185	430	505	270	200	30
12	80	200	500	590	280	225	40
13	100	220	520	630	300	250	54
14	125	250	590	725	325	250	80
75 57 15	150	285	690	850	350	300	86
16	200	340	850	1,060	400	400	195
17	250	405	1,000	1,260	450	500	285
18	300	460	1,200	1,510	500	500	440

Econosto Model No. : 3825

Gate Valves (DIN)

Forged Steel and Cast Steel
DIN Flanged Ends
Outside Screw & Yoke
Long Face to Face
Pressure Rating PN 40

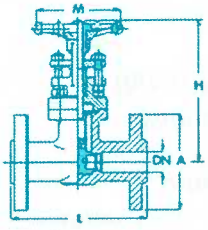
Cast steel and forged steel gate valves with stainless steel seat, pressure rating PN 40, flanged ends acc. to DIN PN 40, bolted bonnet with yoke, outside screwed stem and yoke, rising stem, non-rising handwheel.

DN 15 thru DN 40 : forged steel, face to face acc. to EN 558-1, 1 (DIN 3202-F1) and solid wedge.

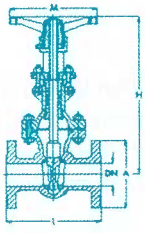
DN 50 thru DN 300 : cast steel, face to face acc. to EN 558-1, 26 (DIN 3202-F7) and flexible wedge.

Application: steam, hot and cold water, oil, air, gas etc.

Remark: the gland packing can be replaced during operation with the wedge in fully-open position.



DN 15 - DN 40



DN 50 - DN 300

Pressure and Temperature Range

Bore	Pressure Raiting	0/20°C	50°C	100°C	150°C	200°C	250°C	300°C
DN 15-40	PN 40	40	40	40	37	35	32	28
DN50-300	PN 40	40	37.2	34.1	31.7	28.4	26	23.5
Bore	Pressure Raiting	350°C	375°C	400°C	450°C	475°C	480°C	
DN 15-40	PN 40	24	22.5	21	13	8	7	
DN50-300	PN 40	21.9	21.6	21.1	-	-	-	

Material Specification

Component	Material	EN and/or (DIN)
DN 15 thru DN 40		
Body and Bonnet	Forged steel	C22G2 (C 22:8)
Wedge	Stainless steel	X20Cr13
DN 50 thru DN 300		
Body, Bonnet and Wedge	Cast steel	GP240GH (GS-C25)
DN 15 thru DN 300		
Wedge Seats	Stainless steel	X20Cr13
Body Seats	Stainless steel	X20Cr13
Stem	Stainless steel	X20Cr13
Handwheel	Steel	
Bonnet Gasket (SS insert)	Graphite	
Gland Packing	Graphite	

How to order: CODE

Gate valve (DIN), CAST STEEL or FORGED STEEL, DIN flanged ends outside screw & yoke, long face to face, pressure rating PN 40, SIZE DN

PN 40

Unit Per Pc.

CODE	DN	Size mm A	H	H Open	L	M	Weight Kgs
Forged Steel							
75 57 29	15	95	161	186	130	80	3.8
30	20	105	163	193	150	100	5.4
31	25	115	180	215	160	120	6.5
32	32	140	252	294	180	140	9.5
33	40	150	252	302	240	140	17.3
Cast Steel							
75 57 34	50	165	400	460	250	200	25
21	65	185	430	505	290	200	30
22	80	200	500	590	310	225	43
23	100	235	530	640	350	300	55
24	125	270	620	755	400	300	85
75 57 25	150	300	730	890	450	400	120
26	200	375	910	1,120	550	400	200
27	250	450	1,110	1,370	650	500	304
28	300	515	1,240	1,550	750	600	460

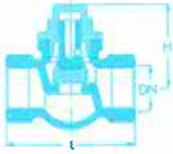
Econosto Model No. : 3840

7TH 75

DIN Check Valves

Check Valves (DIN)
Bronze, BSP Female Threaded Ends
Lift Type

Bronze check valves for horizontal installation.



Pressure and Temperature Range

Model	Pressure and Temperature Range	
500BR	16 bar - 120°C	12 bar - 200°C
500TE	16 bar - 120°C	10 bar - 185°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5)) - (CuZn41Pb62)
Disc and Bonnet	Brass	
Gasket	Asbestos-free	
Disc Ring (500TE)	PTFE	

How to orde : CODE

Check valve (DIN), bronze, BSP female threaded ends, lift type, MODEL NO., SIZE DN

Unit Per Pc.

500BR CODE	DN	Size mm L	H	500TE CODE	DN	Size mm L	H	Weight Kgs
75 57 51	1/4"	50	37	75 57 61	1/4"	50	37	0.3
52	3/8"	50	38	62	3/8"	50	38	0.3
53	1/2"	60	39	63	1/2"	60	39	0.4
54	3/4"	70	48	64	3/4"	70	48	0.5
55	1"	80	53	65	1"	80	53	0.8

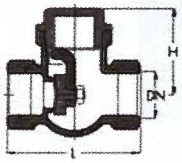
(to be continued)

Unit Per Pc.

500BR				500TE				Weight Kgs
CODE	DN	Size mm L	Size mm H	CODE	DN	Size mm L	Size mm H	
75 57 56	1-1/4"	95	56	**75 57 66**	1-1/4"	95	56	1.2
57	1-1/2"	105	63	**67**	1-1/2"	105	63	1.6
58	2"	130	72	**68**	2"	130	72	2.5
59	2-1/2"	163	100	**69**	2-1/2"	163	100	5.2
60	3"	185	110	**70**	3"	185	110	6.0

Check Valves (DIN)
Bronze, BSP Female Threaded Ends
Swing Type

Bronze check valves for horizontal and vertical (upward flow) installation.



Pressure and Temperature Range

Model	Pressure and Temperature Range	
505BR	16 bar - 120°C	12 bar - 200°C
505TE	16 bar - 120°C	10 bar - 185°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Disc and Bonnet	Brass	- (CuZn41Pb62)
Gasket	Asbestos-free	
Disc Ring (505TE)	PTFE	

How to order: CODE

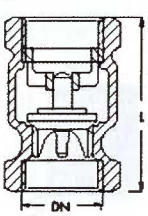
Check valve (DIN), bronze, BSP female threaded ends, swing type, MODEL NO., SIZE DN

Unit Per Pc.

505BR (Metal Seated)				505TE (PTFE Disc Seal)				Weight Kgs
CODE	D	Size mm L	Size mm H	CODE	D	Size mm L	Size mm H	
75 57 71	3/8"	50	35	**75 57 81**	3/8"	50	35	0.3
72	1/2"	60	38	**82**	1/2"	60	38	0.4
73	3/4"	70	49	**83**	3/4"	70	49	0.5
74	1"	80	54	**84**	1"	80	54	0.8
75	1-1/4"	95	60	**85**	1-1/4"	95	60	1.1
75 57 76	1-1/2"	105	70	**75 57 86**	1-1/2"	105	70	1.5
77	2"	130	77	**87**	2"	130	77	2.1
78	2-1/2"	160	94	**88**	2-1/2"	160	94	4.6
79	3"	185	130	**89**	3"	185	130	6.9

Check Valves (DIN)
Bronze, BSP Female Threaded Ends
Vertical Installation

Bronze check valves with BSP female threaded ends, only suitable for vertical (upward flow) installation.



Pressure and Temperature Range :
16 bar - 120°C
12 bar - 200°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Disc and Disc Guide	Brass	- (CuZn41Pb62)

How to order: CODE

Check valve (DIN), bronze, BSP female threaded ends, Vertical installation, MODEL NO., SIZE DN

Unit Per Pc.

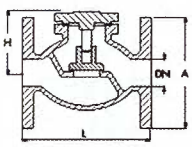
CODE	D	L mm	Weight Kgs	CODE	D	L mm	Weight Kgs
75 57 91	3/8"	55	0.18	**75 57 95**	1-1/4"	80	0.6
92	1/2"	55	0.18	**96**	1-1/2"	85	0.85
93	3/4"	65	0.25	**97**	2"	112	1.45
94	1"	72	0.38				

Econosto Model No. : 507

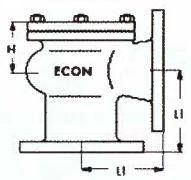
Check Valves (DIN)
Bronze, DIN Flanges
Lift Type
Straight and Angle

Bronze lift type check valves with bronze disc and seat, pressure rating PN 16, straight and angle pattern, flat faced flanges as per DIN PN 16 and bolted bonnet. Only suitable for installation in horizontal pipelines. These check valves offer very good resistance to the corrosive action of seawater, fresh water and waste water.

Application area : aboard ships but also in installations where corrosion (in- or external) is undesirable.



Straight



Angle

Pressure and Temperature Range

Pressure Raiting	Pressure and Temperature Range	Max. Temperature
PN 16	16 bar - 120°C 12 bar - 200°C	200°C 200°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Disc	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet Gasket	Graphite	

How to order: CODE

Check valve (DIN), bronze, DIN flanges, lift type, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L	H	
75 58 11	15	95	120	65	3.5
12	20	105	120	65	4.2
13	25	115	140	75	5.0
14	32	140	150	75	6.8
15	40	150	155	95	8.4
75 58 16	50	165	180	105	10.2
17	65	185	200	120	21.3
18	80	200	240	130	26.5
19	100	220	270	160	34.0
20	125	250	320	175	50.0
75 58 21	150	285	370	195	62

Econosto Model No. : 496

Angle Type

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L1	H	
75 58 25	15	95	65	55	3.3
26	20	105	65	55	4.6
27	25	115	70	65	4.8
28	32	140	90	65	6.4
29	40	150	90	80	8.6
75 58 30	50	165	105	85	11.1
31	65	185	115	95	20.3
32	80	200	125	100	25.0
33	100	220	145	120	33.0
34	125	250	170	135	43.0
75 58 35	150	285	200	150	63

Econosto Model No. : 497

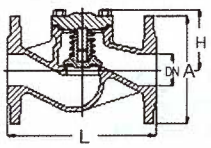
Check Valves (DIN)

Cast Iron, DIN Flanges
Lift Type with Spring
Stainless Steel Seat
Straight and Angle

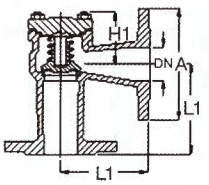
Cast iron lift type check valves with stainless steel disc and seat, spring loaded disc, pressure rating PN 16, straight and angle pattern with bolted bonnet, flanged connection acc. to DIN PN 16. Suitable for horizontal and vertical (rising flow) installation.

Application area : general industrial use.

Purpose: cold and hot water, air, gases, steam and other neutral media.



Straight



Angle

Pressure and Temperature Range

	-10/120°C	150°C	180°C	200°C
PN 16	16 bar	14.4	13.4	12.8
	230°C	250°C	300°C	
PN 16	11.8	11.2	9.6	

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-250 (GG-25)
Bonnet	Cast iron	GJL-250 (GG-25)
Disc	Stainless steel	X20Cr13
Spring	Stainless steel	X17CrNi16-2 (X20CrNi17 2)
Seat	Stainless steel	X12Cr13 (X10Cr13)
Stem	Stainless steel	X20Cr13
Bonnet Gasket (SS insert)	Graphite	

How to order: CODE

Check valve (DIN), cast iron, DIN flanges, lift type with spring, Stainless steel seat, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L	H	
75 58 41	15	95	130	56	2.1
42	20	105	150	56	2.7
43	25	115	160	67	3.8
44	32	140	180	76	5.5
45	40	150	200	89	7.4
75 58 46	50	165	230	96	9.5
47	65	185	290	104	15
48	80	200	310	124	20
49	100	220	350	161	29
50	125	250	400	174	41
75 58 51	150	285	480	197	66
53	200	340	600	248	111
54	250	405	730	333	196
68	300	460	800	375	302

Econosto Model No. : 77

Angle Type

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L1	H1	
75 58 55	15	95	90	50	2.2
56	20	105	95	47	2.8
57	25	115	100	57	3.9
58	32	140	105	60	5.5
59	40	150	115	70	7.0
75 58 60	50	165	125	73	9.2
61	65	185	145	79	12.0
62	80	200	155	77	17.2
63	100	220	175	112	25.0
64	125	250	200	119	36.0
75 58 65	150	285	225	123	55
67	200	340	275	157	97

Econosto Model No. : 78

Check Valves (DIN)

Cast Iron, DIN Flanges
Lift Type with Spring
Bronze Seat
Straight and Angle

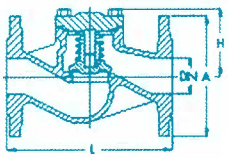
Cast iron life type check valves with zinc-free bronze disc and seat, spring loaded disc, pressure rating PN 16,

straight and angle pattern with bolted bonnet, flanges acc. to DIN PN 16.

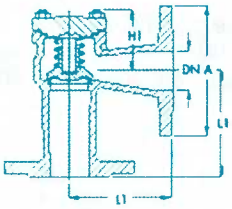
Suitable for horizontal and vertical (upward flow) installation.

Application area : maritime use in particular, due to the zinc free bronze trim.

Application : in particular for cold and warm (sea) water, air, gases, other neutral media.



Straight



Angle

7TH 75

Pressure and Temperature Range

	-10/120°C	150°C	180°C	200°C	225°C
PN 16	16 bar	14.4	13.4	12.8	12

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-250 (GG-25)
Bonnet	Cast iron	GJL-250 (GG-25)
Disc	Zinc-free bronze	CuSn10-Cu (G-CuSn10)
Spring	Zinc-free bronze	
Seat	Zinc-free bronze	CuSn10-Cu (G-CuSn10)
Stem	Zinc-free bronze	CuSn10-Cu (G-CuSn10)
Bonnet Gasket (SS insert)	Graphite	

How to order: CODE

Check valve (DIN), cast iron, DIN flanges, lift type with spring, Bronze seat, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc

CODE	DN	Size mm A	Size mm L	Size mm H	Weight Kgs
75 58 71	15	95	130	56	2.1
72	20	105	150	56	2.7
73	25	115	160	67	3.8
74	32	140	180	76	5.5
75	40	150	200	89	7.4
75 58 76	50	165	230	96	9.5
77	65	185	290	104	15
78	80	200	310	124	20
79	100	220	350	161	29
80	125	250	400	174	41
75 58 81	150	285	480	197	66
83	200	340	600	248	111
84	250	405	730	333	196
98	300	460	800	375	302

Econosto Model No. 101

Angle Type

Unit Per Pc.

CODE	DN	Size mm A	Size mm L1	Size mm H1	Weight Kgs
75 58 85	15	95	90	50	2.2
86	20	105	95	47	2.8
87	25	115	100	57	3.9
88	32	140	105	60	5.5
89	40	150	115	70	7.0
75 58 90	50	165	125	73	9.2
91	65	185	145	79	12.0
92	80	200	155	77	17.2
93	100	220	175	112	25.0
94	125	250	200	119	36.0
75 58 95	150	285	225	123	55
97	200	340	275	157	97

Econosto Model No. : 102

Check Valves (DIN)

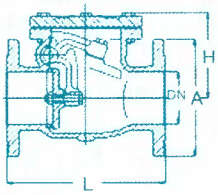
Cast Iron, DIN Flanges

Swing Type, Bronze Disc Seat

Pressure Rating PN 10 - 16

Cast iron swing type check valves, bronze seat or rubber seal, pressure rating PN 10/16, straight pattern, full bore, bolted bonnet, flanges acc. to DIN PN 10/16 and flange drilling acc. to DIN PN 10/16. Suitable for horizontal and vertical (upward flow) installation. Model 83BR has a bronze seat.

Application area: cold and hot water, fresh and seawater.



Pressure and Temperature Range

Size	Pressure and Temperature Range
DN 40 - DN 150	16 bar - 120 C
DN 200 - DN 300	10 bar - 120 C
Max. Temperature	120°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-250 (GG-25)
Bonnet	Cast iron	GJL-250 (GG-25)
Seat	Bronze	CuSn5ZnPb5-C(G-CuSn5ZnPb (Rg 5))
Hinge Pin	Brass	
Hinge Arm	Cast iron	CuZn40Pb2
Disc (DN40-DN125)	Bronze	GJL-250 (GG-25)
Disc (DN150-DN300)	Cast iron Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Disc Seat	Novus 34	GJL-250 (GG-25)
Bonnet Gasket		CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))

How to order: CODE

Check valve (DIN), cast iron, DIN flanges. swing type, Bronze disc seat, SIZE DN

Unit Per Pc

CODE	DN	Size mm A	Size mm L	Size mm H	Weight Kgs
75 59 01	40	150	180	115	8
02	50	165	200	125	10
03	65	185	240	130	15
04	80	200	260	140	20
05	100	220	300	160	26

(to be continued)

Unit Per Pc

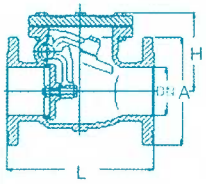
CODE	DN	Size mm A	L	H	Weight Kgs
75 59 06	125	250	350	180	35
07	150	285	400	200	48
08	200	340	500	220	72
09	250	392	600	290	135
10	300	445	700	330	196

Econosto Model No. : 83BR

Check Valves (DIN)
Cast Iron, DIN Flanges
Swing Type, Rubber Disc Seal
Pressure Rating PN 10 - 16

Cast iron swing type check valves, bronze seat or rubber seal, pressure rating PN 10/16, straight pattern, full bore, bolted bonnet, flanges acc. to DIN 10/16 and flange drilling acc. to DIN PN 10/16. Suitable for horizontal and vertical (upward flow) installation. Model 83GU has a rubber seal.

Application area: cold and hot water, fresh and seawater.



Pressure and Temperature Range

Size	Pressure and Temperature Range
DN 40 - DN 150 DN 200 - DN 300	16 bar - 80°C 10 bar - 80°C
Max. Temperature	80 C

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-250 (GG-25)
Bonnet	Cast iron	GJL-250 (GG-25)
Seat	Bronze	CuSn5ZnPb5-C (G-CuSn5ZnPb (Rg 5))
Hinge Pin	Brass	CuZn40Pb2
Hinge Arm	Cast iron	GJL-250 (GG-25)
Disc (DN40DN125)	Bronze	CuSn5ZnPb5-C (G-CuSn5ZnPb (Rg 5))
Disc (DN150-DN300)	Cast iron	GJL-250 (GG-25)
Disc Seal	Rubber	
Bonnet Gasket	Novus 34	

How to order: CODE

Check valve (DIN), cast iron, DIN flanges, swing type. Rubber disc seal, SIZE DN

Unit Per Pc.

CODE	DN	Size mm A	L	H	Weight Kgs
75 59 11	40	150	180	115	8
12	50	165	200	125	10
13	65	185	240	130	15
14	80	200	260	140	20
15	100	220	300	160	26
75 59 16	125	250	350	180	35
17	150	285	400	200	48
18	200	340	500	220	72
19	250	395	600	290	135
20	300	445	700	330	196

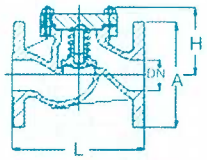
Econosto Model No. : 83GU

Check Valves (DIN)
Cast Steel, DIN Flanges
Lift Type with Spring
Pressure Rating PN 40

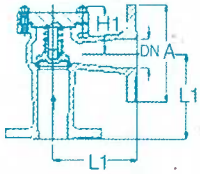
Cast steel lift type check valves with stainless steel disc and seat, spring loaded disc, pressure rating PN 40, straight and angle pattern with bolted bonnet, flanged acc. to DIN PN 40. Suitable for horizontal and vertical (upward flow) installation.

Application : general industrial use

Application : cold and hot water, air, gases, steam, ammonia, thermal oil etc.



Straight



Angle

Pressure and Temperature Range

	-10/20°C	100°C	150°C	200°C	250°C
PN 40	40 bar	37.3	34.7	30.2	28.4
	300°C	350°C	400°C	450°C	
PN 40	25.8	24	23.1	22.2	

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GP240GH + N (GS-C25N)
Bonnet (DN15-DN80)	Forged steel	C22G2 (C 22.8)
Bonnet (DN100-DN500)	Cast steel	GP240GH + N (GS-C25N)
Seat (DN15-DN50)	Stainless steel	X20Cr13
Seat (DN65-DN500)	Stainless steel	- (X5CrNiNb19 9)
Disc (DN15-DN200)	Stainless steel	X20Cr13
Disc (DN250-DN500)	Stainless steel	- (X5CrNiNb19 9)
Spring	Stainless steel	X10CrNi18-8 (X12CrNi17 7)
Bonnet Gasket (SS insert)	Graphite	

How to order: CODE

Check valve (DIN), cast steel, DIN flanges, lift type with spring, pressure raiting PN 40, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm A	L	H	Weight Kgs
75 59 21	15	95	130	70	3.8
22	20	105	150	70	4.9
23	25	115	160	80	5.9
24	32	140	180	80	7.1
25	40	150	200	85	10.4
75 59 26	50	165	230	95	12.3
27	65	185	290	110	22.7
28	80	200	310	130	28.5
29	100	235	350	155	40
30	125	270	400	165	64

(to be continued)

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L	H	
75 59 31	150	300	480	215	90
33	200	375	600	285	170
90	250	450	730	325	240
91	300	515	850	365	374
92	350	580	980	420	508
75 59 93	400	660	1,100	430	786
94	500	755	1,350	530	1,044

Econosto Model No. : 95

Angle Type

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L1	H1	
75 59 35	15	95	90	40	4.2
36	20	105	95	35	4.9
37	25	115	100	45	5
38	32	140	105	45	7.6
39	40	150	115	55	10
75 59 40	50	165	125	60	12
41	65	185	145	65	24.5
42	80	200	155	95	28.5
43	100	235	175	105	42
44	125	270	200	120	55
75 59 45	150	300	225	150	90
47	200	375	275	195	155
95	250	450	325	220	188
96	300	515	375	240	262
97	350	580	425	300	430
75 59 98	400	660	475	310	700
99	500	755	525	380	925

Econosto Model No. : 96

Check Valves (DIN)

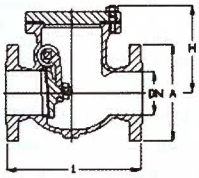
Cast Steel, DIN Flanges

Swing Type

Pressure Rating PN 16

Cast steel swing type check valves, stainless steel disc and seat, pressure rating DIN PN 16, straight pattern with bolted bonnet, full bore, flanged acc. to DIN PN 16. Suitable for horizontal and vertical (upward flow) installation.

Application : general industrial use, such as hot water installations, aboard ships for ships side, etc.



Pressure and Temperature Range

	20°C	50°C	100°C	150°C	200°C
PN 16	16 bar	14.9	13.6	12.7	11.4
	250°C	300°C	350°C	375°C	400°C
PN 16	10.4	9.4	8.8	8.6	8.4

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast steel	GP240GH (GS-C25)
Bonnet	Cast steel	GP240GH (GS-C25)
Seat	Stainless steel	X20Cr13
Disc	Stainless steel	X20Cr13
Hinge Pin	Stainless steel	X20Cr13
Hinge Arm	Cast steel	GP240GH (GS-C25)
Bonnet Gasket (SS insert)	Graphite	

How to order: CODE

Check valve (DIN), cast steel, DIN flanges, swing type, Pressure raiting PN 16, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L	H	
75 59 52	50	165	200	150	18
53	65	185	240	180	25
54	80	200	260	200	29
55	100	220	300	225	39
56	125	250	350	270	60
75 59 57	150	285	400	300	82
58	200	340	500	355	151
59	250	405	600	390	215
60	300	460	700	445	290

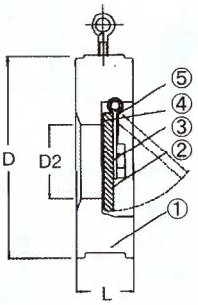
Econosto Model No. : 109

Carbon Steel Check Valves

Wafer Style Long PN16

Series No.4012

For mounting between flanges according to DIN 2501-PN16.



Material

Part No.	Material	Code
1. Body	Carbon Steel	GSC-25N
2. Disc	Stainless Steel	AISI 316L
3. Arm	Stainless Steel	AISI 316L
4. Seat	Viton	FKM
5. Spring	Stainless Steel	AISI 316L

Pressure

Size DN	Nominal Pressure	Hydraulic Inspection	
	PN	Body	Seat
40 to 200	16	25	16
250 to 500	10	16	10

Unit Per Pc.

CODE	DN	Size mm			Weight kgs
		L	D	D2	
75 59 61	50	45	109	33	1.8
62	65	48	129	43	2.4
63	80	51	144	52	3.2
64	100	57	164	76	5.4
65	125	64	194	95	7.3
75 59 66	150	70	220	121	9.2
67	200	73	275	164	14.6
68	250	79	331	194	23.6
69	300	86	386	241	34.4
70	350	108	446	267	75.0
75 59 71	400	108	498	318	91.0
72	450	108	558	356	100.0
73	500	140	620	387	154.0

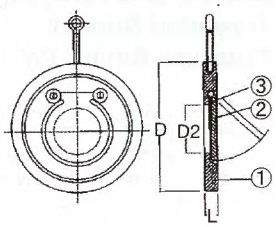
Name of Mfr. : World Wide Metric

Bronze Swing Check Valves

Wafer Style Short PN16

Series No.4022

For mounting between flanges according to DIN2501-PN16.



Material

Part No.	Material	Code
1. Body	Gunmetal	DIN 1705
2. Disc	Gunmetal	DIN 1705
3. Seat	NBR	NBR

Pressure

Size DN	Nominal Pressure PN	Hydraulic Inspection	
		Body	Seat
40 to 200	16	25	16
250 to 500	10	16	10

Unit Per Pc.

CODE	DN	Size mm			Weight kgs
		L	D	D2	
75 59 76	40	16	94	26	0.9
77	50	19	109	26	0.9
78	65	19	129	38	1.3
79	80	19	144	47	1.5
80	100	19	164	70	2.0
75 59 81	125	19	195	92	3.0
82	150	19	221	114	4.8
83	200	29	276	143	11
84	250	29	330	190	15
85	300	38	386	214	25
75 59 86	350	44	446	263	37
87	400	51	498	305	55
88	450	60	558	342	65
89	500	64	620	400	105

Name of Mfr. : World Wide Metric

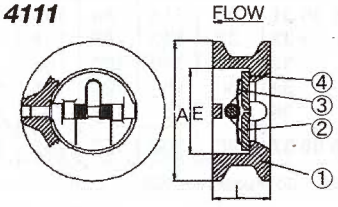
The following optional material for each part are available on your selection;

Part No.	Material	Code
1. Body	Gunmetal Stainless Steel	DIN 1705 AISI 316L
2. Disc	Gunmetal Stainless Steel	DIN 1705 AISI 316L
3. Seat	NBR EPDM Viton Teflon	NBR EPDM FKM PTFE

Duo Check Valves

Cast Iron & Cast Steel

Series No.4101 & 4111



Material

Part No.	Cast Iron (#4101)		Cast Steel (#4111)	
	Material	Code	Material	Code
1.Body	Cast Iron	GG25	Cast Steel	GSC-25N
2 Disc	Bronze	RG5	Stainless Steel	316
3.Spring	Stainless Steel	316	Stainless Steel	316
4.Seat Ring	NBR Viton	NBR Viton	NBR	NBR

Cast Iron (Series 4101)

Unit Per Pc.

CODE	DN	Size mm			Weight kgs
		L	A	E	
75 60 71	50	43	105	54	2.7
72	65	46	124	67	4.5
73	80	64	136	79	5.9
74	100	64	174	105	7.7
75	125	70	196	130	12
75 60 76	150	76	222	155	16
77	200	89	279	209	32
78	250	114	340	257	48
79	300	114	410	308	78
80	350	127	451	358	91
75 60 81	400	140	514	409	125
82	450	152	549	460	143
83	500	152	606	511	197

Name of Mfr. : World Wide Metric
*According to DIN3202 Series 16

Cast Steel (Series 4111)

Unit Per Pc.

CODE	DN	Size mm			Weight kgs
		L	A	E	
75 60 86	50	60	105	54	2.7
87	65	67	124	67	4.5
88	80	73	136	79	5.9
89	100	73	174	105	7.7
90	125	86	196	130	12
75 60 91	150	98	222	155	16
92	200	127	279	209	32
93	250	146	340	257	48
94	300	181	410	308	78
95	350	184	451	358	91
75 60 96	400	190	514	409	125
97	450	203	549	460	143
98	500	212	606	511	197

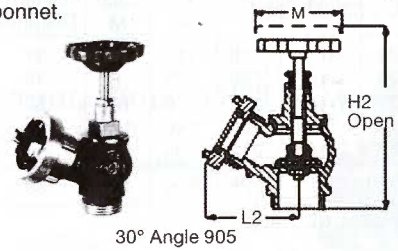
Name of Mfr. : World Wide Metric
*According to API 609

DIN Fire and Deckwash Valves

Firefighting and Deckwash Valves (DIN)

Bronze, BSP Threaded

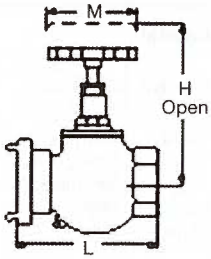
Fire fighting valves with threaded ends are available in two patterns; straight and 30° angled, with BSP threaded inlet. Model 901, 902 and 905 are fitted standard with a "Storz" coupling on the outlet. These valves all feature a threaded bonnet.



30° Angle 905

Straight 901
BSP Male
Threaded Ends

Straight 902
BSP Female
Threaded Ends



901/902

Pressure and Temperature Rang: 16 bar - 60°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet	Brass	CuZn39Pb3
Stem, Disc, Coupling	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Disc, Sealing Ring	NBR	
Handwheel	Cast iron	GJL-200 (GG-20)

How to order: CODE

Firefighting and deckwash valve (DIN), Bronze,BSP threaded, STRAIGHT TYPE or 30°, ANGLE TYPE, SIZE DN

30° Angle Type

Unit Per Pc.

CODE	DN	Size mm			Cam Distance	Weight kgs
		L2	H2	M		
75 60 01	1"	84	145	80	31	1.0
02	1-1/4"	87	160	80	44	1.9
03	1-1/2"	100	190	100	52	2.6
05	2"	120	200	120	81	3.5
06	2-1/2"	127	240	120	81	4.3
75 60 07	3"	157	275	140	89	6.9

Econosto Model No. : 905

Straight Type with BSP Male Threaded Ends

Unit Per Pc.

CODE	DN	Size mm			Cam Distance	Weight kgs
		L	H	M		
75 60 11	1"	118	110	80	31	1.0
12	1-1/4"	130	125	80	44	1.9
13	1-1/2"	138	140	100	52	2.7
15	2"	176	160	120	81	3.7
16	2-1/2"	212	195	120	81	5.5
75 60 17	3"	225	200	140	89	8.0

Econosto Model No. : 901

Straight Type with BSP Female Threaded Ends Unit Per Pc.

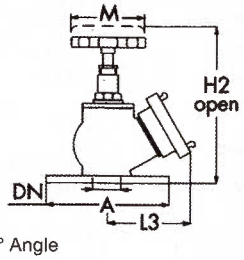
CODE	Inch	Size mm			Cam Distance	Weight kgs
		L	H	M		
75 60 21	1"	118	110	80	31	1.0
22	1-1/4"	130	125	80	44	1.9
23	1-1/2"	138	140	100	52	2.7
25	2"	176	160	120	81	3.7
26	2-1/2"	212	195	120	81	5.5
75 60 27	3"	225	200	140	89	8.0

Econosto Model No. : 902

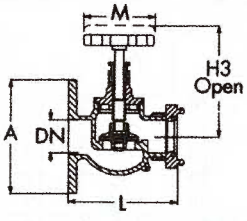
Firefighting and Deckwash Valves (DIN)

Bronze, DIN Flanged, Globe Type Threaded Bonnet Pressure Rating PN 16

Flanged fire fighting valves are available in two patterns; straight and 30° angled with PN 16 flanged inlet. All valves are fitted with a "Storz" coupling on the outlet. Model 907 and 908 are constructed with a threaded bonnet.



30° Angle



Straight

Pressure and Temperature Range: 16 bar - 60°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Bonnet	Brass	CuZn39Pb3
Stem, Disc, Coupling	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Disc, Sealing Ring	NBR	
Handwheel	Cast iron	GJL-200 (GG-20)

How to order: CODE

Firefighting and deckwash valve (DIN), bronze,DIN flanged, globe type, threaded bonnet, pressure rating PN 16, TYPE, SIZE DN

30° Angle Type

Unit Per Pc.

CODE	DN	Size mm				Cam Distance	Weight Kgs
		A	L3	H2	M		
75 60 31	25	115	84	140	80	31	1.9
32	32	140	87	155	80	44	2.9
33	40	150	100	185	80	52	3.9
34	50	165	120	195	100	66	5.1
36	65	185	127	230	120	81	6.4
75 60 37	80	200	157	265	160	89	10.1

Econosto Model No.: 907

Straight Type

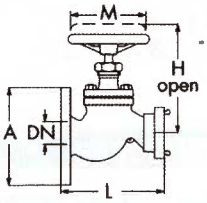
Unit Per Pc.

CODE	DN	Size mm				Cam Distance	Weight Kgs
		A	L	H3	M		
75 60 41	25	115	112	105	80	31	1.9
42	32	140	124	125	80	44	2.9
43	40	150	133	145	80	52	3.9
44	50	165	171	160	100	66	6.2
46	65	185	202	195	120	81	8.7
75 60 47	80	200	215	200	160	89	11.5

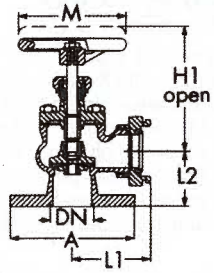
Econosto Model No.: 908

Firefighting and Deckwash Valves (DIN)
Bronze, DIN Flanged, Globe Type
Bolted Bonnet
Pressure Rating PN 16

Flanged fire fighting valves are available in two patterns; straight and 30° angled with PN 16 flanged inlet. All valves are fitted with a "Storz" coupling on the outlet. Model 911 and 912 are maritime patterns with bolted bonnet and are Lloyds type approved.



Straight



Angle

Pressure and Temperature Range: 16 bar - 60°C

Material Specification

Component	Material	EN and/or (DIN)
Body, Bonnet	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Stem, Disc, Coupling	Brass	CuZn35Ni3Mn2AlPb (CuZn35Ni)
Disc, Sealing Ring	NBR	
Handwheel	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))

How to order: CODE

Firefighting and deckwash valve (DIN), bronze,DIN flanged, globe type, bolted bonnet, pressure rating PN 16, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	M	
75 60 51	40	150	168	160	140	6.0
52	50	165	185	175	140	6.5
53	65	185	222	205	160	10.4

Econosto Model No. : 911

Angle Type

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L1	L2	H1	M	
75 60 55	40	150	82	70	150	140	4.8
56	50	165	96	75	150	140	5.8
57	65	185	117	90	200	160	10.4

Econosto Model No. : 912

Fire Hydrant (DIN)
Brass, BSP Threaded
AB510

Unit Per Pc.

CODE	Nom. Size	Male Thread × Female Thread	Item No.
75 60 54	DN50	2"	AB510050
58	DN65	2-1/2"	AB510065

Name of Mfr.: Alligator

Fire Hydrant, (DIN)
Brass, BSP Male Threaded and Flanged
AB520

Flange is undrilled.

Unit Per Pc.

CODE	Nom. Size	Thread Size	Flange Diam.	Item No.
75 60 59	DN40	1-1/2" BSP male	150 mm	AB520038
60	DN50	2" BSP male	165 mm	AB520050
70	DN65	2-1/2" BSP male	185 mm	AB520065

Name of Mfr.: Alligator

Fire Hydrant, Angle (DIN)
Brass, BSP Male Threaded End
AB530

75 60 84	Fire hydrant, DIN, Brass, Angle, DN 50, 2" BSP male threaded end, AB530050	Pc.

Name of Mfr.: Alligator

Fire Hydrant, Angle (DIN)
Brass, Flanged End
and BSP Male Threaded End
AB550

Flange is undrilled.

Unit Per Pc.

CODE	Nom. Size	Flange Diam.	Thread Size	Item No.
75 60 85	DN38	150 mm	1-1/2" BSP male	AB520038
99	DN50	165 mm	2" BSP male	AB520050
75 61 00	DN65	185 mm	2-1/2" BSP male	AB520065

Name of Mfr.: Alligator

Sealing Cap with Chain
"Storz" blind cap for Firefighting and Deckwash Valves (DIN)

Sealing Cap with Chain is available in "Storz" system, suitable for firefighting and deckwash applications.
Available in Brass and Aluminium body.
Please specify the size and material when ordering.

How to order: CODE

Sealing Cap with Chain, "STORZ" blind cap for Firefighting and deckwash valve, BRASS or ALUMINIUM, SIZE

7TH 75

Brass Cap with Stainless Steel Chain

Unit Per Pc.

CODE	Lug Distance (Reported)	CODE	Lug Distance (Reported)
75 60 08	31 mm	**75 60 19**	81 mm
09	44 mm	**20**	89 mm
10	51 mm	**28**	133 mm
18	66 mm		

Econosto Model No.: 920

Aluminium Cap with Galvanized Steel Chain

Unit Per Pc.

CODE	Lug Distance (Reported)	CODE	Lug Distance (Reported)
75 60 29	31 mm	**75 60 40**	81 mm
30	44 mm	**48**	89 mm
38	51 mm	**49**	115 mm
39	66 mm	**50**	160 mm

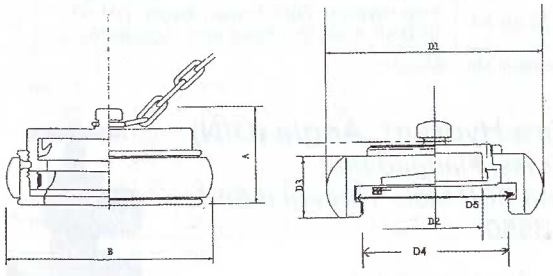
Econosto Model No.: 920

Sealing Cap with Chain
for Firefighting and Deckwash Valves (JIS/ANSI)

JIS Type

Machino Type

Nakajima Type



How to order: CODE

Sealing Cap with Chain for Firefighting and deckwash valve, JIS Type, Specify the NAME OF MAKER, SIZE

Unit Per Pc.

MACHINO TYPE				NAKAJIMA TYPE						
CODE	Size	Size (mm) A (±3)	Size (mm) B (±3)	CODE	Size	Size (mm) D1	D2	D3	D4	D5
75 60 64	40	72	40	**75 60 67**	40	91	38	27.5	61	67
65	50	91	47	**68**	50	110	50	33	73	80
66	65	107	52	**69**	65	133.5	63	36	91	98

ANSI Type

How to order: CODE

Sealing Cap with Chain for Firefighting and deckwash valve, ANSI Type, SIZE

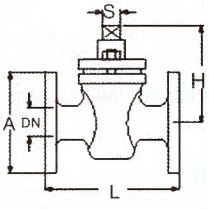
CODE	Size	Thread Per Inch	Basic O.D. Male Part
75 61 19	1-1/2"	9	1.990"
20	2-1/2"	7-1/2	3.0686"

DIN Cocks

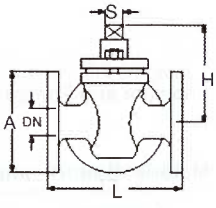
Plug Valves (DIN)
Bronze, DIN Flanges 2-way and 3-way

Flanged plug valves are available in a 2 and 3 way patterns. The 3-way pattern is available with L or T-plug. All versions are executed with gland packing. With model 15L and 15T, as required by the Dutch shipping inspectorate, the dimensions of plug and valve body have been selected such that none of the ports can be undesirably interconnected with the plug in any intermediate position. Cock wrench is available in separated order.

Model 14



Model 14



Model 15

Pressure and Temperature Range : 10 bar - 90°C

Material Specification

Component	Material	EN and/or (DIN)
Body, Plug	Bronze	- (CuSn8)

How to order: CODE

Plug valve (DIN), bronze, DIN flanges, TYPE, SIZE DN

2 way Type

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	A	H	S	Kgs
75 61 21	15	120	95	72	10	1.7
22	20	130	105	90	12	2.5
23	25	150	115	94	14	3.1
24	32	170	140	105	17	4.7
25	40	190	150	118	22	5.3
75 61 26	50	200	165	133	27	7.5
27	65	230	185	159	30	12
28	80	260	200	176	32	21
29	100	310	220	241	46	26

Econosto Model No. : 14

3 way L-Plug Type

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	A	H	S	Kgs
75 61 31	15	120	95	72	10	1.7
32	20	130	105	90	12	2.5
33	25	150	115	94	14	3.1
34	32	170	140	105	17	4.7
35	40	190	150	118	22	5.3
75 61 36	50	200	165	133	27	7.5
37	65	230	185	159	30	12
38	80	260	200	176	32	21
39	100	310	220	241	46	26

Econosto Model No. : 15L

3 way T-Plug Type

Unit Per Pc.

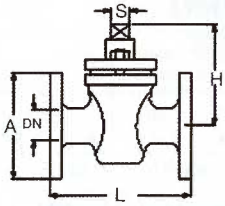
CODE	DN	Size mm				Weight
		L	A	H	S	Kgs
75 62 61	15	120	95	72	10	1.7
62	20	130	105	90	12	2.5
63	25	150	115	94	14	3.1
64	32	170	140	105	17	4.7
65	40	190	150	118	22	5.3
75 62 66	50	200	165	133	27	7.5
67	65	230	185	159	30	12
68	80	260	200	176	32	21
69	100	310	220	241	46	26

Econosto Model No. : 15T

Plug Valves (DIN)

Cast Iron, DIN Flanges, 2 Way Type

Flanged plug valves are available in 2-way patterns. Cock wrench is available in separated order.



Pressure and Temperature Range: 10 bar - 90°C

Material Specification

Component	Material	EN and/or (DIN)
Body, Plug	Cast iron	GJL-200 (GG-20)

How to order: CODE

Plug valve (DIN), cast iron, DIN flanges, 2 way type SIZE DN

Unit Per Pc.

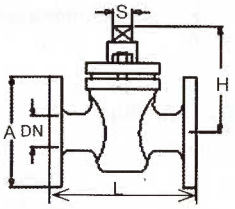
CODE	DN	Size mm				Weight
		L	A	H	S	Kgs
75 61 61	15	130	95	87	12	2.5
62	20	150	105	102	17	3.3
63	25	160	115	108	19	4.5
64	32	180	140	127	22	7.4
65	40	200	150	147	24	9.0
75 61 66	50	230	165	165	32	13.5
67	65	290	185	204	41	20.5
68	80	310	200	228	46	27
69	100	350	220	275	55	39

Econosto Model No. : 52B

Plug Valves (DIN)

Cast Iron, DIN Flanges, 2 Way Type

Flanged plug valve in 2-way pattern. All versions are executed with gland packing. Cock wrench is available in separated order.



Pressure and Temperature Range: 10 bar - 90°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-200 (GG-20)
Plug	Bronze	- (CuSn8)

How to order: CODE

Plug valve (DIN), cast iron, DIN flanges, with bronze plug 2 way type, SIZE DN

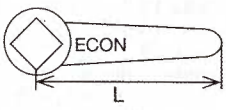
Unit Per Pc.

CODE	DN	Size mm				Weight
		L	A	H	S	Kgs
75 61 71	15	130	95	87	12	2.5
72	20	150	105	102	17	3.3
73	25	160	115	108	19	4.5
74	32	180	140	127	22	7.4
75	40	200	150	147	24	9.0
75 61 76	50	230	165	165	32	13.5
77	65	290	185	204	41	20.5
78	80	310	200	228	46	27
79	100	350	220	275	55	39

Econosto Model No. : 52BKP

Cock Wrenches (DIN)

Malleable Iron



How to order: CODE

Cock wrench (DIN), malleable iron, SIZE mm

Unit Per Pc.

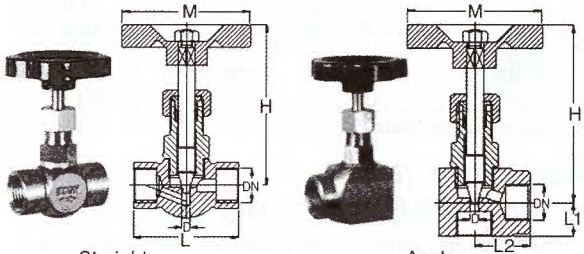
CODE	Size mm		CODE	Size mm	
	For S Size	L		For S Size	L
75 61 80	8	100	**75 61 89**	19	190
81	9	100	**90**	22	210
82	10	123	**91**	24	230
83	11	125	**93**	27	250
84	12	135	**95**	32	290
75 61 86	14	150	**75 61 96**	41	360
70	15	130	**97**	46	390
87	17	175	**98**	55	470

Econosto Model No. : 58

DIN Needle Valves

Needle Valves (DIN)
Brass, BSP Female Threaded Ends

Needle valves, especially suitable for accurate regulation of gases and liquids. Not suitable for steam.



Straight Angle

Pressure and Temperature Range:
100 bar - 30°C
40 bar - 150°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Brass	CuZn40Pb2
Bonnet	Brass	CuZn39Pb3
Stem with fixed needle tip	Brass	CuZn39Pb3
Gland Packing	PTFE	
Handwheel	PF (Bakelite)	

How to order: CODE

Needle valve (DIN), brass, BSP female threaded ends, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	Threaded Connection	Size mm				Weight Kgs
		d	L	H	M	
75 62 02	1/4"	4	46	82	50	0.22
03	3/8"	5	50	95	50	0.30
04	1/2"	6	55	95	65	0.35
05	3/4"	8	64	105	65	0.55
06	1"	8	75	105	65	0.65

Econosto Model No. : 718

Angle Type

Unit Per Pc.

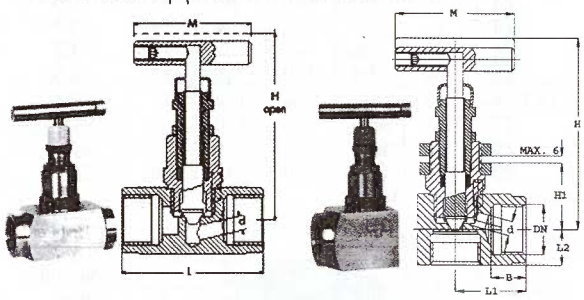
CODE	Threaded Connection	Size mm					Weight Kgs
		d	L1	L2	H	M	
75 62 12	1/4"	4	13	24.5	82	50	0.25
14	1/2"	6	16	32	95	65	0.35
16	1/4"	8	13	24.5	82	50	0.55

Econosto Model No. : 719

Needle Valves (DIN)
Stainless Steel,
Straight and Angle Pattern
BSP Female Threaded Ends

Needle valve, especially suitable for accurate regulation of gases and liquids.

Features
- Fitted with external screwed stem, making it suitable for high temperatures.
- Secured bonnet.
- "Backseat" construction ; In fully open position, the gland packing is relieved.
- One-piece PTFE gland packing, adjustable by means of secureable gland.
- Stem with non-rotating needle tip ensures 100% sealing.
- Plastic dust cap protects threaded stem.



Straight Angle

Pressure and Temperature Range:
420 bar - 20°C
320 bar - 200°C
250 bar - 250°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Stainless steel	X5CrNiMo17-12 2
Bonnet	Stainless steel	X5CrNiMo17-12 2
Stem	Stainless steel	X5CrNiMo17-12 2
Needle tip	Stainless steel	- (X4CrNiMnMoN19 16 5)
Gland Packing	PTFE	
Lever	Stainless steel	X8CrNiS 18-9 (X12CrNiS18 8)
Dust Cap	Plastic	

How to order: CODE

Needle valve (DIN), stainless steel, BSP female threaded ends, STRAIGHT or ANGLE, SIZE DN

Straight Type

Unit Per Pc.

CODE	Threaded Connection	Size mm				Weight Kgs
		d	L	H	M	
75 62 21	1/4"	3	50	78	50	0.3
22	3/8"	5	55	78	50	0.3
23	1/2"	6	60	80	50	0.7
24	3/4"	8	80	97	60	0.7
25	1"	8	80	99	60	0.7

Econosto Model No. : 226S

Angle Type

Unit Per Pc.

CODE	Threaded Connection	Size mm							Weight Kgs
		d	B	H	H1	L1	L2	M	
75 62 31	1/4"	3	12	78	12	25	14	50	0.3
32	1/2"	4	15	83	12	30	17.5	50	0.3

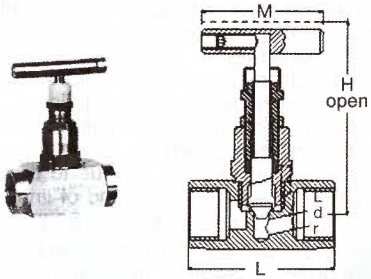
Econosto Model No. : 228S

Needle Valves (DIN)
Stainless Steel
NPT Female Threaded

Needle valve, especially suitable for accurate regulation of gases and liquids.

Features
- Fitted with external screwed stem, making it suitable for high temperatures.
- Secured bonnet.

- "Backseat" construction; In fully open position, the gland packing is relieved.
- One-piece PTFE gland packing, adjustable by means of secureable gland.
- Stem with non-rotating needle tip ensures 100% sealing.
- Plastic dust cap protects threaded stem.



Pressure and Temperature Range:
420 bar - 20°C 320 bar - 200°C 250 bar - 250°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Stainless steel	X5CrNiMo17-12 2
Bonnet	Stainless steel	X5CrNiMo17-12 2
Stem	Stainless steel	X5CrNiMo17-12 2
Needle tip	Stainless steel	- (X4CrNiMnMoN19 16 5)
Gland Packing	PTFE	
Lever	Stainless steel	X8CrNiS 18-9 (X12CrNiS18 8)
Dust Cap	Plastic	

How to order: CODE

Needle valve (DIN), stainless steel, NPT female thread SIZE NPT

Unit Per Pc.

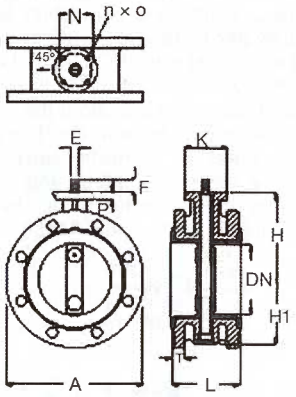
CODE	Threaded Connection	Size mm				Weight Kgs
		d	L	H	M	
75 62 41	1/4"	3	50	78	50	0.3
42	3/8"	5	55	78	50	0.3
43	1/2"	6	60	80	50	0.7
44	3/4"	8	80	97	60	0.7
45	1"	8	80	99	60	0.7

Econosto Model No. : 1226S

DIN Butterfly Valves

Butterfly Valves (DIN)
Ductile Cast Iron, Rubber Lined Flange Type Series 46 Bonded Liner

Ductile cast iron butterfly valve, double-flanged type with centric disc, one piece shaft supported by bronze radial bearings, rubber lined body. The rubber liner is vulcanized integrally to body and bearings ensuring reduced torque and a long lifetime. This liner extends along the valve faces, eliminating the use of gaskets. The double flanged body is suitable for mounting between flanges acc. to DIN PN10 or PN16. Face to face dimensions are acc. to ISO5752 /EN558 basic series 13, DIN3202 F16 and BS5155. Valve is also suitable for end of line applications. For easy mounting of both manual and automatic actuators the valve is executed with a topflange according to the ISO5211 standard. Further applications of series 46 butterfly valves can be found amongst others in general industrial and maritime systems for media such as (ballast) water, gases, hydrocarbons and light corrosive media up to a maximum of 16 bar.



Features
- Connections: Flange
- Body material: Cast iron, nodular
- Valve butterfly material: Bronze
- Operation: None

Pressure and Temperature Range

Size	Liner	Pressure Raiting	Temperature Range	Max. Operating Pressure
DN50-DN600	NBR or	PN 16	NBR -10° /+80°C or	16 bar
DN200-DN600	EPDM	PN 10	EPDM-10° /+120°C	10 bar

Material Specification

Component	Material	EN and/or (DIN)
Body	Ductile cast iron	GJS-400-15 (GGG-40)
Disc	Aluminium bronze	CuAl10Fe5Ni5-C(G-CuAl10Ni)
Stem	Stainless steel	X39CrMo17-1 (X35CrMo17)
Liner	NBR or EPDM	

How to order: CODE

Butterfly valve (DIN), ductile cast iron, Rubber-lined, flange type, bonded liner (NBR or EPDM), SIZE DN

Unit Per Pc.

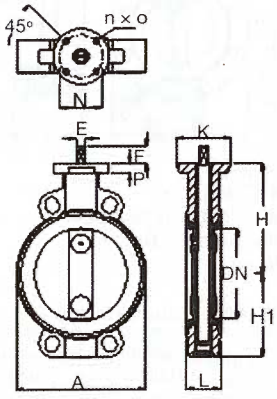
CODE	DN	Size mm							Weight Kgs
		A	E	H	H1	L	N	T	
75 63 01	50	165	11	118	67	108	70	22	10
02	65	185	11	126	74	112	70	22	12
03	80	200	11	133	82	114	70	22	14
04	100	228	11	147	100	127	70	23	16
05	125	254	14	160	112	140	70	26	20
75 63 06	150	285	14	180	134	140	70	26	27
07	200	243	17	204	159	152	70	29	35
08	250	405	22	245	195	165	102	32	51
09	300	445	22	270	220	178	102	32	62
10	350	505	27	315	282	190	125	32	90
75 63 11	400	565	27	350	307	216	125	33	124
12	450	615	36	375	352	222	140	33	180
13	500	670	36	415	387	229	140	35	210
14	600	780	46	465	452	267	165	36	302

Econosto Model No. : 4620

Butterfly Valves (DIN)
Ductile Cast Iron, Rubber Lined Ring Type, Bonded Liner

Ductile iron butterfly valve, wafer type with centric disc, one piece shaft supported by bronze radial bearings for smooth operation, rubber lined body. The rubber liner is vulcanized integrally to body and bearings ensuring reduced torque and a long lifetime. This liner extends along the valve faces, eliminating the

use of gaskets. The body with centering holes for easy pipe alignment is suitable for mounting between flanges according to DIN PN 10/16 and ASME 150#. Face to face dimensions are according to ISO5752/EN558 basic series 20, API609, DIN3202 K1 and BS5155. For easy mounting of both manual and automatic actuators the valve is executed with a topflange according to the ISO5211 standard. Further applications of series 57 butterfly valves can be found amongst others in general industrial and maritime systems for media such as (ballast) water, gases, hydrocarbons and light corrosive media up to a maximum of 16 bar (PN16 execution).



Features
- Connections: Wafer type
- Body material: Cast iron, nodular
- Valve butterfly material: Bronze
- Operation: None

Pressure and Temperature Range

Size	Liner	Pressure Raiting	Temperature Range	Max. Operating Pressure
DN50-DN600	NBR or	PN 16	NBR -10° /+80°C or	16 bar
DN450-DN600	EPDM	PN 10	EPDM-10° /+120°C	10 bar

Material Specification

Component	Material	EN and/or (DIN)
Body	Ductile cast iron	GJS-400-15 (GGG-40)
Disc	Aluminium bronze	CuAl10Fe5Ni5-C(G-CuAl10Ni)
Stem	Stainless steel	X39CrMo17-1 (X35CrMo17)
Liner	NBR or EPDM	

How to order: CODE

Butterfly valve (DIN), ductile cast iron, Rubber-lined, wafer type, bonded liner (NBR or EPDM), SIZE DN

Unit Per Pc.

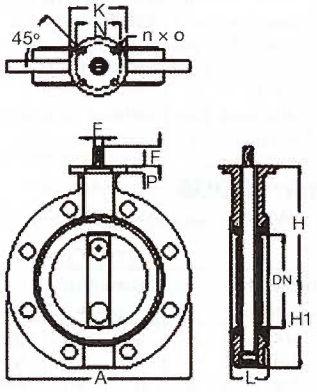
CODE	DN	Size mm						Weight Kgs
		A	E	H	H1	L	N	
75 63 31	50	90	11	118	67	43	70	2.7
32	65	105	11	126	74	46	70	3.5
33	80	124	11	133	82	46	70	3.9
34	100	150	11	147	100	52	70	5.1
35	125	182	14	160	112	56	70	7.7
75 63 36	150	210	14	180	134	56	70	9.2
37	200	265	17	204	159	60	70	15
38	250	315	22	245	195	68	102	25
39	300	371	22	270	220	78	102	34
40	350	434	27	315	282	78	125	50
75 63 41	400	488	27	350	307	102	125	67
42	450	536	36	375	352	114	140	100
43	500	590	36	415	387	127	140	135
44	600	685	46	465	452	154	165	180

Econosto Model No. : 5720

Butterfly Valves (DIN)

Ductile Cast iron, Rubber Lined Mono-flange Type, Bonded Liner

Ductile iron butterfly valve, monoflange type with centric disc, one piece shaft supported by bronze radial bearings for smooth operation, rubber lined body. The rubber liner is vulcanized integrally to body and bearings ensuring reduced torque and a long lifetime. This liner extends along the valve faces, eliminating the use of gaskets. The body with monoflange is suitable for mounting between flanges according to DIN PN10 or PN16. Due to the monoflange design this valve can be used as end of line valve. Face to face dimensions are according to ISO5752/EN558 basic series 20, API609, DIN3202 K1 and BS5155. For easy mounting of both manual and automatic actuators the valve is executed with a topflange according to the ISO5211 standard. Further applications of series 60 butterfly valves can be found amongst others in general industrial and maritime systems for media such as (ballast) water, gases, hydrocarbons and light corrosive media up to a maximum of 16 bar (PN16 execution).



Features
- Connections: Monoflange
- Valve butterfly material: Bronze
- Operation: None

Pressure and Temperature Range

Size	Liner	Pressure Raiting	Temperature Range	Max. Operating Pressure
DN50-DN400	NBR or	PN 16	NBR -10° /+80°C or	16 bar
DN200-DN400	EPDM	PN 10	EPDM-10° /+120°C	10 bar

Remark: Maximum operating pressure as end of line valve, 6 bar

Material Specification

Component	Material	EN and/or (DIN)
Body	Ductile cast iron	GJS-400-15 (GGG-40)
Disc	Aluminium bronze	CuAl10Fe5Ni5-C(G-CuAl10Ni)
Stem	Stainless steel	X39CrMo17-1 (X35CrMo17)
Liner	NBR or EPDM	

How to order: CODE

Butterfly valve (DIN), ductile cast iron, Rubber-lined, mono-flange type, bonded liner (NBR or EPDM), SIZE DN

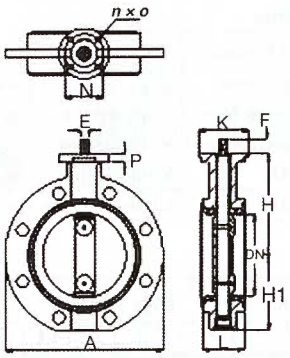
Unit Per Pc.

CODE	DN	Size mm						Weight Kgs
		A	E	H	H1	L	N	
75 63 45	50	165	11	118	67	43	70	3.5
46	65	185	11	126	74	46	70	4.6
47	80	200	11	133	82	46	70	5.7
48	100	228	11	147	100	52	70	7.8
49	125	254	14	160	112	56	70	11.9
75 63 50	150	285	14	180	134	56	70	15.0
51	200	340	17	204	159	60	70	24.4
52	250	405	22	245	195	68	102	47.0
53	300	460	22	270	220	78	102	56.6
54	350	533	27	315	282	78	125	78
75 63 55	400	585	27	350	307	102	125	101

Econosto Model No. : 6020

Butterfly Valves (DIN)
Cast Iron, Rubber Lined
Mono-flange Type
Bonded Liner, Centric Disc

Ductile cast iron butterfly valve, monoflange type with centric disc, one piece shaft supported by bronze radial bearings for smooth operation, rubber lined body. The rubber liner is vulcanized integrally to body and bearings ensuring reduced torque and a long lifetime. This liner extends along the valve faces, eliminating the use of gaskets. The body with monoflange is suitable for mounting between flanges according to DIN PN10. Due to the monoflange design, this valve can be used as end of line valve. Face to face dimensions are according to ISO5752/EN558 basic series 16, API 609, DIN 3202 K3 and BS5155. For easy adaption of both manual and automatic actuators the valve is executed with a topflange according to ISO5211 standard. Further applications of series 60 butterfly valves can be found amongst others in general industrial and maritime systems for media such as (ballast) water, gases, hydrocarbons and light corrosive media up to a maximum of 10 bar.



Pressure and Temperature Range

Size	Liner	Pressure Raiting	Temperature Range	Max. Operating Pressure
DN50-DN400	NBR or EPDM	PN 10	NBR -10° /+80°C or EPDM-10° /+120°C	10 bar

Material Specification

Component	Material	EN and/or (DIN)
Body	Ductile cast iron	GJS-400-15 (GGG-40)
Disc (Rilsan Coating)	Ductile cast iron	GJS-400-15 (GGG-40)
Stem	Stainless steel	X39CrMo17-1 (X35CrMo17)
Liner	NBR or EPDM	

How to order: CODE

Butterfly valve (DIN), ductile cast iron, Rubber-lined, mono-flange type, centric disc, bonded liner (NBR or EPDM), SIZE DN

Unit Per Pc.

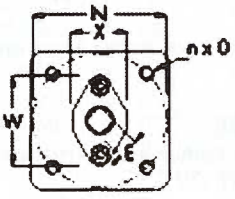
CODE	DN	Size mm							Weight Kgs
		A	E	H	H1	K	L	N	
75 63 56	50	165	11	118	67	90	43	70	3.1
57	65	185	11	126	74	90	46	70	4.2
58	80	200	11	133	82	90	64	70	5.2
59	100	228	11	147	100	90	64	70	7.0
60	125	254	14	160	112	90	70	70	11.0
75 63 61	150	285	14	180	134	90	76	70	14.0
62	200	340	17	204	159	90	89	70	23.0
63	250	405	22	245	195	125	114	102	44.0
64	300	460	22	270	220	125	114	102	54.0
65	350	533	27	315	282	150	127	125	76
75 63 66	400	585	27	350	307	150	140	125	100

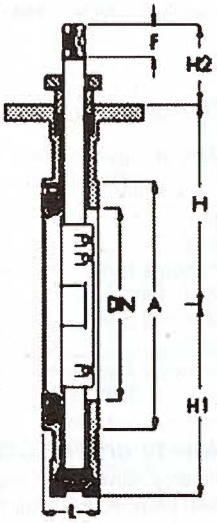
Econosto Model No. : 6110

7TH
75

Butterfly Valves (DIN)
Stainless Steel and Cast Steel
High Performance Type
Ring Type

High-Performance butterfly valve, ring type with streamlined double eccentric disc and one-piece anti-blow out shaft, bi- directional sealing, anti-static design. Available in stainless steel and cast steel. Executed with replaceable seat in PTFE, Fire-safe, metal or double-seat version, for in-line sealing. For sealing to the atmosphere the valve is provided with a self-centering and re-adjustable gland packing of PTFE or graphite material. The body with centering holes for easy pipe alignment is suitable for mounting between flanges according to DIN PN 10/16 and ASME 150#. Face to Face dimensions are according to ISO 5752/EN558 basic series 20(DN 350, basic series 25). For easy adaption of both manual and automatic actuators the valve is executed with a topflange according to the ISO 5211 standard. Applications of series 96 butterfly valves can be found amongst others in general industrial and maritime systems for example in corrosive media, gases, steam and hot water up to a maximum of 20 bar (ASME class 150 execution). For application in cargo lines on chemical and liquefied gas tankers this valve has a BV type approval.

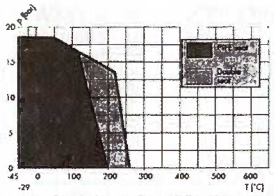




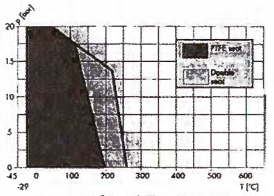
Pressure and Temperature Range

20 bar, -45°C to +260°C, depending on choice of material.

See pressure/temperature diagrams for precise specifications.



Stainless Steel Body



Steel Body

Stainless Steel Body

Material Specification

Component	Material	US
Body	Stainless steel	ASTM A 351-CF8M
Disc	Stainless steel	ASTM A 351-CF8M
Pressure Ring	Stainless steel	AISI-316
Stem, Pins	Stainless steel	AISI-316
Seat and Shaft Seal*	PTFE	PTFE

Remark : * Double seat, fire-safe seat or metal seat is available on request.

How to order: CODE

Butterfly valve (DIN), High-Performance, Ring type, stainless steel body, PTFE seat, SIZE DN

Unit Per Pc.

CODE	DN	Size mm						Weight Kgs
		A	E	H	H1	L	N	
75 63 71	50	102	12	108	99	43	70	6.0
72	65	122	12	123	112	46	70	6.0
73	80	132	12	133	120	46	70	7.0
74	100	156	12	155	131	52	70	8.0
75	125	188	17	173	159	56	102	12.0
75 63 76	150	216	17	183	170	56	102	15.0
77	200	268	19	218	210	60	125	22.0
78	250	326	22	253	237	68	125	32.0
79	300	375	27	278	278	78	140	43.0
80	350	420	30	318	316	92	140	54.0
75 63 81	400	482	36	363	362	102	165	86.0
82	450	538	41	388	387	114	165	114
83	500	592	46	418	432	127	165	145
84	600	694	50	478	506	154	254	219

Econosto Model No. : 9630

Cast Steel Body

Material Specification

Component	Material	US
Body	Cast steel	ASTM A216-WCB
Disc	Stainless steel	ASTM A351-CF8M
Pressure Ring	Forged steel	ASTM A105(N)
Stem, Pins	Stainless steel	AISI-316
Seat and Shaft Seal*	PTFE	PTFE

Remark : * Double seat, fire-safe seat or metal seat is available on request.

How to order: CODE

Butterfly valve (DIN), High-Performance, Ring type, cast steel body, PTFE seat, SIZE DN

Unit Per Pc.

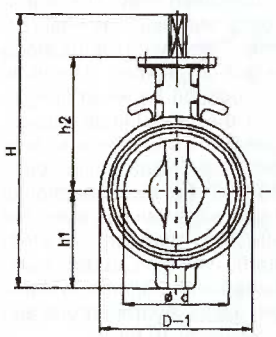
CODE	DN	Size mm						Weight Kgs
		A	E	H	H1	L	N	
75 63 85	50	102	12	108	99	43	70	6.0
86	65	122	12	123	112	46	70	6.0
87	80	132	12	133	120	46	70	7.0
88	100	156	12	155	131	52	70	8.0
89	125	188	17	173	159	56	102	12.0
75 63 90	150	216	17	183	170	56	102	15.0
91	200	268	19	218	210	60	125	22.0
92	250	326	22	253	237	68	125	32.0
93	300	375	27	278	278	78	140	43.0
94	350	420	30	318	316	92	140	54.0
75 63 95	400	482	36	363	362	102	165	86.0
96	450	538	41	388	387	114	165	114
97	500	592	46	418	432	127	165	145
98	600	694	50	478	506	154	254	219

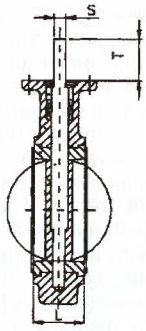
Econosto Model No. : 9630

DIN Cast Iron Butterfly Valves

Series ISO 5752 S-20

Wafer Type Series 50





Materials Table

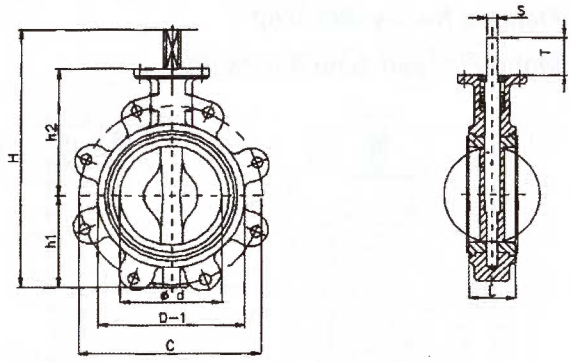
Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C

Unit Per Pc.

CODE	Nom. Size	Body Size mm						Stem Size mm		Weight kgs
		D-1	d	L	H	h1	h2.	S	T	
75 44 01	50	102	52	43	240	78	130	10	-	3.7
02	65	115	65	46	247	88	130	10	-	4.0
03	80	128	80	46	266	93	143	10	-	4.4
04	100	153	100	52	298	105	161	10	-	5.9
05	125	183	125	56	331	125	177	12	-	8.9
75 44 06	150	210	150	56	363	140	191	15	-	9.0
07	200	259	198	60	412	163	217	15	-	11.0
08	250	328	248	68	506	205	267	18	-	20.0
09	300	374	298	78	538	249	295	20	-	32.0
10	350	416	327	78	675	271	324	20	45	43.0
75 44 11	400	475	387	102	817	343	369	-	60	64.0
12	450	535	438	114	877	366	406	-	60	99.0
13	500	586	477	127	1,008	421	485	-	60	115.0
14	600	695	560	154	1,180	493	570	-	60	215.0

Name of Mfr. : World Wide Metric

Lug Type Series 52



Materials Table

Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C

PN6

Unit Per Pc.

CODE	Nom. Size	Body Size mm				Stem Size mm		Bolt Hole mm		Weight kgs
		D-1	d	L	H	S	T	C	Bolt	
75 44 16	50	102	52	43	240	10	-	110	4x14	4.1
17	65	115	65	46	247	10	-	130	4x14	5.5
18	80	128	80	46	266	10	-	150	4x18	6.8
19	100	153	100	52	298	10	-	170	4x18	8.6
20	125	183	125	56	331	12	-	200	8x18	10.5
75 44 21	150	210	150	56	363	15	-	225	8x18	12.5
22	200	259	198	60	412	15	-	280	8x18	21.4
23	250	328	248	68	506	18	-	335	12x18	29.3
24	300	374	298	78	538	20	-	395	12x22	44.0
25	350	416	327	78	675	20	45	445	12x22	62.2
75 44 26	400	475	387	102	817	-	60	495	16x22	112.0
27	450	535	438	114	877	-	60	550	16x22	153.0
28	500	586	477	127	1,008	-	60	600	20x22	199.0
29	600	695	560	154	1,180	-	60	705	20x26	283.0

Name of Mfr. : World Wide Metric

PN10

Unit Per Pc.

CODE	Nom. Size	Body Size mm				Stem Size mm		Bolt Hole mm		Weight kgs
		D-1	d	L	H	S	T	C	Bolt	
75 44 31	50	102	52	43	240	10	-	125	4x18	4.1
32	65	115	65	46	247	10	-	145	4x18	5.5
33	80	128	80	46	266	10	-	160	8x18	6.8
34	100	153	100	52	298	10	-	180	8x18	8.6
35	125	183	125	56	331	12	-	210	8x18	10.5
75 44 36	150	210	150	56	363	15	-	240	8x22	12.5
37	200	259	198	60	412	15	-	295	8x22	21.4
38	250	328	248	68	506	18	-	350	12x22	29.3
39	300	374	298	78	538	20	-	400	12x22	44.0
40	350	416	327	78	675	20	45	460	16x22	62.2
75 44 41	400	475	387	102	817	-	60	515	16x26	112.0
42	450	535	438	114	877	-	60	565	20x26	153.0
43	500	586	477	127	1,008	-	60	620	20x26	199.0
44	600	695	560	154	1,180	-	60	725	20x30	283.0

Name of Mfr. : World Wide Metric

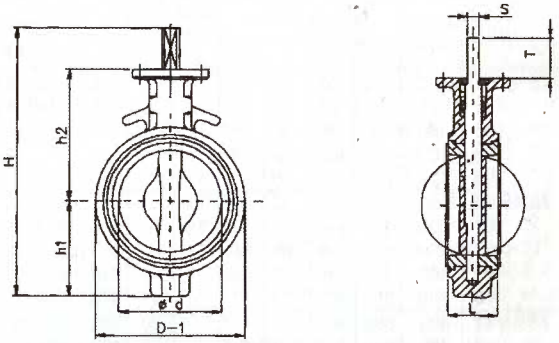
PN16

Unit Per Pc.

CODE	Nom. Size	Body Size mm				Stem Size mm		Bolt Hole mm		Weight kgs
		D-1	d	L	H	S	T	C	Bolt	
75 44 46	50	102	52	43	240	10	-	125	4x18	4.1
47	65	115	65	46	247	10	-	145	4x18	5.5
48	80	128	80	46	266	10	-	160	8x18	6.8
49	100	153	100	52	298	10	-	180	8x18	8.6
50	125	183	125	56	331	12	-	210	8x18	10.5
75 44 51	150	210	150	56	363	15	-	240	8x22	12.5
52	200	259	198	60	412	15	-	295	12x22	21.4
53	250	328	248	68	506	18	-	355	12x26	29.3
54	300	374	298	78	538	20	-	410	12x26	44.0
55	350	416	327	78	675	20	45	470	16x26	62.2
75 44 56	400	475	387	102	817	-	60	525	16x30	112.0
57	450	535	438	114	877	-	60	585	20x30	153.0
58	500	586	477	127	1,008	-	60	650	20x33	199.0
59	600	695	560	154	1,180	-	60	770	20x36	283.0

Name of Mfr. : World Wide Metric

Flanged Type Series 55



Materials Table

Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C

PN6

Unit Per Pc.

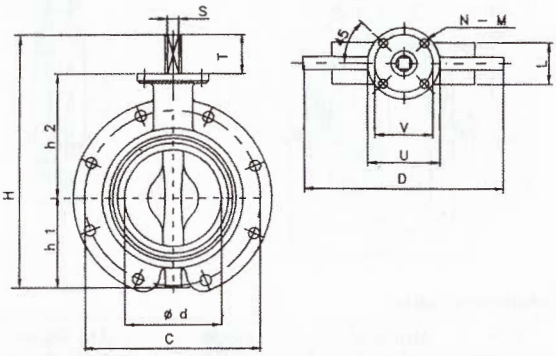
CODE	Nom. Size	Body Size mm				Stem Size mm		Bolt Hole mm		Weight kgs
		D	d	L	H	S	T	C	Bolt	
75 44 61	50	140	52	43	240	10	-	110	4x14	6.8
62	65	160	65	46	247	10	-	130	4x14	8.9
63	80	190	80	46	266	10	-	150	4x18	10.2
64	100	210	100	52	298	10	-	170	4x18	14.5
65	125	240	125	56	331	12	-	200	8x18	16.8
75 44 66	150	265	150	56	363	15	-	225	8x18	19.8
67	200	320	198	60	412	15	-	280	8x18	31.2
68	250	375	248	68	506	18	-	335	12x18	46.2
69	300	440	298	78	538	20	-	395	12x22	58.8
70	350	490	327	78	675	20	45	445	12x22	67.0
75 44 71	400	540	387	102	817	-	60	495	16x22	96.0
72	450	595	438	114	877	-	60	550	16x22	147.0
73	500	645	477	127	1,008	-	60	600	20x22	161.0
74	600	755	560	154	1,180	-	60	705	20x26	292.0

Name of Mfr. : World Wide Metric

DIN Cast Iron Butterfly Valves

Flanged Series ISO 5752

Mono Flanged Type Series 56



Materials Table

Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C

PN10

Unit Per Pc.

CODE	Nom. Size	Body Size mm				Stem Size mm		Bolt Hole mm		Weight kgs
		D	d	L	H	S	T	C	Bolt	
75 44 76	50	165	52	43	240	10	-	125	4x18	6.8
77	65	185	65	46	247	10	-	145	4x18	8.9
78	80	200	80	46	266	10	-	160	8x18	10.2
79	100	220	100	52	298	10	-	180	8x18	14.5
80	125	250	125	56	331	12	-	210	8x18	16.8
75 44 81	150	285	150	56	363	15	-	240	8x22	19.8
82	200	340	198	60	412	15	-	295	8x22	31.2
83	250	395	248	68	506	18	-	350	12x22	46.2
84	300	445	298	78	538	20	-	400	12x22	58.8
85	350	505	327	78	675	20	45	460	16x22	67.0
75 44 86	400	565	387	102	817	-	60	515	16x26	96.0
87	450	615	438	114	877	-	60	565	20x26	147.0
88	500	670	477	127	1,008	-	60	620	20x26	161.0
89	600	780	560	154	1,180	-	60	725	20x30	292.0

Name of Mfr. : World Wide Metric

7TH 75

PN16

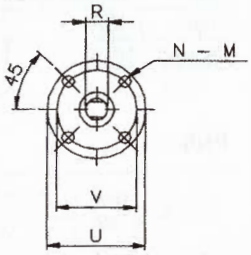
Unit Per Pc.

CODE	Nom. Size	Body Size mm				Stem Size mm		Bolt Hole mm		Weight kgs
		D	d	L	H	S	T	C	Bolt	
75 45 01	50	165	52	43	240	10	-	125	4x18	6.8
02	65	185	65	46	247	10	-	145	4x18	8.9
03	80	200	80	46	266	10	-	160	8x18	10.2
04	100	220	100	52	298	10	-	180	8x18	14.5
05	125	250	125	56	331	12	-	210	8x18	16.8
75 45 06	150	285	150	56	363	15	-	240	8x22	19.8
07	200	340	198	60	412	15	-	295	12x22	31.2
08	250	405	248	68	506	18	-	355	12x26	46.2
09	300	460	298	78	538	20	-	410	12x26	58.8
10	350	520	327	78	675	20	45	470	16x26	67.0
75 45 11	400	580	387	102	817	-	60	525	16x30	96.0
12	450	640	438	114	877	-	60	585	20x30	147.0
13	500	715	477	127	1,008	-	60	650	20x33	161.0
14	600	840	560	154	1,180	-	60	770	20x36	292.0

Name of Mfr. : World Wide Metric

Top Flange Dimensions to ISO 5711

The following specifications are applicable to those butterfly valves series 50, 52 and 55.



Nominal Size mm	Size mm				
	R	U	V	N	M
50	14	90	70	4	9
65	14	90	70	4	9
80	14	90	70	4	9
100	16	90	70	4	9
125	19	90	70	4	9
150	19	90	70	4	9
200	22	90	70	4	9
250	28	125	102	4	12
300	28	125	102	4	12
350	32	125	102	4	12
400	35	175	140	4	18
450	38	175	140	4	18
500	45	210	165	4	22
600	50	210	165	4	22

PN6

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm		Weight kgs
		d	H	L	S	T	C	Bolt	
75 45 21	50	50	215	43	10	34	110	4x14	2.8
22	65	65	231	46	10	34	130	4x14	3.6
23	80	80	245	64	10	34	150	4x18	6.5
24	100	100	277	64	12	34	170	4x18	7.5
25	125	125	303	70	12	34	200	8x18	11.0
75 45 26	150	150	347	76	16	34	225	8x18	14.0
27	200	200	396	89	16	34	280	8x18	18.0
28	250	250	484	114	24	45	335	12x18	28.0
29	300	300	534	114	24	45	395	12x22	38.0
30	350	336	616	127	24	45	445	12x22	50.0
75 45 31	400	386	721	140	30	50	495	16x22	95.0
32	450	436	772	152	30	50	550	16x22	115.0
33	500	486	823	152	30	50	600	20x22	155.0
34	600	586	986	178	40	50	705	20x26	230.0

Name of Mfr. : World Wide Metric

PN10

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm		Weight kgs
		d	H	L	S	T	C	Bolt	
75 45 36	50	50	215	43	10	34	125	4x18	2.8
37	65	65	231	46	10	34	145	4x18	3.6
38	80	80	245	64	10	34	160	8x18	6.5
39	100	100	277	64	12	34	180	8x18	7.5
40	125	125	303	70	12	34	210	8x18	11.0
75 45 41	150	150	347	76	16	34	240	8x22	14.0
42	200	200	396	89	16	34	295	8x22	18.0
43	250	250	484	114	24	45	350	12x22	28.0
44	300	300	534	114	24	45	400	12x22	38.0
45	350	336	616	127	24	45	460	16x22	50.0
75 45 46	400	386	721	140	30	50	515	16x26	95.0
47	450	436	772	152	30	50	565	20x26	115.0
48	500	486	823	152	30	50	620	20x26	155.0
49	600	586	986	178	40	50	725	20x30	230.0

Name of Mfr. : World Wide Metric

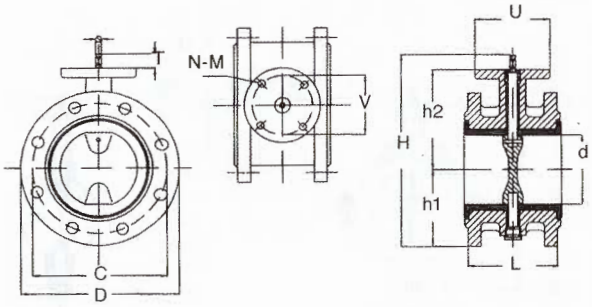
PN16

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm		Weight kgs
		d	H	L	S	T	C	Bolt	
75 45 51	50	50	215	43	10	34	125	4x18	2.8
52	65	65	231	46	10	34	145	4x18	3.6
53	80	80	245	64	10	34	160	8x18	6.5
54	100	100	277	64	12	34	180	8x18	7.5
55	125	125	303	70	12	34	210	8x18	11.0
75 45 56	150	150	347	76	16	34	240	8x22	14.0
57	200	200	396	89	16	34	295	12x22	18.0
58	250	250	484	114	24	45	355	12x26	28.0
59	300	300	534	114	24	45	410	12x26	38.0
60	350	336	616	127	24	45	470	16x26	50.0
75 45 61	400	386	721	140	30	50	525	16x30	95.0
62	450	436	772	152	30	50	585	20x30	115.0
63	500	486	823	152	30	50	650	20x33	155.0
64	600	586	986	178	40	50	770	20x36	230.0

Name of Mfr. : World Wide Metric

Flanged Type Short - Series 53



Materials Table

Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C

PN6

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm			Weight kgs
		d	H	L	S	T	D	C	Bolt	
75 45 66	50	50	215	108	10	34	140	110	4x14	8.0
67	65	65	231	112	10	34	160	130	4x14	8.5
68	80	80	245	114	10	34	190	150	4x18	9.0
69	100	100	277	127	12	34	210	170	4x18	11.0
70	125	125	303	140	12	34	240	200	8x18	13.0
75 45 71	150	150	347	140	16	34	265	225	8x18	17.0
72	200	200	396	152	16	34	320	280	8x18	23.0
73	250	250	484	165	24	45	375	335	12x18	32.0
74	300	300	534	178	24	45	440	395	12x22	50.0
75	350	336	616	190	24	45	490	445	12x22	65.0
75 45 76	400	386	721	216	30	50	540	495	16x22	95.0
77	450	436	772	222	30	50	595	550	16x22	130.0
78	500	486	823	229	30	50	645	600	20x22	150.0
79	600	586	986	267	40	50	755	705	20x26	200.0

Name of Mfr. : World Wide Metric

PN10

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm			Weight kgs
		d	H	L	S	T	D	C	Bolt	
75 45 81	50	50	215	108	10	34	165	125	4x18	8.0
82	65	65	231	112	10	34	185	145	4x18	8.5
83	80	80	245	114	10	34	200	160	8x18	9.0
84	100	100	277	127	12	34	220	180	8x18	11.0
85	125	125	303	140	12	34	250	210	8x18	13.0
75 45 86	150	150	347	140	16	34	285	240	8x22	17.0
87	200	200	396	152	16	34	340	295	8x22	23.0
88	250	250	484	165	24	45	395	350	12x22	32.0
89	300	300	534	178	24	45	445	400	12x22	50.0
90	350	336	616	190	24	45	505	460	16x22	65.0
75 45 91	400	386	721	216	30	50	565	515	16x26	95.0
92	450	436	772	222	30	50	615	565	20x26	130.0
93	500	486	823	229	30	50	670	620	20x26	150.0
94	600	586	986	267	40	50	780	725	20x30	200.0

Name of Mfr. : World Wide Metric

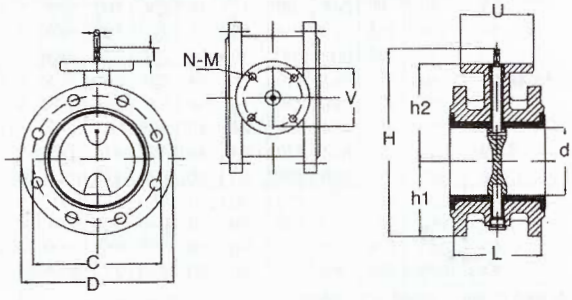
PN16

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm			Weight kgs
		d	H	L	S	T	D	C	Bolt	
75 46 01	50	50	215	108	10	34	165	125	4x18	8.0
02	65	65	231	112	10	34	185	145	4x18	8.5
03	80	80	245	114	10	34	200	160	8x18	9.0
04	100	100	277	127	12	34	220	180	8x18	11.0
05	125	125	303	140	12	34	250	210	8x18	13.0
75 46 06	150	150	347	140	16	34	285	240	8x22	17.0
07	200	200	396	152	16	34	340	295	12x22	23.0
08	250	250	484	165	24	45	405	355	12x26	32.0
09	300	300	534	178	24	45	460	410	12x26	50.0
10	350	336	616	190	24	45	520	470	16x26	65.0
75 46 11	400	386	721	216	30	50	580	525	16x30	95.0
12	450	436	772	222	30	50	640	585	20x30	130.0
13	500	486	823	229	30	50	715	650	20x33	150.0
14	600	586	986	267	40	50	840	770	20x36	200.0

Name of Mfr. : World Wide Metric

Flanged Type Long - Series 54



Materials Table

Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C

PN6

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm			Weight kgs
		d	H	L	S	T	D	C	Bolt	
75 46 21	50	50	215	150	10	34	140	110	4x14	10.6
22	65	65	231	170	10	34	160	130	4x14	12.5
23	80	80	245	180	10	34	190	150	4x18	17.0
24	100	100	277	190	12	34	210	170	4x18	20.0
25	125	125	303	200	12	34	240	200	8x18	26.0
75 46 26	150	150	347	210	16	34	265	225	8x18	31.0
27	200	200	396	230	16	34	320	280	8x18	45.0
28	250	250	484	250	24	45	375	335	12x18	70.0
29	300	300	534	270	24	45	440	395	12x22	90.0
30	350	336	616	290	24	45	490	445	12x22	120.0
75 46 31	400	386	721	310	30	50	540	495	16x22	165.0
32	450	436	772	330	30	50	595	550	16x22	200.0
33	500	486	823	350	30	50	645	600	20x22	230.0
34	600	586	986	390	40	50	755	705	20x26	320.0

Name of Mfr. : World Wide Metric

7TH 75

PN10

Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm			Weight kgs
		d	H	L	S	T	D	C	Bolt	
75 46 36	50	50	215	150	10	34	165	125	4x18	10.6
37	65	65	231	170	10	34	185	145	4x18	12.5
38	80	80	245	180	10	34	200	160	8x18	17.0
39	100	100	277	190	12	34	220	180	8x18	20.0
40	125	125	303	200	12	34	250	210	8x18	26.0
75 46 41	150	150	347	210	16	34	285	240	8x22	31.0
42	200	200	396	230	16	34	340	295	8x22	45.0
43	250	250	484	250	24	45	395	350	12x22	70.0
44	300	300	534	270	24	45	445	400	12x22	90.0
45	350	336	616	290	24	45	505	460	16x22	120.0
75 46 46	400	386	721	310	30	50	565	515	16x26	165.0
47	450	436	772	330	30	50	615	565	20x26	200.0
48	500	486	823	350	30	50	670	620	20x26	230.0
49	600	586	986	390	40	50	780	725	20x30	320.0

Name of Mfr. : World Wide Metric

PN16

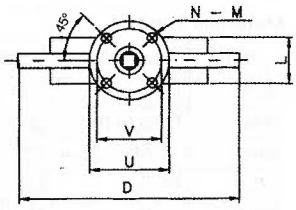
Unit Per Pc.

CODE	Nom. Size	Body Size mm			Stem Size mm		Bolt Hole mm			Weight kgs
		d	H	L	S	T	D	C	Bolt	
75 46 51	50	50	215	150	10	34	165	125	4x18	10.6
52	65	65	231	170	10	34	185	145	4x18	12.5
53	80	80	245	180	10	34	200	160	8x18	17.0
54	100	100	277	190	12	34	220	180	8x18	20.0
55	125	125	303	200	12	34	250	210	8x18	26.0
75 46 56	150	150	347	210	16	34	285	240	8x22	31.0
57	200	200	396	230	16	34	340	295	12x22	45.0
58	250	250	484	250	24	45	405	355	12x26	70.0
59	300	300	534	270	24	45	460	410	12x26	90.0
60	350	336	616	290	24	45	520	470	16x26	120.0
75 46 61	400	386	721	310	30	50	580	525	16x30	165.0
62	450	436	772	330	30	50	640	585	20x30	200.0
63	500	486	823	350	30	50	715	650	20x33	230.0
64	600	586	986	390	40	50	840	770	20x36	320.0

Name of Mfr. : World Wide Metric

Top Flange Dimensions to ISO 5211

The following specifications are applicable to those butterfly valves Series 56, 53 and 54.

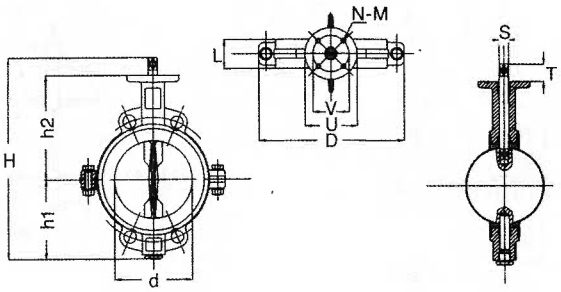


Nominal Size mm	Size mm			
	U	V	N	M
50	90	70	4	9
65	90	70	4	9
80	90	70	4	9
100	90	70	4	9
125	90	70	4	9
150	90	70	4	9
200	90	70	4	9
250	125	102	4	11
300	125	102	4	11
350	125	102	4	11
400	175	140	4	17
450	175	140	4	17
500	175	140	4	17
600	175	140	4	17

DIN Cast Iron Butterfly Valves

Teflon Lined Series ISO 5752 S-20

Series 58



Materials Table

Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C

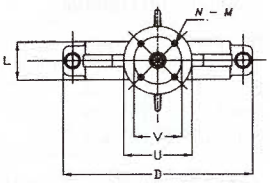
Unit Per Pc.

CODE	Nom. Size	Body Size mm						Stem Size mm		Weight kgs
		D	d	L	H	h1	h2	S	T	
75 46 71	50	102	52	43	227	67	130	10	38	4.3
72	65	115	65	46	241	71	140	10	38	4.5
73	80	128	80	46	263	83	150	10	38	4.9
74	100	153	100	52	290	95	163	10	38	6.3
75	125	183	125	56	319	110	178	12	38	8.9
75 46 76	150	210	150	56	347	124	191	15	38	9.4
77	200	259	198	60	433	163	238	18	38	11.5
78	250	328	248	68	546	227	285	20	45	21.0
79	300	374	298	78	601	252	315	20	45	32.0
80	350	416	327	78	675	271	324	20	45	44.0
75 46 81	400	475	387	102	817	343	369	-	60	64.0
82	450	535	438	114	877	366	406	-	60	100.0
83	500	586	477	127	1,008	421	485	-	60	115.0
84	550	643	543	154	1,085	440	528	-	60	164.0
85	600	695	560	154	1,180	493	570	-	60	215.0

Name of Mfr. : World Wide Metric

Top Flange Dimensions to ISO 5211

The following specifications are applicable to butterfly valve series 58.



Nominal Size mm	Size mm			
	U	V	N	M
50	90	70	4	9
65	90	70	4	9
80	90	70	4	9
100	90	70	4	9
125	90	70	4	9
150	90	70	4	9
200	90	70	4	9
250	125	102	4	12
300	125	102	4	12
350	125	102	4	12
400	175	140	4	18
450	175	140	4	18
500	210	165	4	22
550	210	165	4	22
600	210	165	4	22

Face to Face Dimension Chart for DIN Butterfly Valves

Unit in mm

Nominal Diameter		Wafer-Lug			Flanged		
		Series 20	Series 16	700S	722F/720F	Series 13	Series 14
mm	Inch	ISO5752	ISO 5752		Hull Valves	ISO 5752	ISO 5752
40	1-1/2	43/33	-	-	-	-	-
50	2	43	43	45	-	108	150
65	2-1/2	46	46	45	-	112	170
80	3	46	64	50	-	114	180
100	4	52	64	50	-	127	190
125	5	56	70	55	100	140	200
150	6	56	76	60	100	140	210
200	8	60	89	65	100	152	230
250	10	68	114	80	110	165	250
300	12	78	114	90	110	178	270
350	14	78	127	100	120	190	290
400	16	102	140	110	130	216	310
450	18	114	152	120	150	222	330
500	20	127	152	140	160	229	350
550	22	154	170	150	170	-	-
600	24	154	178	160	170	267	390
650	26	165	210	170	170	-	-
700	28	165	229	180	180	292	430
750	30	190	230	190	200	318	470
800	32	190	241	200	200	318	470
900	36	203	241	230	230	330	510
1000	40	216	300	250	250	410	550

Flange Dimension Chart for Butterfly Valve

Size	JIS				ANSI	
	5kgf/cm²		10kgf/cm²		150Lbs	
	C	n-h Bolt	C	n-h Bolt	C	n-h Bolt
40	95	4x15	105	4x19	98	4x16
50	105	4x15	120	4x19	121	4x20
65	130	4x15	140	4x19	140	4x20
80	145	4x19	150	8x19	152	8x20
100	165	8x19	175	8x19	190	8x20
125	200	8x19	210	8x23	216	8x23
150	230	8x19	240	8x23	241	8x23
200	280	8x23	290	12x23	298	8x23
250	345	12x23	355	12x25	362	12x26
300	390	12x23	400	16x25	432	12x26
350	435	12x25	445	16x25	476	12x28
400	495	16x25	510	16x27	540	16x27
450	555	16x25	565	20x27	578	16x32
500	605	20x25	620	20x27	635	20x32
550	665	20x27	680	20x33	-	-
600	715	20x27	730	24x33	750	20x35
650	770	24x27	780	24x33	807	24x33
700	820	24x27	840	24x33	864	28x35
750	880	24x33	900	24x33	914	28x35
800	930	24x33	950	28x33	978	28x41
900	1,030	24x33	1,050	28x33	1,086	32x41
1000	1,130	28x33	1,160	28x39	1,200	36x41

Notation : C = Bolt Circle, n-h = Number of Holes, Bolt = Size of Hole

Size	DIN					
	PN6		PN10		PN16	
	C	n-h Bolt	C	n-h Bolt	C	n-h Bolt
40	100	4x14	110	4x18	110	4x18
50	110	4x14	125	4x18	125	4x18
65	130	4x14	145	4x18	145	4x18
80	150	4x18	160	8x18	160	8x18
100	170	4x18	180	8x18	180	8x18
125	200	8x18	210	8x18	210	8x18
150	225	8x18	240	8x22	240	8x22
200	280	8x18	295	8x22	295	12x22
250	335	12x18	350	12x22	355	12x26
300	395	12x22	400	12x22	410	12x26
350	445	12x22	460	16x22	470	16x26
400	495	16x22	515	16x26	525	16x30
450	550	16x22	565	20x26	585	20x30
500	600	20x22	620	20x26	650	20x33
550	-	-	-	-	-	-
600	705	20x26	725	20x30	770	20x36
650	-	-	-	-	-	-
700	810	24x27	840	24x30	840	24x36
750	-	-	-	-	-	-
800	920	24x30	950	24x33	950	24x39
900	1,020	24x30	1,050	28x33	1,050	28x39
1000	1,120	28x30	1,160	28x36	1,170	28x42

Notation : C = Bolt Circle, n-h = Number of Holes, Bolt = Size of Hole

Available materials for butterfly valve series : 50, 52, 53, 54, 55, 56 and 58

Part	Material	DIN Code	ASTM Code
Body	Cast Iron	GG 25	ASTM A126 C1.B
	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
	Carbon Steel	GS-C 25	ASTM A216 WCB
	Stainless Steel	G-X6 CrNiMo 18.10	ASTM A351 Gr CF8-CF8M
	Bronze	RG5	ASTM B62
Disc	Ductile Iron	GGG 40	ASTM A536 Gr 65-45-12
	Stainless Steel	G-X6 CrNiMo 18.10	ASTM A351 Gr CF8-CF8M
	Aluminum Bronze	G-CuA110Ni	ASTM B 148 C1. C 95500
Stem	Stainless Steel	X2 CrNiMo 18.10	ASTM A276 316
Seat	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
	EPDM	Copolymer EPDM	Tem Range -35 °C / +130 °C
	Viton	Fluoelastomer	Tem Range -20 °C / +200 °C
	Teflon	PTFE	Tem Range -80 °C / +232 °C
Packing	NBR	Nitrile Rubber	Tem Range -25 °C / +100 °C
	EPDM	Copolymer EPDM	Tem Range -35 °C / +130 °C
	Viton	Fluoelastomer	Tem Range -20 °C / +200 °C

(to be continued)

When ordering butterfly valves, please specify the following information :

1) Type of Butterfly : Wafer, Lug, Mono, Double Flanged, or High Performance.
2) Nominal Size : Millimeters or Inches.
3) Face to Face : Reference the charts above.
4) Flange Drilling : Reference the chart above.
5) Actuation: Manual lock lever and manual worm gear. For pneumatic, electric and hydraulic actuators, include specifications.
6) Manufacturer: Manufacturer and model number is helpful in cases where dimensions are not provided, and essential when ordering replacement parts (seat rings, discs, etc...).
7) Material: Specify the required materials for the body, disc, and Seat.
   - Body : Cast Iron, Ductile Iron, Cast Steel, Stainless, Steel, or Bronze.
   - Disc : Ductile Iron, Stainless Steel, Aluminium/Bronze, or Coated.
   - Seat : EPDM, NBR, Viton, Neoprene, or Teflon (PTFE).
8) Medium : Oil, Gas, Water, etc...
9) Working Temperature : Degrees Celsius or Fahrenheit.

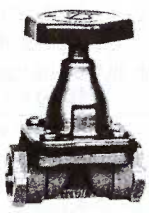
DIN Diaphragm Valves

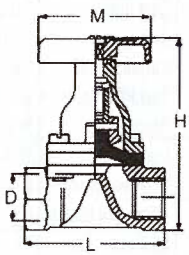
Diaphragm Valves (DIN)
Bronze, BSP Female Threaded
Weir Type

Weir type bronze diaphragm valve, BSP female threaded ends acc. to DIN 259, rising stem and handwheel.

Application :
In cold and warm water circuits for both tap water and central heating systems. As main valve in water and gas pipelines and in various industrial applications. The valve is KIWA type approved.

Remark: Model 5603 with EPDM diaphragm may not be used for hot tap water in combination with copper piping. EPDM diaphragm will be supplied if not specified especially.





Pressure and Temperature Range

Diaphragm	EPDM	Neoprene (CR)
Max. Operating Pressure	10 bar	10 bar
Max. Temperature	120°C	60°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G CuSn5ZnPb (Rg 5))
Bonnet	Brass	CuZn40Pb2
Stem	Brass	CuZn40Pb2
Handwheel	Steel	

How to order: CODE

Diaphragm valve (DIN), bronze, BSP female threaded, weir typ SIZE DN

Unit Per Pc.

CODE	DN	Size mm L	Size mm H	Size mm M	Weight Kgs
75 64 12	1/2"	65	84	55	0.5
13	3/4"	77	93	65	0.84
14	1"	93	118	72	1.4
15	1-1/4"	113	132	80	2.6
16	1-1/2"	132	147	100	3.4
75 64 17	2"	160	165	120	5

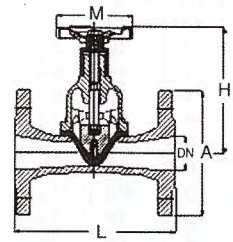
Econosto Model No. 5603

Diaphragm Valves (DIN)
Cast iron, Flanged Ends
Full Bore, Pressure Rating PN 10

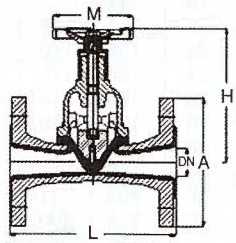
Full bore cast iron diaphragm valve, lined and unlined body. Flanged ends DIN PN 16. Position indicator with integrated stem protector and rising handwheel.

Application: Cold and hot water, portable water, air, oil, abrasive and aggressive media.

Suitability for application is partly depending on selected diaphragm and/or lining material.



No Lining



Hard Rubber Lining

Pressure and Temperature Range

Diaphragm	EPDM	Butyl (IIR)	Hypalon (CSM)
Max. Operating Pressure	10 bar	10	10
Max. Temperature	140°C	120	100
Diaphragm	Nitrile (NBR)	Natural Rubber (NR)	-
Max. Operating Pressure	10 bar	10	-
Max. Temperature	90°C	80	

No Lining

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Stem	Stainless steel	X14CrMoS17 (X12CrMoS17)
Handwheel (DN15-DN20)	ABS	
Handwheel (DN25-DN200)	Steel	
Diaphragm	EPDM	

Remark : The following diaphragm materials are available upon request : Butyl (IIR), Hypalon (CSM), Nitrile (NBR) or Natural Rubber (NR).

How to order: CODE

Diaphragm valve (DIN), cast iron, flanged ends, full bore, pressure rating PN 10, no lining, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H max.	M	
75 65 15	15	95	130	93	63	2
16	20	105	150	93	63	3.5
17	25	115	160	155	100	4
18	32	140	180	155	100	6.5
19	40	150	200	155	100	7
75 65 20	50	165	230	220	125	10.3
21	65	185	290	280	200	16
22	80	200	310	320	200	20
23	100	220	350	370	250	26.5
24	125	250	400	360	320	55
75 65 25	150	285	480	440	400	75
26	200	340	600	560	500	125

Econosto Model No. : 5651

Hard Rubber Lined

Material Specification

Component	Material	EN and/or (DIN)
Body and Bonnet	Cast iron	GJL-250 (GG-25)
Stem	Stainless steel	X14CrMoS17 (X12CrMoS17)
Handwheel (DN15-DN20)	ABS	
Handwheel (DN25-DN200)	Steel	
Body Lining	Hard rubber	NR-H
Diaphragm Material	Butyl (IIR)	

Remark : The following diaphragm materials are available upon request : EPDM, Hypalon (CSM), Nitrile (NBR) or Natural Rubber (NR).

How to order: CODE

Diaphragm valve (DIN), cast iron, flanged ends, full bore, pressure rating PN 10, hard rubber lining, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H max.	M	
75 65 31	15	95	130	93	63	2
32	20	105	150	93	63	3.5
33	25	115	160	155	100	4
34	32	140	180	155	100	6.5
35	40	150	200	155	100	7
75 65 36	50	165	230	220	125	10.3
37	65	185	290	280	200	16
38	80	200	310	320	200	20
39	100	220	350	370	250	26.5
40	125	250	400	360	320	55
75 65 41	150	285	480	440	400	75
42	200	340	600	560	500	125

Econosto Model No. : 5652

DIN Pressure Reducing Valves

Pressure Reducing Valves

Gunmetal & Stainless Steel with Flange Connection

Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- Germanischer Lloyd,
- Lloyds Register

Pressure reducer with flange connection made of gunmetal with pressure-relieved single seal valve and built-in dirt trap.

The pressure can be adjusted via a non-rising valve stem. Flange connection according to DIN EN 1092-3. Pressure reducer equipped with pressure gauge ports; gauge connection G 1/4".

Available three models with

- EPDM (ethylene propylene diene monomer rubber) seal suitable for water, neutral and non-sticking liquids, compressed air and neutral gases.
- FKM (Fluoroelastomer) seal suitable for non-neutral media i.e. oils, fuels, oil-laden compressed air, etc..

- **Low pressure: 682/482mGFO-LP EPDM and FKM**
- **Standard pressure: 682/482mGFO-SP EPDM and FKM**
- **High pressure: 682/482mGFO-HP EPDM and FKM**

Mesh sizes: DN15 to DN32 = 0.6 mm
DN40 and DN100 = 0.75 mm

Seats for 682:
DN15 to DN50 made of gunmetal
DN65 to DN100 made of gunmetal/stainless steel

Primary pressure: up to 40 bar
Secondary pressure: 0.5 - 15 bar

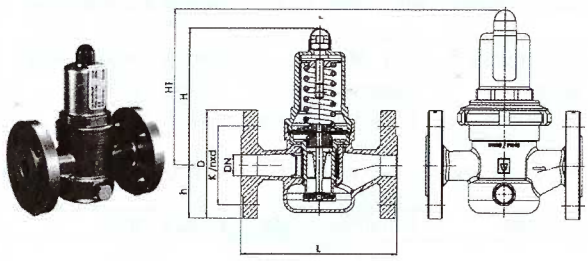
All models also available in **Stainless Steel**: series **482**.

How to order: CODE

Pressure Reducing Valve (DIN), Gunmetal or Stainless Steel, with Flange Connection, SIZE DIN, Type of Pressure Rating (LOW, STANDARD, or HIGH), SPECIFY THE SEALS FROM "EPDM" or "FKM"

Series 682 (Gunmetal):

Component	Material	DIN EN	ASTM/AISI
Body, Insert	Gunmetal	CC499K	CC499K
Internal Parts	Stainless steel	1.4404	316 L
Pressure Spring	Spring Steel	1,1200	ASTM A228
Strainer	Stainless steel	1.4404	316 L



7TH 75

Model 682mGFO-LP (Low Pressure)

Unit Per Pc

CODE	DN	PN	Size mm					Weight Kgs
			d	L	H1	h	n	
75 65 44	15	40	95	130	128	46	4 x M12	2.9
54	20	40	105	150	150	50	4 x M12	4.2
58	25	40	115	160	150	55	4 x M12	4.7
59	32	40	140	180	150	68	4 x M16	5.9
60	40	40	150	200	185	73	4 x M16	8.6
75 65 67	50	40	165	230	185	80	4 x M16	10.5

Primary Pressure	Up to 25 bar
Secondary Pressure	0.5 - 2 bar

Goetze KG: 682mGFO-LP

**Please Specify the Seal from EPDM or FKM when ordering

Model 682mGFO-SP (Standard Pressure)

Unit Per Pc

CODE	DN	PN	Size mm					Weight Kgs
			d	L	H	h	n	
75 65 45	15	40	95	130	102	46	4 x M12	2.7
68	20	40	105	150	130	50	4 x M12	4.2
69	25	40	115	160	130	55	4 x M12	4.7
70	32	40	140	180	130	68	4 x M16	5.9
76	40	40	150	200	165	73	4 x M16	8.6
75 65 77	50	40	165	230	165	80	4 x M16	10.5
55	65	16	185	290	235	89	8 x M16	20
56	65	40	185	290	235	89	8 x M16	20
57	80	40	200	310	235	96	8 x M16	22
46	100	16	200	350	320	112	8 x M16	40

Primary Pressure	Up to 40 bar
Secondary Pressure	1 - 8 bar

Goetze KG 682mGFO-SP

**Please Specify the Seal from EPDM or FKM when ordering.

Model 682mGFO-HP (High Pressure)

Unit Per Pc

CODE	DN	PN	Size mm					Weight Kgs
			d	L	H	h	n	
75 65 47	15	40	95	130	102	46	4 x M12	2.7
78	20	40	105	150	130	50	4 x M12	4.2
79	25	40	115	160	130	55	4 x M12	4.7
80	32	40	140	180	130	68	4 x M16	5.9
81	40	40	150	200	165	73	4 x M16	8.6
75 65 82	50	40	165	230	165	80	4 x M16	10.5

Primary Pressure	Up to 40 bar
Secondary Pressure	5 - 15 bar

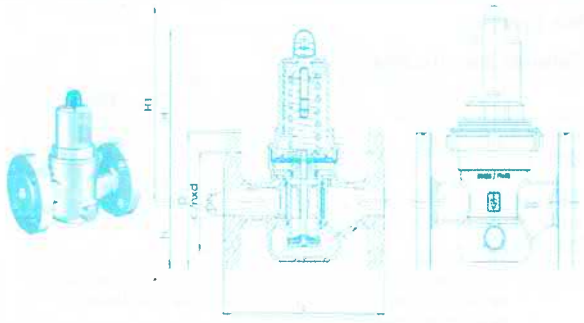
Goetze KG: 682mGFO-HP

**Please Specify the Seal from EPDM or FKM when ordering

Series 482 (Stainless Steel):

Seats for version 482: DN20 to DN80 made of stainless steel

Component	Material	DIN EN	ASTM/AISI
Body	Stainless Steel	1.4408	CF-8M
Internal Parts	Stainless Steel	1.4408	CF-8M
Pressure Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless steel	1.4404	316L



Model 482mGFO-LP (Low Pressure)

Unit Per Pc

CODE	DN	PN	Size mm					Weight Kgs
			d	L	H1	h	n	
75 65 48	15	40	95	130	128	46	4 x M12	2.9
83	20	40	105	150	150	50	4 x M12	4.3
84	25	40	115	160	150	55	4 x M12	4.4
85	32	40	140	180	150	68	4 x M16	5.9
86	40	40	150	200	185	73	4 x M16	9.1
75 65 87	50	40	165	230	185	80	4 x M16	10.9

Primary Pressure	Up to 25 bar
Secondary Pressure	0.5 - 2 bar

Goetze KG: 482mGFO-LP

**Please Specify the Seal from EPDM or FKM when ordering.

Model 482mGFO-SP (Standard Pressure)

Unit Per Pc

CODE	DN	PN	Size mm					Weight Kgs
			d	L	H	h	n	
75 65 49	15	40	95	130	102	46	4 x M12	2.7
88	20	40	105	150	130	50	4 x M12	3.9
99	25	40	115	160	130	55	4 x M12	4.3
75 66 00	32	40	140	180	130	68	4 x M16	5.5
12	40	40	150	200	165	73	4 x M16	8.4
75 66 13	50	40	165	230	165	80	4 x M16	10.2
75 65 51	65	16	185	290	235	89	4 x M16	18.7
52	65	40	185	290	235	89	8 x M16	19
53	80	40	200	310	235	96	8 x M16	20.5

Primary Pressure	Up to 40 bar
Secondary Pressure	1 - 8 bar

Goetze KG: 482mGFO-SP

**Please Specify the Seal from EPDM or FKM when ordering

Model 482mGFO-HP (High Pressure)

Unit Per Pc

CODE	DN	PN	Size mm					Weight Kgs
			d	L	H	h	n	
75 65 50	15	40	95	130	102	46	4 x M12	2.7
75 66 14	20	40	105	150	130	50	4 x M12	3.9
23	25	40	115	160	130	55	4 x M12	4.3
24	32	40	140	180	130	68	4 x M16	5.5
33	40	40	150	200	165	73	4 x M16	8.4
75 66 34	50	40	165	230	165	80	4 x M16	10.2

Primary Pressure	Up to 40 bar
Secondary Pressure	5 - 15 bar

Goetze KG: 482mGFO-HP

**Please Specify the Seal from EPDM or FKM when ordering

Pressure Reducing Valves
Gunmetal & Stainless Steel
with Threaded Connection

Marine Type Approvals held for these valves:
- American Bureau of Shipping,
- Bureau Veritas,
- Germanischer Lloyd,
- Lloyds Register

Pressure reducer with threaded connections made of gunmetal with pressure-relieved single seat valve and built-in dirt trap. Spring made of rust resistant, and strainers made of stainless steel. Diaphragm made of high-quality plastic with insert of fabric, and gasket made of heat resistant-plastic. Body with G 1/4" connection for pressure gauge on both sides.

Standard thread: BSPTm also available in female BSP-P for sizes up to 1"(PLEASE CLEARLY INDICATE IN THE ORDER."f f" or "BSPTm/BSPTm")

Available three models with
- EPDM (ethylene propylene diene monomer rubber) seal suitable for water, neutral and non-sticking liquids, compressed air and neutral gases.
- FKM (Fluoroelastomer) seal suitable for non-neutral media i.e. oils, fuels, oil-laden compressed air, etc..

- **Low Pressure: 681/481mGFO-LP EPDM and FKM**
- **Standard Pressure: 681/481mGFO-SP EPDM and FKM**
- **High Pressure: 681/481mGFO-HP EPDM and FKM**

Mesh sizes: G 1/2" to G 1-1/4" = 0.6 mm
DN40 and DN50 = 0.75 mm

Seats for version 681:
DN15 to DN20 made of stainless steel
DN32 to DN50 made of gunmetal

Primary pressure: up to 40 bar
Secondary pressure: 0.5 - 15 bar

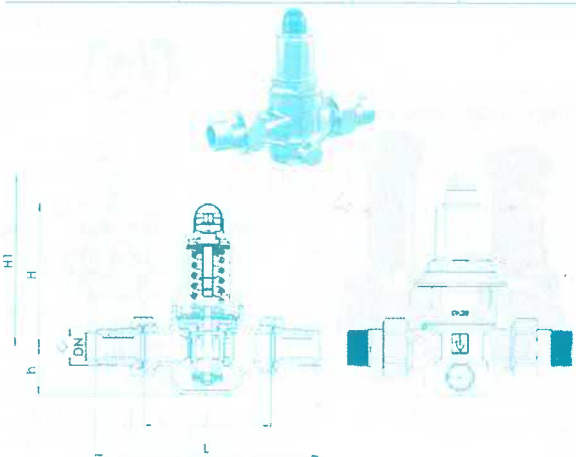
All models also available in **Stainless Steel**: series **481**.

How to order: CODE

Pressure Reducing Valve (DIN), with threaded connection, Gunmetal or Stainless Steel, Type of Pressure Rating (LOW, STANDARD, and HIGH), SIZE DIN, SPECIFY THE SEALS FROM "EPDM" or "FKM"

Series 681 (Gunmetal):

Component	Material	DIN EN	ASTM/AISI
Body	Gunmetal	CC499K	CC499K
Internal Parts	Gunmetal/ Stainless Steel	CC499K/ 1.4404	CC499K/ 316L
Pressure Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless steel	1.4404	316L



Model 681mGFO-LP (Low Pressure)

CODE	DN	Size mm L	l	H1	h	Weight Kgs
75 66 43	15	142	80	128	33	1.5
44	20	158	90	128	33	1.6
53	25	180	100	150	45	2.9
54	32	193	105	150	45	3.1
63	40	226	130	185	70	6.2
75 66 64	50	252	140	185	70	6.7
Primary Pressure		Up to 25 bar				
Secondary Pressure		0.5 - 2 bar				

Goetze KG: 681mGFO LP
**Please Specify the Seal from EPDM or FKM when ordering

Model 681mGFO-SP (Standard Pressure)

CODE	DN	Size mm L	l	H	h	Weight Kgs
75 65 61	15	142	80	102	33	1.2
62	20	158	90	102	33	1.3
63	25	180	100	130	45	2.4
64	32	193	105	130	45	2.6
65	40	226	130	165	70	5.5
75 65 66	50	252	140	165	70	6.0
Primary Pressure		Up to 40 bar				
Secondary Pressure		1 - 8 bar				

Goetze KG: 681mGFO-SP
**Please Specify the Seal from EPDM or FKM when ordering

Model 681mGFO-HP (High Pressure)

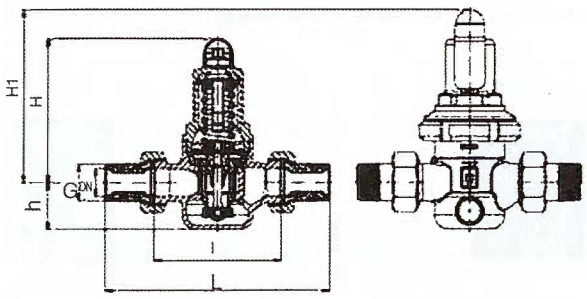
CODE	DN	Size mm L	l	H	h	Weight Kgs
75 66 97	15	142	80	102	33	1.2
98	20	158	90	102	33	1.3
99	25	180	100	130	45	2.4
75 69 16	32	193	105	130	45	2.6
17	40	226	130	165	70	5.5
75 69 18	50	252	140	165	70	6.0
Primary Pressure		Up to 40 bar				
Secondary Pressure		5 - 15 bar				

Goetze KG: 681mGFO-HP
**Please Specify the Seal from EPDM or FKM when ordering

Series 481 (Stainless Steel):

Seats for version 481:
DN15 to DN50 made of stainless steel

Component	Material	DIN EN	ASTM/AISI
Body	Stainless Steel	1.4408	CF-8M
Internal Parts	Stainless Steel	1.4408 / 1.4404	CF-8M/316L
Pressure Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless steel	1.4404	316L



Model 481mGFO-LP (Low Pressure)

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		L	l	H1	h	
75 69 19	15	142	80	128	33	1.5
20	20	158	90	128	33	1.6
27	25	180	100	150	45	2.8
28	32	193	105	150	45	3.0
29	40	226	130	185	70	5.9
75 69 30	50	252	140	185	70	6.4
Primary Pressure		Up to 25 bar				
Secondary Pressure		0.5 - 2 bar				

Goetze KG: 481mGFO-LP
**Please Specify the Seal from EPDM or FKM when ordering.

Model 481mGFO-SP (Standard Pressure)

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		L	l	H	h	
75 69 37	15	142	80	102	33	1.2
38	20	158	90	102	33	1.3
39	25	180	100	130	45	2.3
40	32	193	105	130	45	2.5
49	40	226	130	165	70	5.2
75 69 50	50	252	140	165	70	5.7
Primary Pressure		Up to 40 bar				
Secondary Pressure		1 - 8 bar				

Goetze KG: 481mGFO-SP
**Please Specify the Seal from EPDM or FKM when ordering.

Model 481mGFO-HP (High Pressure)

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		L	l	H	h	
75 69 59	15	142	80	102	33	1.2
60	20	158	90	102	33	1.3
68	25	180	100	130	45	2.3
69	32	193	105	130	45	2.5
70	40	226	130	165	70	5.2
75 69 78	50	252	140	165	70	5.7
Primary Pressure		Up to 40 bar				
Secondary Pressure		5 - 15 bar				

Goetze KG: 481mGFO-HP
**Please Specify the Seal from EPDM or FKM when ordering.

Pressure Reducing Valves
Gunmetal with Threaded Connection

Marine Type Approvals held for these valves:

- Germanischer Lloyd,
- Lloyds Register

Pressure reducer with threaded connections made of gunmetal. Either with elastomere moulded diaphragm made of FKM or with piston. Body with G 1/4" connection for pressure gauge on both sides of outlet.

Available in various versions:

- Version code: **mXXXSM**:
  with elastomere moulded diaphragm and seals made of FKM suitable for e.g. oils, fuels, oil-laden compressed air, etc..
  max. inlet pressure: 60 bar, outlet pressure: 0.5 to 15 bar.
- Version code: **kXXXSK / kXXXHK**:
  with piston made of brass and seals made of FKM suitable for e.g. oils, fuels, oil-laden compressed air, etc..
  kXXXSK: max. inlet pressure: 60 bar, outlet pressure: 5 to 30 bar
  kXXXHK: max. inlet pressure: 60 bar, outlet pressure:10 to 50 bar
- Version code: **xGSXX**:
  for neutral gases (compressed air) with secondary venting
- Version code: **xGFOXX**:
  for liquids & non-neutral gases without secondary venting

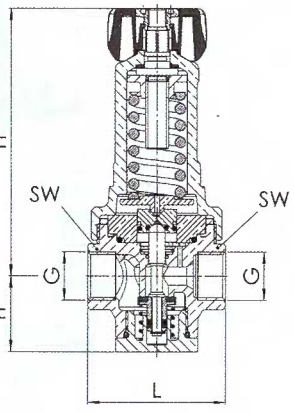
How to order: CODE Pressure Reducing Valve (DIN), with threaded connection, Gunmetal, Version with diaphragm or piston – depending on pressure rating (mXXXSM, kXXXSK or kXXXHK), Version for which kind of medium (xGSXX or xGFOXX), SIZE DIN

Example code:
684mGSSM-20-f/f-20/20 FKM
series 684 **mXXXSM**: **diaphragm**
xGSXX: **with secondary venting**
20-f/f-20/20: size DN**20** with female BSP-P threads

Series 684:

Component	Material	DIN EN	ASTM/AISI
Body	Gunmetal	CC499K	CC499K
Internal Parts	Brass	CW614N	CW614N
Pressure Spring	Spring steel with anti-rust protection	1.1200	ASTM A228

DN8 to DN25 DN40 & DN50



Model 684mGSSM

with elastomere moulded diaphragm and seals made of FKM for neutral gases (compressed air) **with secondary venting.**

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	H	h	SW	Kgs
75 74 56	8	68	120	33	26	1.2
57	10	68	120	33	26	1.2
58	15	60	120	33	26	1.2
59	20	78	180	40	32	2.8
60	25	102	215	56	44	5.3
75 74 61	40	136	260	63	58	9.4
62	50	136	270	70	70	10.2
Primary Pressure		Up to 60 bar				
Secondary Pressure		0.5 - 15 bar				

Goetze KG: 684mGSSM

Model 684mGFOSM

with elastomere moulded diaphragm and seals made of FKM for liquids & non-neutral gases **without secondary venting.**

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	H	h	SW	Kgs
75 74 63	8	68	120	33	26	1.2
64	10	68	120	33	26	1.2
65	15	60	120	33	26	1.2
66	20	78	180	40	32	2.8
67	25	102	215	56	44	5.3
75 74 68	40	136	260	63	58	9.4
69	50	136	270	70	70	10.2
Primary Pressure		Up to 60 bar				
Secondary Pressure		0.5 - 15 bar				

Goetze KG: 684mGFOSM

Model 684kGSSK

with piston made of brass and seals made of FKM for neutral gases (compressed air) **with secondary venting.**

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	H	h	SW	Kgs
75 74 70	8	68	120	33	26	1.2
71	10	68	120	33	26	1.2
72	15	60	120	33	26	1.2
73	20	78	180	40	32	2.8
74	25	102	215	56	44	5.3
75 74 75	40	136	260	63	58	9.4
76	50	136	270	70	70	10.2
Primary Pressure		Up to 60 bar				
Secondary Pressure		5 - 30 bar				

Goetze KG: 684kGSSK

Model 684kGFOSK

with piston made of brass and seals made of FKM for liquids & non-neutral gases **without secondary venting.**

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	H	h	SW	Kgs
75 74 77	8	68	120	33	26	1.2
78	10	68	120	33	26	1.2
79	15	60	120	33	26	1.2
80	20	78	180	40	32	2.8
81	25	102	215	56	44	5.3
75 74 82	40	136	260	63	58	9.4
83	50	136	270	70	70	10.2
Primary Pressure		Up to 60 bar				
Secondary Pressure		5 - 30 bar				

Goetze KG: 684kGFOSK

Model 684kGSHK

with piston made of brass and seals made of FKM for neutral gases (compressed air) **with secondary venting.**

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	H	h	SW	Kgs
75 74 84	8	68	120	33	26	1.2
85	10	68	120	33	26	1.2
86	15	60	120	33	26	1.2
87	20	78	180	40	32	2.8
88	25	102	215	56	44	5.3
75 74 89	40	136	260	63	58	9.4
90	50	136	270	70	70	10.2
Primary Pressure		Up to 60 bar				
Secondary Pressure		10 - 50 bar				

Goetze KG: 684kGSHK

Model 684kGFOHK

with piston made of brass and seals made of FKM for liquids & non-neutral gases **without secondary venting.**

Unit Per Pc.

CODE	DN	Size mm				Weight
		L	H	h	SW	Kgs
75 74 91	8	68	120	33	26	1.2
92	10	68	120	33	26	1.2
93	15	60	120	33	26	1.2
94	20	78	180	40	32	2.8
95	25	102	215	56	44	5.3
75 74 96	40	136	260	63	58	9.4
97	50	136	270	70	70	10.2
Primary Pressure		Up to 60 bar				
Secondary Pressure		10 - 50 bar				

Goetze KG: 684kGFOHK

Pressure Reducing Valves

Gunmetal with Socket Joint

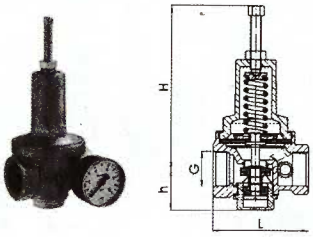
Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- Germanischer Lloyd,
- Lloyds Register

Pressure reducer with socket joint made of gunmetal with pressure-relieved single seat valve. Suitable for compressed air and neutral gas, water, neutral and non-sticking liquids. Body with G 1/4" connection for pressure gauge on both sides.

Primary pressure : up to 50 bar (DN32 – 30 bar)
Secondary pressure : 1.5 to 10 bar
Biggest reduction relation 10 : 1

Component	Material	DIN EN	ASTM/AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Brass	CW614N	B124 C37700
Pressure Spring	Spring steel	1.1200	-



Unit Per Pc

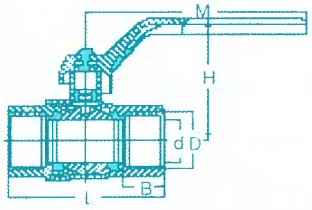
CODE	DN	Size mm L	H	h	Weight Kgs
75 65 71	10	73	100	22	0.5
72	15	73	100	22	0.5
73	20	70	120	30	0.8
74	25	87	165	35	1.4
75	32	100	175	43	2.0
Primary Pressure		Up to 50/30 bar			
Secondary Pressure		1.5 - 10 bar			

Goetze KG: Model 683

DIN Ball Valves

Ball Valves (DIN)
Brass Nickel Plated
BSP Female Threaded Ends
Pressure Rating PN 40

Brass nickel-plated ball valve with full bore, floating ball, pressure rating PN 40. Actuated by means of aluminium lever. This type of ball valve is generally applicable e.g. for compressed air, HVAC and water systems up to maximum 40 bar.



Pressure and Temperature Range

Size	Pressure Rating	Temperature Range	-20 C	+90 C	+150 C
1/4" - 1"	PN 40	-20 C /+150°C	40 bar	40	22
1-1/4" - 2"	PN 25	-20 C +150 C	25 bar	25	15
2-1/2" - 4"	PN 16	-20 C +150°C	16 bar	16	9

Material Specification

Component	Material	EN and/or (DIN)
Body, Ball and Stem*1	Brass	CuZn40Pb2
Ball Seat	PTFE	
Stem Seal (Secondary)	NBR	
Stem Seal (Primary)	FPM (Viton)	
Lever*2	Aluminium	

Remark : *1 : Body nickel plated, ball chromium plated
*2 : Finished with epoxy coating colour green

How to order: CODE

Ball valve (DIN), brass nickel plated, BSP female threaded ends, pressure rating PN 40, SIZE DN

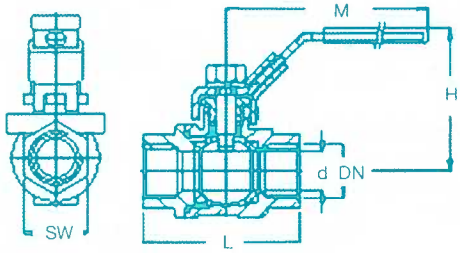
Unit Per Pc

CODE	DN	Size mm Φd	L	H	M	Kv*-values	Weight Kgs
75 66 01	1/4"	10	45	48	80	4.1	0.12
02	3/8"	10	45	48	80	6.3	0.12
03	1/2"	15	59	55	105	15.5	0.22
04	3/4"	20	69	66	120	31	0.36
05	1"	25	83	70	120	52	0.57
75 66 06	1-1/4"	32	94	83	135	100	0.89
07	1-1/2"	40	102	93	160	180	1.15
08	2"	50	124	102	160	350	1.77
09	2-1/2"	65	148	143	265	580	3.30
10	3"	80	171	153	265	1,000	5.37
75 66 11	4"	100	206	187	340	1,550	8.24

Remark : *Kv=m³/h (Δp=1 bar) water at 20 C
Econosto Model No. 1607

Ball Valves (DIN)
Stainless Steel
Female Threaded Ends
Full Bore

Two-piece ball valve with full bore, floating ball, BSP or NPT female thread connection, pressure rating 1,000 PSI WOG fitted with blow-out proof stem. This ball valve is available in stainless steel 1.4408. Actuated by means of a lockable lever with PVC sleeve. This type of ball valve is generally applicable e.g. for compressed air, HVAC, fuel and corrosive systems up to maximum 68 bar.



Pressure and Temperature Range

Size	Temperature Range	-34 C	+38 C	+100 C	+150 C	+205 C
1/4" - 2"	-34 C +205 C	68 bar	68	44	22	0
2-1/2 -3		50 bar	50	32	16	0

Pressure rating 1,000 PSI WOG

Material Specification

Component	Material	EN and/or (DIN)
Body	Stainless steel	GX5CrNiMo 19-11-2 (G-X6Cr NiMo 18 10)
Ball	Stainless steel	GX5CrNiMo 19-11-2 (G-X6Cr NiMo 18 10)
Stem	Stainless steel	X5CrNiMo17-12-2
Ball Seat	PTFE	
Stem Seal	PTFE	
Lever	Stainless steel	X5CrNi18-10

BSP Female Threaded Ends

How to order: CODE

Ball valve (DIN), stainless steel SS 316, BSP female threaded ends, full bore, SIZE DN

Unit Per Pc

CODE	DN	Size mm Φd	H	L	M	Weight Kgs
75 66 65	1/4"	12.5	48	51.5	103	0.23
66	3/8"	12.5	48	51.5	103	0.21
67	1/2"	15	50	63.5	103	0.28
68	3/4"	20	57	74	126	0.50
69	1"	25	67	86	144	0.80
75 66 70	1-1/4"	32	72	98	144	1.20
71	1-1/2"	38	93	105.5	189	1.90
72	2"	50	100	122	189	2.95
73	2-1/2"	63.5	126	159	223	6.00
74	3"	76	136	182	223	9.80

Econosto Model No. 7752

NPT Female Threaded Ends

How to order: CODE

Ball valve (DIN), stainless steel SS 316, NPT female threaded ends, full bore, SIZE DN

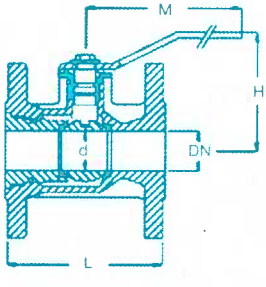
Unit Per Pc

CODE	DN	Size mm Φd	H	L	M	Weight Kgs
75 65 89	1/4"	12.5	48	51.5	103	0.23
90	3/8"	12.5	48	51.5	103	0.21
91	1/2"	15	50	63.5	103	0.28
92	3/4"	20	57	74	126	0.50
93	1"	25	67	86	144	0.80
75 65 94	1-1/4"	32	72	98	144	1.20
95	1-1/2"	38	93	105.5	189	1.90
96	2"	50	100	122	189	2.95
97	2-1/2"	63.5	126	159	223	6.00
98	3"	76	136	182	223	9.80

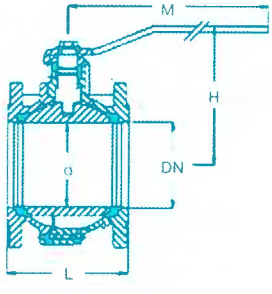
Econosto Model No. : 7752NPT

Ball Valves (DIN)
Bronze
DIN Flanges, 2-way
Full Bore
Pressure Rating PN 16

Ball valve with full bore, floating ball and flange connection rated DIN PN 16. Actuated by lever. Also available with a pneumatic or electric actuator. This type of ball valve is generally used in heating, air conditioning and industrial systems for water and gases up to a maximum of 16 bar (PN 16 version).



DN 20 - DN 40



DN 50 - DN 200

Pressure and Temperature Range

Size	Pressure Rating	Temperature Range	-20 °C	-10°C	+70 °C	+90°C	+150 °C
DN20-DN200	PN 16	-20°C /+150 °C	16 bar	16	16	16	8

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Ball and Stem	Stainless steel	X5CrNiMo17-12-2
Ball Seat (+ Graphite)	PTFE	
Lever (Lacquered)	Steel	
O-rings	FPM (Viton)	

How to order: CODE

Ball valve (DIN), bronze, DIN flanges, 2-way, full bore, pressure rating PN 16 SIZE DN

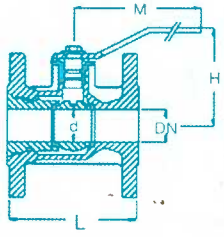
Unit Per Pc

CODE	DN	Size mm d	H	L	M	Weight Kgs
75 66 75	20	20	85	120	130	2.5
76	25	25	95	125	170	3.2
77	32	32	100	130	170	4.4
78	40	40	118	140	220	5.5
79	50	50	125	150	220	8.5
75 66 80	65	63	152	170	284	11.5
81	80	76	166	180	284	15.5
82	100	95	180	190	360	20
83	125	120	225	200	447	30
84	150	145	242	210	560	36
75 66 85	200	190	320	400	1,000	93

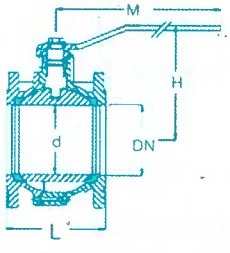
Econosto Model No. : 1943

Ball Valves (DIN)
Cast Iron
DIN Flanges, 2-way
Full Bore
Pressure Rating PN 16

Ball valve with full bore, floating ball and flange connection rated DIN PN 16. Actuated by lever. Also available with a pneumatic or electric actuator. This type of ball valve is generally used in heating, air conditioning and industrial systems for water and gases up to a maximum of 16 bar (PN 16 version).



DN 20 - DN 40



DN 50 - DN 200

Pressure and Temperature Range

Size	Pressure Rating	Temperature Range	-10 °C	+70 °C	+90 °C	+150 °C
DN20-DN200	PN 16	-10 °C /+150 °C	16 bar	16	16	8

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-250 (GG-25)
Ball and Stem	Brass	CuZn40Pb2
Ball Seat (+ Graphite)	PTFE	
Lever (Lacquered)	Steel	
O-rings	NBR	

How to order: CODE

Ball valve (DIN), cast iron, DIN flanges, 2-way, full bore, brass ball and stem pressure rating PN 16, SIZE DN

Unit Per Pc

CODE	DN	Size mm d	H	L	M	Weight Kgs
75 66 86	20	20	85	120	130	2.5
87	25	25	95	125	170	3.2
88	32	32	100	130	170	4.4
89	40	40	118	140	220	5.5
90	50	50	125	150	220	8.5

(to be continued)

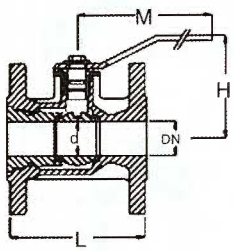
Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		d	H	L	M	
75 66 91	65	63	152	170	284	11.5
92	80	76	166	180	284	15.5
93	100	95	180	190	360	20
94	125	120	225	200	447	30
95	150	145	242	210	560	36
75 66 96	200	190	320	400	1,000	93

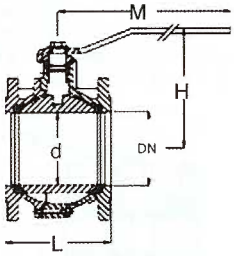
Econosto Model No. : 1942M

Ball Valves (DIN)
Cast Iron, DIN Fanges
2-way, Full Bore
Pressure Rating PN 16

Ball valve with full bore, floating ball and flange connection rated DIN PN 16. Actuated by lever. Also available with a pneumatic or electric actuator. This type of ball valve is generally used in heating, air conditioning and industrial systems for water and gases up to a maximum of 16 bar (PN 16 version).



DN 20 - DN 40



DN 50 - DN 200

Pressure and Temperature Range

Size	Pressure Rating	Temperature Range	-10°C	+70°C	+90°C	+150°C
DN20-DN200	PN 16	-10°C /+150°C	16 bar	16	16	8

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-250 (GG-25)
Ball and Stem	Stainless steel	X5CrNi18-10
Ball Seat (+ Graphite)	PTFE	
Lever (Lacquered)	Steel	
O-rings	NBR	

How to order: CODE

Ball valve (DIN), cast iron, DIN flanges, 2-way, full bore, pressure rating PN 16, stainless steel ball and stem SIZE DN

Unit Per Pc.

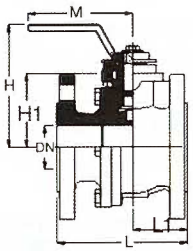
CODE	DN	Size mm				Weight Kgs
		d	H	L	M	
75 67 01	20	20	85	120	130	2.5
02	25	25	95	125	170	3.2
03	32	32	100	130	170	4.4
04	40	40	118	140	220	5.5
05	50	50	125	150	220	8.5
75 67 06	65	63	152	170	284	11.5
07	80	76	166	180	284	15.5
08	100	95	180	190	360	20
09	125	120	225	200	447	30
10	150	145	242	210	560	36
75 67 11	200	190	320	400	1,000	93

(to be continued)

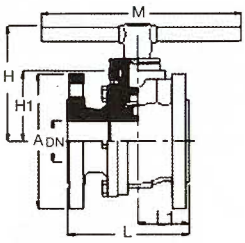
Econosto Model No. : 1942R

Ball Valves (DIN)
Forged Steel
DIN Flanges, 2-way,
Full Bore
Pressure Rating PN 16 – PN 40

Two-piece ball valve with full bore, floating ball and flange connection to DIN PN 16 or PN 40. Actuated by means of a lever, T-bar or gearbox. Also available with a pneumatic or electric actuator. This type of ball valve is generally used in industrial systems such as steam, water, gases, and corrosive media, up to a maximum of 40 bar (PN 40 version). These ball valves are anti-static, fire-safe and fitted with a double gland packing and blow-out proof stem.



DN 15 - DN 65



DN 80 - DN 200

Pressure and Temperature Range

Size	Temp. Range	-30°C	+50°C	+100°C	+150°C	+200°C	+230°C
PN 16							
DN15 - DN50	-30°C / +230°C	16 bar	15	14	13	11	0
DN65 - DN150		16 bar	15	14	13	9	0
DN200		16 bar	15	14	13	6	0
PN 40							
DN15 - DN50	-30°C / +230°C	39 bar	37	34	30	13	0
DN65 - DN150		39 bar	37	33	26	9	0
DN200		34 bar	32	22	16	6	0

Material Specification

Component	Material	EN and/or (DIN)
Body (DN15-65)	Forged steel	C22G2 (C 22.8)
Body (DN80-200)	Cast steel	GP240GH + N (GS-C25N)
Ball (DN15-65)	Stainless steel	GX5CrNiMo19-11-2
Ball (DN80-200)	Stainless steel	(G-X6CrNiMo 18 10)
Stem (DN15-65)	Stainless steel	GX5CrNiMo19-10 (G-X6CrNi 18 9)
Stem (DN80-200)	Stainless steel	X5CrNiMo17-12-2
Ball Seat	PTFE(TFM1600)	X5CrNi18-10
Stem Seal (Prim./Sec.)	PTFE/Graphite	
O-ring	Viton(PTFE coating)	
Body Gasket (Prim./Sec.)	PTFE/Graphite	
Lever (DN15-65)	Stainless Steel	X5CrNi18-10
T-bar (DN80-200)	Galvanized Steel	

PN 16

How to order: CODE

Ball valve (DIN), forged steel, DIN flanges, 2-way, full bore, pressure rating PN 16, SIZE DN

Unit Per Pc.

CODE	DN	Size mm						Weight Kgs		Operation
		ϕd	L		L1	M	H			
			Short	Long				Short	Long	
75 67 12	15	14	115	130	55	150	83	-	-	Lever
13	20	19	120	150	53	200	93	-	-	"
14	25	24	125	160	55	200	104	-	-	"
15	32	30	130	180	56	240	116	-	-	"
16	40	38	140	200	60.5	240	121	-	-	"
75 67 17	50	50	150	230	63	290	145	-	-	Lever
57	65	62	170	290	72	290	161	16	18	"
58	80	76	180	310	77	350	181	22	26	T-bar
59	100	100	190	350	86	350	207	31	37	"
60	125	120	325	-	140	550	225	56	-	"
75 67 61	150	151	350	-	175	550	284	69	-	T-bar
62	200	202	400	-	200	700	331	120	-	"

Econosto Model No. : 7349

PN 40

How to order: CODE

Ball valve (DIN), forged steel, DIN flanges, 2-way, full bore, pressure rating PN 40, SIZE DN

Unit Per Pc.

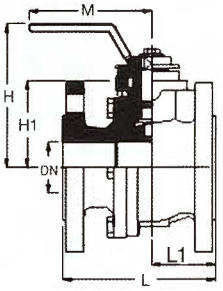
CODE	DN	Size mm						Weight Kgs		Operation
		ϕd	L		L1	M	H			
			Short	Long				Short	Long	
75 67 51	15	14	115	130	55	150	83	2.8	3.5	Lever
52	20	19	120	150	53	200	93	3.6	4.2	"
53	25	24	125	160	55	200	104	4.9	5.2	"
54	32	30	130	180	56	240	116	7.1	7.6	"
55	40	38	140	200	60.5	240	121	8.3	8.9	"
75 67 56	50	50	150	230	63	290	145	13	13	Lever
18	65	62	170	290	72	290	161	17	18	"
19	80	76	180	310	77	350	181	24	27	T-bar
20	100	100	190	350	86	350	207	34	39	"
34	125	120	325	-	140	550	225	61	-	"
75 67 48	150	151	350	-	175	550	284	75	-	T-bar
49	200	202	400	-	200	700	331	135	-	"

Econosto Model No. : 7349

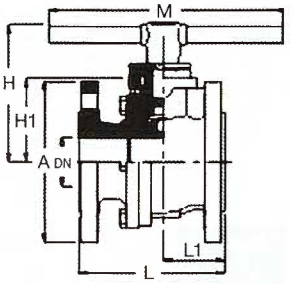
Ball Valves (DIN)

Stainless Steel
DIN Flanges, 2-way
Full Bore
Pressure Rating
PN 16 – PN 40

Two-piece ball valve with full bore, floating ball and flange connection rated DIN PN 16 or PN 40. Actuated by means of a lever, T-bar or gearbox. Also available with a pneumatic or electric actuator. This type of ball valve is generally used in industrial systems such as steam, water, gases, and corrosive media, up to a maximum of 40 bar (PN 40 version). These ball valves are anti-static, fire-safe and fitted with a double gland packing and blow-out proof stem.



DN 15 - DN 65



DN 80 - DN 200

Pressure and Temperature Range

Size	Temp. Range	-30°C	+50°C	+100°C	+150°C	+200°C	+230°C
PN 16							
DN15 - DN50	-30°C / +230°C	16 bar	15	14	13	11	0
DN65 - DN150		16 bar	15	14	13	9	0
DN200		16 bar	15	14	13	6	0
PN 40							
DN15 - DN50	-30°C / +230°C	39 bar	37	34	30	13	0
DN65 - DN150		39 bar	37	33	26	9	0
DN200		34 bar	32	22	16	6	0

Material Specification

Component	Material	EN and/or (DIN)
Body and Ball	Stainless steel	GX5CrNiMo19-11-2 (G-X6CrNiMo 18 10)
Stem	Stainless steel	X5CrNiMo17-12-2
Ball Seat	PTFE(TFM1600)	
Stem Seal (Prim./Sec.)	PTFE/Graphite	
O-ring	Viton(PTFE coating)	
Body Gasket (Prim./Sec.)	PTFE/Graphite	
Lever (DN15-65)	Stainless Steel	X5CrNi18-10
T-bar (DN80-200)	Galvanized Steel	

PN 16

How to order: CODE

Ball valve (DIN), stainless steel, DIN flanges, 2-way, full bore, pressure rating PN 16, SIZE DN

Unit Per Pc.

CODE	DN	Size mm						Weight Kgs		Operation
		ϕd	L		L1	M	H			
			Short	Long				Short	Long	
75 67 50	15	14	115	130	55	150	83	-	-	Lever
64	20	19	120	150	53	200	93	-	-	"
78	25	24	125	160	55	200	104	-	-	"
79	32	30	130	180	56	240	116	-	-	"
80	40	38	140	200	60.5	240	121	-	-	"
75 67 90	50	50	150	230	63	290	145	-	-	Lever
71	65	62	170	290	72	290	161	16	18	"
72	80	76	180	310	77	350	181	22	26	T-bar
73	100	100	190	350	86	350	207	31	37	"
74	125	120	325	-	140	550	225	56	-	"
75 67 75	150	151	350	-	175	550	284	69	-	T-bar
76	200	202	400	-	200	700	331	120	-	"

Econosto Model No. : 7389

PN 40

How to order: CODE

Ball valve (DIN), stainless steel, DIN flanges, 2-way, full bore, pressure rating PN 40, SIZE DN

Unit Per Pc

CODE	DN	Size mm						Weight Kgs		Operation
		ϕd	L Short	L Long	L1	M	H	Short	Long	
75 67 65	15	14	115	130	55	150	83	2.8	3 5	Lever
66	20	19	120	150	53	200	93	3.6	4.2	"
67	25	24	125	160	55	200	104	4 9	5.2	"
68	32	30	130	180	56	240	116	7 1	7 6	"
69	40	38	140	200	60 5	240	121	8.3	8.9	"
75 67 70	50	50	150	230	63	290	145	13	13	Lever
75 68 00	65	62	170	290	72	290	161	17	18	"
24	80	76	180	310	77	350	181	24	27	T-bar
39	100	100	190	350	86	350	207	34	39	"
40	125	120	325	-	140	550	225	61	-	"
75 68 41	150	151	350	-	175	550	284	75	-	T-bar
42	200	202	400	-	200	700	331	135	-	"

Econosto Model No. : 7389

7TH 75

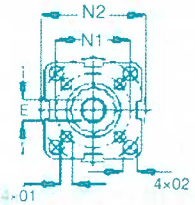
Ball Valves (DIN)

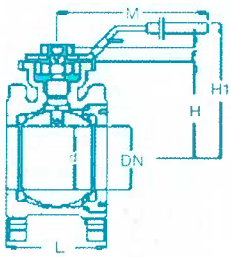
Cast Steel

DIN wafer Type, 2-way

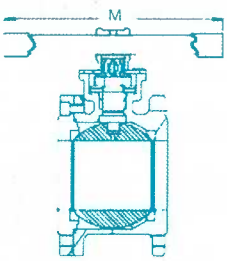
Pressure Rating PN 16 and 40

Wafer type ball valve with full bore, floating ball and flange connection to DIN PN16 or PN40. Actuated by means of a lever or T-bar. This type of ball valve is generally used in industrial systems such as steam, water, gases, and corrosive media, up to a maximum of 40 bar (PN40 version).





DN 15 - DN 80



DN 100 - DN 150

PN 16

Pressure and Temperature Range

Size	Pressure Rating	Temp. Range	-30 C	+50 C	+100 C	+150 C	+200 C	+230 C
DN15 - DN50	PN16	-30 C / +230 C	16 bar	15	13	13	11	7 6

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast steel	GP240GH (GS-C25)
Ball	Stainless steel	GX5CrNi19-10 (G-X6CrNi18 9)
Stem	Stainless steel	X5CrNi18-10
Ball Seat	PTFE(TFM1600)	
Stem Seal	PTFE	
O-ring	FKM(Viton)	
Body Gasket	PTFE	
Lever(DN15-80) *1	Stainless steel	X5CrNi18-10
T-bar(DN100-150) *1	Galvanized Steel	

*1 Covered with PVC sleeve, colour blue

How to order: CODE

Ball valve (DIN), cast steel, DIN wafer type, 2-way, pressure rating PN 16, SIZE DN

Unit Per Pc

CODE	DN	Size mm					Weight Kgs
		d	L	M	H	H1	
75 68 43	15	15	42	145	49	77	1.4
44	20	20	44	145	55	82	1.8
45	25	25	50	175	62	94	2.4
46	32	32	60	175	72	104	3.9
47	40	38	65	194	78	114	4.9
75 68 48	50	50	80	194	86	120	8.6
75 67 87	65	63.5	110	265	108	158	10.1
88	80	76	120	265	116	165	14.5
89	100	95	150	400	139	182	22.7
75 68 49	125	118	180	600	176	224	50
75 68 50	150	142	225	800	192	268	70

Econosto Model No. : 7343

PN 40

Pressure and Temperature Range

Size	Pressure Rating	Temp Range	-30 C	+50 C	+100 C	+150 C	+200 C	+230 C
DN15 -DN50	PN40	-30°C +230 C	39 bar	37	34	32	19	7.6
DN65 -DN100			39 bar	37	34	28	16	7.6
DN125 -DN150			30 bar	28	25	19	12	7.6

How to order: CODE

Ball valve (DIN), cast steel, DIN wafer type, 2-way, pressure rating PN 40, SIZE DN

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		d	L	M	H	H1	
75 67 81	15	15	42	145	49	77	1.4
82	20	20	44	145	55	82	1.8
83	25	25	50	175	62	94	2.4
84	32	32	60	175	72	104	3.9
85	40	38	65	194	78	114	4.9
75 67 86	50	50	80	194	86	120	8.6
75 67 57	65	63.5	110	265	108	158	10.1
58	80	76	120	265	116	165	14.5
59	100	95	150	400	139	182	22.7
60	125	118	180	600	176	224	50
75 68 64	150	142	225	800	192	268	70

Econosto Model No. : 7343

Ball Valves (DIN)

Stainless Steel

DIN Wafer Type, 2-way

Pressure rating PN 16 and 40

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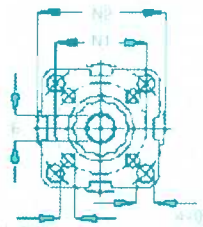
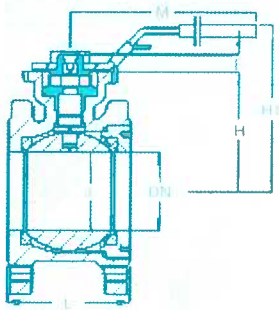
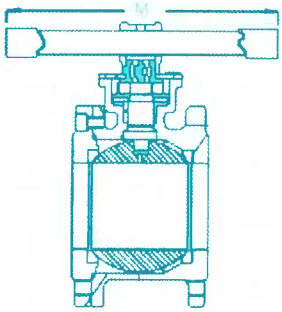
PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

Wafer type ball valve with full bore, floating ball and flange connection to DIN PN16 or PN40. Actuated by means of a lever or T-bar. This type of ball valve is generally used in industrial systems such as steam, water, gases, and corrosive media, up to a maximum of 40 bar (PN40 version).







DN 15 - DN 80

DN 100 - DN 150

Material Specification

Component	Material	EN and or (DIN)
Body	Stainless steel	GX5CrNiMo19-11-2 (G-X6CrNiMo 18-10)
Ball	Stainless steel	GX5CrNiMo19-11-2 (G-X6CrNiMo 18-10)
Stem	Stainless steel	X5CrNiMo 17-12-2
Ball Seat (Reinforced)	PTFE(TFM1600)	
Stem Seal	PTFE	
O-ring	FKM (Viton)	
Body Gasket	PTFE	
Lever(DN15-80) *1	Stainless steel	X5CrNi 18-10
T-bar(DN100-150) *1	Galvanized steel	

Pressure and Temperature Range

Size	Pressure Rating	Temp Range	-30 C	-50 C	+100 C	+150 C	+200 C	+230 C
DN15 - DN50	PN16	-30 C +230 C	16 bar	15	13	13	11	7.6

PN 16

How to order: CODE

Ball valve (DIN), stainless steel, DIN wafer type, 2-way, pressure rating PN 16, SIZE DN

Unit Per Po

CODE	DN	Size mm					Weight Kgs
		d	L	M	H	H1	
75 68 74	15	15	42	145	49	77	1.4
92	20	20	44	145	55	82	1.8
93	25	25	50	175	62	94	2.4
94	32	32	60	175	72	104	3.9
95	40	38	65	194	78	114	4.9
75 68 96	50	50	80	194	86	120	8.6
75 67 97	65	63.5	110	265	108	158	10.1
98	80	76	120	265	116	165	14.5
99	100	95	150	400	139	182	22.7
75 68 97	125	118	180	600	176	224	50
75 68 98	150	142	225	800	192	268	70

Econosto Model No 7383

PN 40

Pressure and Temperature Range

Size	Pressure Rating	Temp Range	-30 C	-50 C	+100 C	+150 C	+200 C	+230 C
DN15 - DN50	PN40	-30 C +230 C	39 bar	37	33	30	19	7.6
DN65 - DN100			39 bar	37	33	28	16	7.6
DN125 - DN150			30 bar	28	25	19	12	7.6

How to order: CODE

Ball valve (DIN), stainless steel, DIN wafer type, 2-way, pressure rating 40, SIZE DN

Unit Per Po

CODE	DN	Size mm					Weight Kgs
		d	L	M	H	H1	
75 67 91	15	15	42	145	49	77	1.4
92	20	20	44	145	55	82	1.8
93	25	25	50	175	62	94	2.4
94	32	32	60	175	72	104	3.9
95	40	38	65	194	78	114	4.9
75 67 96	50	50	80	194	86	120	8.6
75 68 99	65	63.5	110	265	108	158	10.1
75 69 00	80	76	120	265	116	165	14.5
12	100	95	150	400	139	182	22.7
13	125	118	180	600	176	224	50
75 69 14	150	142	225	800	192	268	70

Econosto Model No 7383

7TH 75

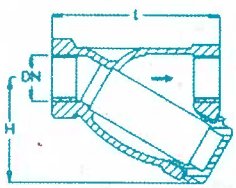
DIN Strainers

Strainers (DIN)
Bronze, Y-Type
Standard Type

BSP female threaded connection acc. to DIN 259 or DIN flanged ends, stainless steel strainer element and threaded cap.

Suitable for use in horizontal and vertical pipelines with a downward flow.

BSP Female Threaded



Perforation Size

Size	Perforation Size		
	Standard Φ mm	Fine Φ mm	Coarse Φ mm
1/4" thru 2"	1.0	0.25	3.0
2-1/2" thru 3"	1.25	0.25	3.0

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Threaded Cap	Brass	
Strainer Element	Stainless steel	X5CrNi18-10

Pressure and Temperature Range
Maximum operating pressure 16 bar
Maximum operating temperature 200°C

How to order: CODE

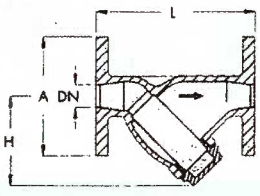
Strainer (DIN), bronze, Y-type, BSP female threaded, SIZE DN

Unit Per Pc.

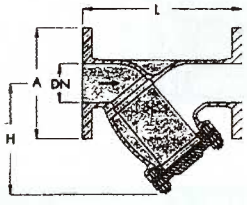
CODE	DN	Size mm		Weight Kgs	Strainer		
					Diam.	Height	Area
		L	H		mm		[cm²]
75 68 01	1/4"	72	45	0.4	18	48	27
02	3/8"	72	45	0.4	18	48	27
03	1/2"	85	55	0.5	23	56	40
04	3/4"	100	65	0.8	28	68	60
05	1"	120	75	1.2	36	82	93
75 68 06	1-1/4"	140	90	1.9	42	98	129
07	1-1/2"	160	100	2.5	50	114	179
08	2"	205	160	6.0	62	119	230
09	2-1/2"	245	185	11	79	134	330
10	3"	265	205	13	90	149	419

Econosto Model No. : 1013

DIN Flanged End



DN 15 - DN 40



DN 50 - DN 250

Perforation Size

Size	Perforation Size		
	Standard Φ mm	Fine Φ mm	Coarse Φ mm
DN 15 thru DN 50	1.0		
DN 65 and DN 80	1.25	0.25	3.0
DN 100 thru DN 250	0.6		

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Threaded Cap thru DN80	Brass	
Bolted Cover starting from DN100	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Strainer Element up to DN80	Stainless steel	X5CrNi18-10
Strainer Element from DN 100	Nickel	

How to order: CODE

Strainer (DIN), bronze, Y-type, DIN flanged end, SIZE DN

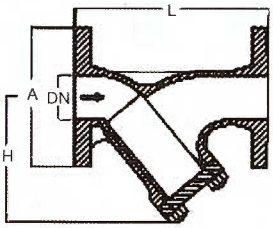
Unit Per Pc.

CODE	DN	Size mm			Weight Kgs	Strainer		
						Diam.	Height	Area
		A	L	H		mm		[cm²]
75 68 11	15	95	125	70	1.5	23	56	40
12	20	105	140	80	2.4	28	68	60
13	25	115	160	95	3.2	36	82	93
14	32	140	180	115	5.5	42	98	129
15	40	150	200	125	6.6	50	114	179
75 68 16	50	165	230	165	11	62	119	230
17	65	185	265	185	15	79	134	330
18	80	200	285	205	20	90	149	419
19	100	220	360	295	35.5	105	265	874
20	125	250	420	330	58	130	310	1,265
75 68 21	150	285	460	380	87	155	340	1,655
22	200	340	590	485	128	205	450	2,897
23	250	395	750	640	210	258	595	4,820

Econosto Model No. : 1017 (DN 15 to DN 80)
1016 (DN 100 to DN 250)

Strainers (DIN)
Cast Iron
DIN Flanged Ends
Pressure Rating PN 16

Suitable for use in horizontal and vertical pipelines with a downward flow.



Perforation Size

Size	Perforation Size		
	Standard Φ mm	Fine Φ mm	Coarse Φ mm
DN 10 thru DN 50	1.0		
DN 65 and DN 80	1.25	0.25	3.0
DN 100 thru DN 400	1.6		

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast iron	GJL-250 (GG-25)
Bolted Cover	Cast iron	GJL-250 (GG-25)
Strainer Element	Stainless steel	X5CrNi18-10

Pressure and Temperature Range
16 bar – 120°C
13 bar - 200°C

How to order: CODE

Strainer (DIN), cast iron, Y-type, DIN flanged end, pressure rating PN 16, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs	Strainer		
						Diam.	Height	Area
		A	L	H		mm		[cm²]
75 68 25	15	95	130	90	4	23	56	40
26	20	105	150	100	5	28	68	60
27	25	115	160	115	6	36	82	93
28	32	140	180	125	8	42	98	129
29	40	150	200	150	10	50	114	179

(to be continued)

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs	Strainer		
						Diam.	Height	Area
		A	L	H		mm		[cm²]
75 68 30	50	165	230	160	13	61.5	119	230
31	65	185	290	180	19	78.5	134	330
32	80	200	310	215	24.5	89.5	149	419
33	100	220	350	235	35	109.5	169	581
34	125	250	400	275	51	138	199	859
75 68 35	150	285	480	305	71	160	224	1,125
36	200	340	600	390	144	210	284	1,873
37	250	395	730	540	175	258	434	3,516
38	300	445	850	680	290	308	555	5,368
75 69 15	400	580	1,100	835	461	415	695	8,947

Econosto Model No. : 1019

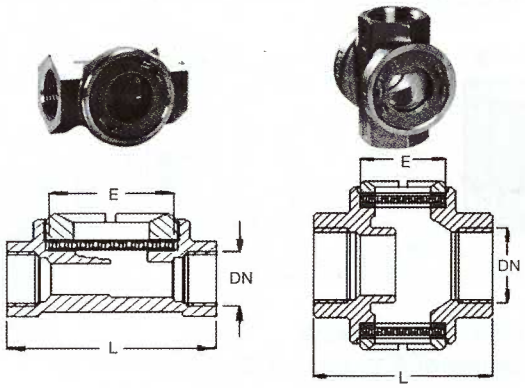
DIN Sight Glasses

Sightglasses (DIN)

Brass

BSP Female Threaded Ends

The small sizes are generally used to check the operation of the steam traps. For checking the liquid flow in open systems as well as a possible discolouring of liquids in open and closed systems (such as lubricating oil).



Single-window Double-window

Material Specification

Component	Material	EN and/or (DIN)
Single-window		
Body	Brass	
Glass	Soda lime	
Gaskets	Graphite	
Double-window		
Body and cover (1/2" thru 1")	Brass	
Body (DN 1/" thru 2")	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Glass	Soda lime	
Gaskets	Graphite	

Pressure and Temperature Range

Pressure and Temperature Range	Max. Pressure	Max. Temperature
5 bar – 90°C/3.5 bar – 148°C	5 bar	148°C

Single Window Type

How to order: CODE

Sight glass (DIN), brass BSP female threaded ends, single window, SIZE DN

Unit Per Pc.

CODE	DN	Size mm		Weight Kgs	CODE	DN	Size mm		Weight Kgs
		E	L				E	L	
75 68 61	1/2"	50	89	0.6	**75 68 63**	1"	50	89	0.9
62	3/4"	50	89	0.7					

Econosto Model No. : 626

Double Window Type

How to order: CODE

Sight glass (DIN), brass or bronze, BSP female threaded ends, double window, SIZE DN

Unit Per Pc.

CODE	d	Size mm		Weight Kgs	CODE	d	Size mm		Weight Kgs
		E	L				E	L	
75 68 75	1/2"	50	89	0.9	**75 68 78**	1-1/4"	50	108	1.8
76	3/4"	50	89	0.9	**79**	1-1/2"	50	108	1.9
77	1"	50	89	1.2	**80**	2"	50	114	2.5

Note : Material of body 1/2" to 1" = Brass, 1-1/4" to 2"= Bronze
Econosto Model No. : 628

7TH 75

DIN Overflow Valves

Pressure Relief Valves

Gunmetal

Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd,
- Lloyds Register

Overflow and control valves made of gunmetal with stainless steel spring. Suitable for liquids, steam and gaseous media.

Available models:

- **618 sGF0** Non-gastight version without lifting lever
- **618 tGF0** Gastight version
- **618 sGFL** Non-gastight version with lifting lever

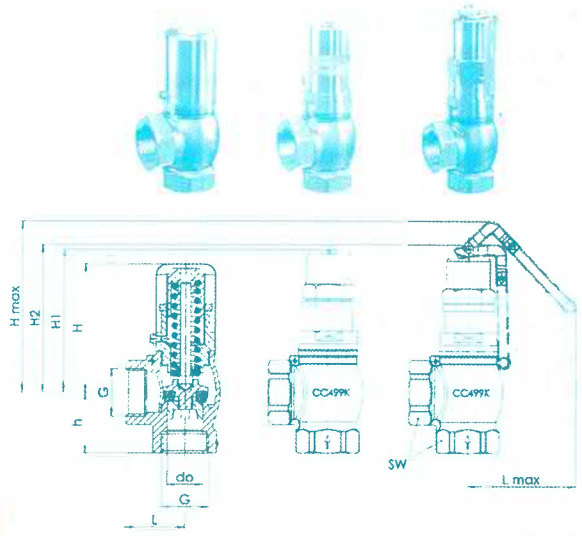
Available seals:

- **NBR**
- **PTFE**

Ranges of adjustment: 0.2 – 0.8 bar
0.5 – 2.5 bar
2.0 – 12 bar
12 – 20 bar with PTFE seal

Valves can be delivered unset within a pressure range or set and sealed at the factory.

Component	Material	DIN EN	ASTM / AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Brass / Gunmetal	CW614N / CC499K	UNS C37700 / UNS C83600
Pressure Spring	Stainless steel	1.4310	AISI 301



- 618 sGFO Non-gastight version without lifting lever

NBR Seal

Unit Per Pc

CODE	DN	Size mm									Weight
		L	Lmax	H	H1	H2	Hmax	h	SW	d0	Kgs
75 69 81	G3/8"	27	84	55	66	73	199	26	24	10	0.3
82	G1/2"	30	84	62	74	82	108	30	28	13	0.4
83	G3/4"	33	84	73	83	89	117	35	34	19	0.6
84	G1"	40	84	90	100	108	134	41	41	25	1
85	G1-1/4"	45	120	110	117	127	168	45	52	30	1.75
75 69 86	G1-1/2"	50	120	130	136	149	190	51	58	38	2.3
87	G2"	60	120	135	146	158	197	60	70	50	3.3
Range of Adjustment		0.2 - 20 bar									

Goetze KG : Models 618sGFO NBR

PTFE Seal

Unit Per Pc

CODE	DN	Size mm									Weight
		L	Lmax	H	H1	H2	Hmax	h	SW	d0	Kgs
75 69 91	G3/8"	27	84	55	66	73	199	26	24	10	0.3
92	G1/2"	30	84	62	74	82	108	30	28	13	0.4
93	G3/4"	33	84	73	83	89	117	35	34	19	0.6
94	G1"	40	84	90	100	108	134	41	41	25	1
95	G1-1/4"	45	120	110	117	127	168	45	52	30	1.75
75 69 96	G1-1/2"	50	120	130	136	149	190	51	58	38	2.3
97	G2"	60	120	135	146	158	197	60	70	50	3.3
Range of Adjustment		0.2 - 20 bar									

Goetze KG : Models 618sGFO PTFE

- 618tGFO Gastight version

NBR Seal

Unit Per Pc

CODE	DN	Size mm									Weight
		L	Lmax	H	H1	H2	Hmax	h	SW	d0	Kgs
75 69 71	G3/8"	27	84	55	66	73	199	26	24	10	0.3
72	G1/2"	30	84	62	74	82	108	30	28	13	0.4
73	G3/4"	33	84	73	83	89	117	35	34	19	0.6
74	G1"	40	84	90	100	108	134	41	41	25	1
75	G1-1/4"	45	120	110	117	127	168	45	52	30	1.75
75 69 76	G1-1/2"	50	120	130	136	149	190	51	58	38	2.3
77	G2"	60	120	135	146	158	197	60	70	50	3.3
Range of Adjustment		0.2 - 20 bar									

Goetze KG : Models 618tGFO NBR

PTFE Seal

Unit Per Pc

CODE	DN	Size mm									Weight
		L	Lmax	H	H1	H2	Hmax	h	SW	d0	Kgs
75 69 61	G3/8"	27	84	55	66	73	199	26	24	10	0.3
62	G1/2"	30	84	62	74	82	108	30	28	13	0.4
63	G3/4"	33	84	73	83	89	117	35	34	19	0.6
64	G1"	40	84	90	100	108	134	41	41	25	1
65	G1-1/4"	45	120	110	117	127	168	45	52	30	1.75
75 69 66	G1-1/2"	50	120	130	136	149	190	51	58	38	2.3
67	G2"	60	120	135	146	158	197	60	70	50	3.3
Range of Adjustment		0.2 - 20 bar									

Goetze KG : Models 618tGFO PTFE

- 618sGFL Non-gastight version with lifting lever

NBR Seal

Unit Per Pc

CODE	DN	Size mm									Weight
		L	Lmax	H	H1	H2	Hmax	h	SW	d0	Kgs
75 70 07	G3/8"	27	84	55	66	73	199	26	24	10	0.3
08	G1/2"	30	84	62	74	82	108	30	28	13	0.4
09	G3/4	33	84	73	83	89	117	35	34	19	0.6
10	G1"	40	84	90	100	108	134	41	41	25	1
17	G1-1/4"	45	120	110	11	127	168	45	52	30	1.75
75 70 18	G1-1/2"	50	120	130	136	149	190	51	58	38	2.3
19	G2"	60	120	135	146	158	197	60	70	50	3.3
Range of Adjustment		0.2 - 20 bar									

Goetze KG : Models 618sGFL NBR

PTFE Seal

Unit Per Pc

CODE	DN	Size mm									Weight
		L	Lmax	H	H1	H2	Hmax	h	SW	d0	Kgs
75 70 20	G3/8"	27	84	55	66	73	199	26	24	10	0.3
24	G1/2"	30	84	62	74	82	108	30	28	13	0.4
25	G3/4"	33	84	73	83	89	117	35	34	19	0.6
26	G1"	40	84	90	100	108	134	41	41	25	1
27	G1-1/4"	45	120	110	117	127	168	45	52	30	1.75
75 70 28	G1-1/2"	50	120	130	136	149	190	51	58	38	2.3
29	G2"	60	120	135	146	158	197	60	70	50	3.3
Range of Adjustment		0.2 - 20 bar									

Goetze KG : Models 618sGFL PTFE

Overflow Valves

Gunmetal & Stainless Steel

Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd,
- Lloyds Register

Overflow and control valves made of gunmetal with stainless steel spring. Suitable for liquids, steam and gaseous media. Adjustable under operating conditions without medium escaping in the atmosphere. Gastight version of spring housing.

Available models:

- **617tGFO gastight version for gases and liquids - without lifting device**

Available seals :

- **NBR**
- **FKM**
- **PTFE**

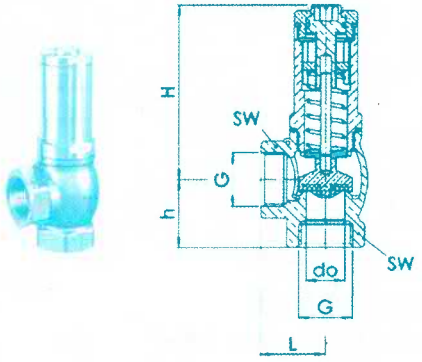
Ranges of adjustment : 0.5 – 2.5 bar
2.0 – 8.0 bar
2.0 – 12 bar
12 – 20 bar (with PTFE seal)

Valves can be delivered unset within a pressure range or set and sealed at the factory.

All models are also available in **Stainless Steel** : series **417**.

Series 617 (Gunmetal):

Component	Material	DIN EN	ASTM / AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Brass	CW614N	UNS C37700
Pressure Spring	Stainless steel	1.4310	AISI 301



How to order: CODE

Overflow Valve (DIN), Gunmetal, MODEL "617tGFO", SIZE DN, SPECIFY THE SEALS FROM "NBR", "FKM", or "PTFE"

- Model 617tGFO gastight version for gases and liquids without lifting device

Unit Per Pc

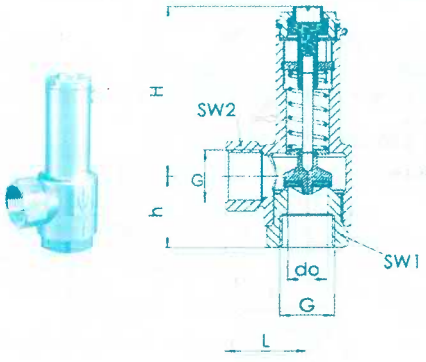
CODE	DN	Size mm					Weight
		L	H	h	SW	d0	Kgs
75 71 61	G3/8"	27	60	26	24	10	0.3
62	G1/2"	30	69	30	28	13	0.4
63	G3/4"	33	86	35	34	19	0.7
64	G1"	40	101	41	41	25	1.2
65	G1-1/4"	45	118	45	52	30	1.9
75 71 66	G1-1/2"	50	139	51	58	38	2.5
67	G2"	60	149	60	70	50	3.8
Range of Adjustment		0.5 - 20 bar					

Goetze KG : Models 617tGFO

**Please Specify the Seal from NBR, FKM and PTFE when ordering.

Series 417 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Body	Stainless steel	1.4401 / 1.4408	AISI 316 / ASTM A 351 CF-8M
Internal Parts	Stainless steel	1.4401	AISI 316
Pressure Spring	Stainless steel	1.4310	AISI 301



How to order: CODE

Overflow Valve (DIN), Stainless Steel, MODEL "417tGFO", SIZE DN, SPECIFY THE SEALS FROM "NBR", "FKM", or "PTFE"

- Model 417tGFO gastight version for gases and liquids without lifting device

Unit Per Pc

CODE	DN	Size mm						Weight
		L	H	h	SW1	SW2	d0	Kgs
75 71 68	G3/8"	27	60	26	26	24	10	0.3
69	G1/2"	30	69	30	30	27	13	0.4
70	G3/4"	33	86	35	36	32	19	0.7
71	G1"	40	101	41	41	46	25	1.2
72	G1-1/4"	45	118	45	52	50	30	1.9
75 71 73	G1-1/2"	50	139	51	58	65	38	2.5
74	G2"	60	149	60	70	70	50	3.8
Range of Adjustment		0.5 - 20 bar						

Goetze KG : Models 417tGFO

**Please Specify the Seal from NBR, FKM and PTFE when ordering.

7TH 75

Overflow Valves

Gunmetal & Stainless Steel with Stainless Steel Spring

Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd,
- Lloyds Register

Angular shaped spring loaded overflow valves made of gunmetal with stainless steel spring – externally adjustable. Suitable for the protection of pumps against overloading in closed circuits for neutral / non neutral, non-sticking liquids and for the control of systems under pressure for neutral / non-neutral gases and vapours and – depending on the sealing material – also for steam. with bellows without lifting device.

Available models:853 bGFO with bellows, for gases and liquids without lifting device

Available seals :

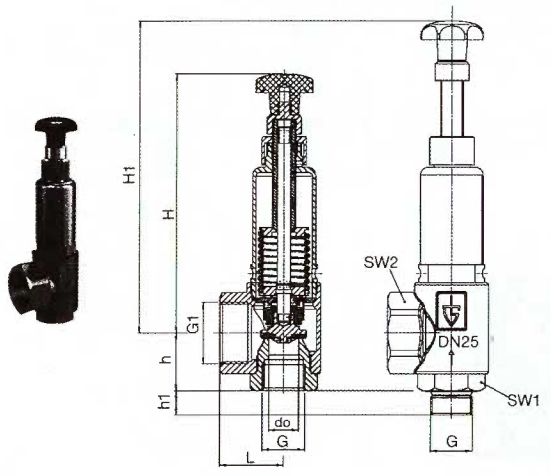
- **NBR**
- **EPDM**
- **FKM**
- **PTFE**
- **FFKM**

Valves can be delivered unset within a pressure range or set and sealed at the factory.

Series also available in **Stainless Steel**: Series **453**.

Series 853 (Gunmetal):

Component	Material	DIN EN	ASTM / AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



How to order: CODE

Overflow Valve (DIN), Gunmetal, with Stainless Steel Spring, MDL "853bGFO", SIZE DN, SPECIFY THE SEALS FROM "NBR", "EPDM", "FKM", "PTFE", or "FFKM"

- Model 853bGFO

Unit Per Pc.

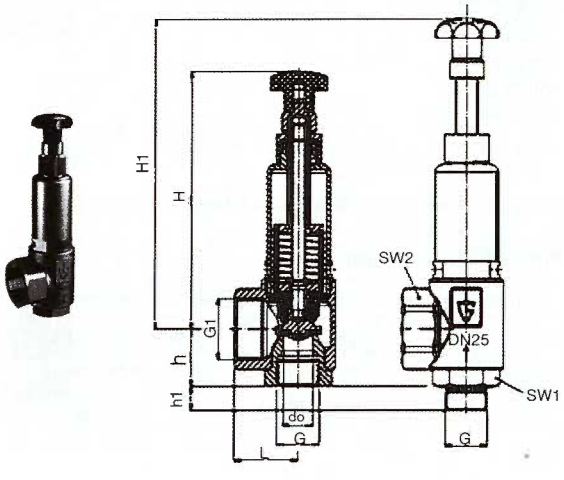
CODE	DN	Connec-tion	Size mm									Weight Kgs
			G1	L	H	H1	h	h1	SW1	SW2	d0	
75 71 75	15	G1/2"	1"	40	102	120	30	16	30	40	16	0.4
76	20	G3/4"	1-1/4"	43	156	177	39	14	36	50	18	1
77	25	G1"	1-1/2"	50	205	230	45	19	46	58	23	2
78	32	G1-1/4"	2"	61	296	320	55	21	55	70	30	4
79	40	G1-1/2"	2"	61	296	320	61	22	55	70	30	4.2
75 71 80	50	G2"	2"	61	296	320	64	20	55	70	30	4.4
Range of Adjustment			0.5 - 25 bar									

Goetze KG: 853bGFO

** Please Specify the Seal from NBR, EPDM, FKM, PTFE or FFKM when ordering.

Series 453 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Body	Stainless steel	1.4571 / 1.4408	AISI 316 Ti / ASTM A 351 CF-8M
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



How to order: CODE

Overflow Valve (DIN), Stainless Steel, with Stainless Steel Spring, MDL "453bGFO", SIZE DN, SPECIFY THE SEALS FROM "NBR", "EPDM", "FKM", "PTFE", or "FFKM"

- Model 453bGFO

Unit Per Pc.

CODE	DN	Connec-tion	Size mm									Weight Kgs
			G1	L	H	H1	h	h1	SW1	SW2	d0	
75 71 81	15	G1/2"	1"	40	102	120	30	16	30	40	16	0.4
82	20	G3/4"	1-1/4"	43	156	177	39	14	36	50	18	1
83	25	G1"	1-1/2"	50	205	230	45	19	46	58	23	2
84	32	G1-1/4"	2"	61	296	320	55	21	55	70	30	4
85	40	G1-1/2"	2"	61	296	320	61	22	55	70	30	4.2
75 71 86	50	G2"	2"	61	296	320	64	20	55	70	30	4.4
Range of Adjustment			0.5 - 25 bar									

Goetze KG: 453bGFO

** Please Specify the Seal from NBR, EPDM, FKM, PTFE or FFKM when ordering.

Overflow Valves

Gunmetal & Stainless Steel

Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd,
- Lloyds Register

Overflow and control valves made of gunmetal with spring made of spring steel with anti-rust protection with threaded connections. With EPDM (ethylene propylene diene monomer rubber) seal suitable for water, neutral and non-sticking liquids, compressed air and neutral gases.

Standard thread: BSPTm also available in female BSP-P for sizes up to 1" (PLEASE CLEARLY INDICATE IN THE ORDER:"f/f" or "BSPTm/BSPTm").

Valves can be delivered unset within a pressure range or set and sealed at the factory (against surcharge).

Mesh sizes : G 1/2" to G 1-1/4" = 0.6 mm
DN40 and DN50 = 0.75 mm

Set pressure : 0.5 – 10 bar

Ranges of adjustment : 0.5 – 2 bar
1.5 – 6 bar
5.5 – 10 bar

Use : Suitable for water up to 95 deg. C

Available seals : EPDM, FKM

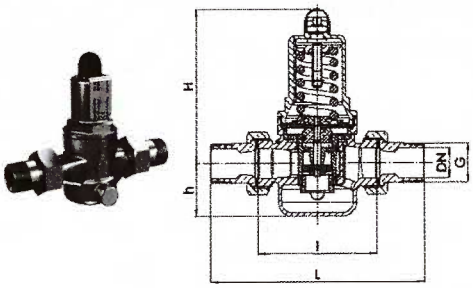
Also available in **Stainless Steel** : **series 430**.

How to order: CODE

Overflow Valve (DIN), Gunmetal, MDL "630mGFO" SIZE DN, SPECIFY THE SEALS FROM "EPDM" or "FKM"

Series 630 (Gunmetal):

Component	Material	DIN EN	ASTM / AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Gunmetal Brass	CC499K / CW614N	UNS C83600 / UNS C37700
Pressure Spring	Spring steel with anti-rust protection.	1.1200	



Unit Per Pc.

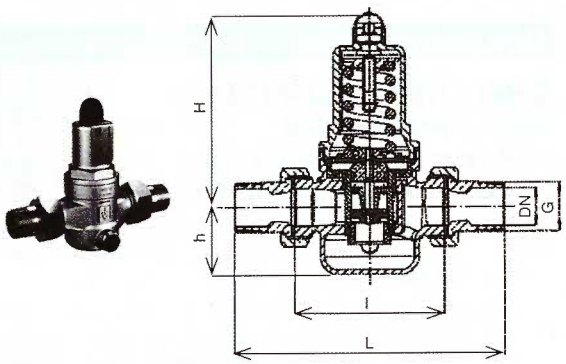
CODE	DN	Size mm				Weight Kgs
		L	l	H	h	
75 71 87	15	142	80	102	33	1.2
88	20	158	90	102	33	1.4
89	25	180	100	130	45	2.4
90	32	193	105	130	45	2.6
91	40	226	130	165	70	5.5
75 71 92	50	252	140	165	70	6
Range of Adjustment		0.5 - 10 bar				

Goetze KG : 630mGFO

**Please Specify the Seal from EPDM or FKM when ordering.

Series 430 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Body	Stainless Steel	1.4408	ASTM A 351 CF-8M
Internal Parts	Stainless Steel	1.4408 / 1.4571	ASTM A 351 CF-8M / AISI 316Ti
Pressure Spring	Spring steel with anti-rust protection.	1.1200	



How to order: CODE

Overflow Valve (DIN), Stainless Steel, MDL "430mGFO" SIZE DN, SPECIFY THE SEALS FROM "EPDM" or "FKM"

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		L	l	H	h	
75 71 93	15	142	80	102	33	1.2
94	20	158	90	102	33	1.3
95	25	180	100	130	45	2.3
96	32	193	105	130	45	2.5
97	40	226	130	165	70	5.2
75 71 98	50	252	140	165	70	5.7
Range of Adjustment		0.5 - 10 bar				

Goetze KG : 430mGFO

**Please Specify the Seal from EPDM or FKM when ordering.

Overflow Valves

Stainless Steel

Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd,
- Lloyds Register

Overflow and control valves made of Stainless steel. Suitable for liquids, steam and gaseous media. Gastight version of spring housing.

Available models:

- **418tGFO gastight version for gases and liquids without lifting device**

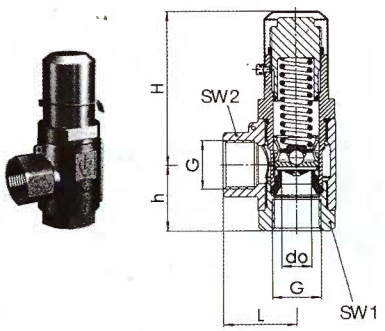
Available seals :

- **NBR**
- **FKM**
- **PTFE**

Ranges of adjustment : 0.2 – 1.2 bar
1.2 – 3 bar
2.0 – 12 bar
12 – 30 bar

Valves can be delivered unset within a pressure range or set and sealed at the factory.

Component	Material	DIN EN	ASTM / AISI
Body	Stainless steel	1.4571 / 1.4408	AISI 316 Ti / ASTM A 351 CF-8M
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



How to order: CODE

Overflow Valve (DIN), Stainless Steel, SIZE DN, MODEL "418tGFO", SPECIFY THE SEAL FROM "NBR", "FKM", or "PTFE"

Unit Per Pc.

CODE	DN	Size mm						Weight Kgs
		L	H	h	SW1	SW2	d0	
75 69 79	G3/8"	34	73	33	30	28	10	0.5
80	G1/2"	34	73	33	30	28	14	0.5
88	G3/4"	40	84	36	36	32	16	0.8
89	G1"	50	98	48	50	41	25	1.8
90	G1-1/4"	50	98	48	50	50	25	1.9
Range of Adjustment		0.2 - 30 bar						

Goetze KG : Models 418tGFO

**Please Specify the Seal from NBR, FKM and PTFE when ordering.

Overflow Valves

Gunmetal & Stainless Steel

Marine Type Approvals held for these valves:

- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd.
- Lloyds Register

Overflow and control valves made of gunmetal with spring made of spring steel with anti-rust protection with flange connections. With EPDM (ethylene propylene diene monomer rubber) seal suitable for water, neutral and non-sticking liquids, compressed air and neutral gases.

Set pressure : 0.5 – 10 bar

Ranges of adjustment: 0.5 – 2 bar (not DN65 and larger)
1.5 – 6 bar
1.5 – 5.5 bar (DN100)
5.5 – 10 bar (not DN65 and larger)

Available seals : EPDM, FKM

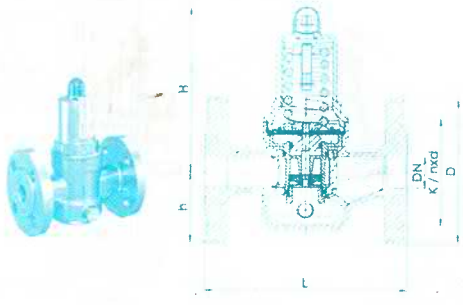
Also available in **Stainless Steel : series 431.**

How to order: CODE

Overflow Valve (DIN). Gunmetal, MDL "631mGFO" SIZE DN. SPECIFY THE SEALS FROM "EPDM" or "FKM"

Series 631 (Gunmetal):

Component	Material	DIN EN	ASTM / AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Gunmetal Brass	CC499K / CW614N	UNS C83600 / UNS C37700
Pressure Spring	Spring steel with anti-rust protection.	1.1200	-



Unit Per Pc.

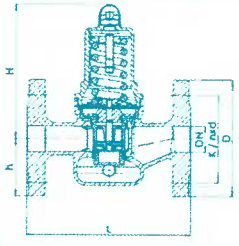
CODE	DN	PN	Size mm				Weight
			L	D	H	h	Kgs
75 71 99	15	40	130	95	102	46	2.8
75 72 09	20	40	150	105	130	50	4.2
10	25	40	160	115	130	55	4.7
18	32	40	180	140	130	68	5.9
19	40	40	200	150	166	73	8.6
75 72 20	50	40	230	165	166	80	10.5
27	65	16	290	185	245	89	20
28	65	40	290	185	245	89	20
29	80	40	310	200	245	97	22
75 72 00	100	16	350	220	320	112	40
Range of Adjustment			0.5 - 10 bar				

Goetze KG · 631mGFO

**Please Specify the Seal from EPDM or FKM when ordering

Series 431 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Body	Stainless Steel	1.4408	ASTM A 351 CF-8M
Internal Parts	Stainless Steel	1.4408 / 1.4571	ASTM A 351 CF-8M / AISI 316Ti
Pressure Spring	Spring steel with anti-rust protection.	1.1200	-



How to order: CODE

Overflow Valve (DIN), Stainless Steel, MDL "431mGFO", SIZE DN. SPECIFY THE SEALS FROM "EPDM" or "FKM"

Unit Per Pc

CODE	DN	PN	Size mm				Weight
			L	D	H	h	Kgs
75 73 00	15	40	130	95	102	46	2.8
75 72 30	20	40	150	105	130	50	3.9
37	25	40	160	115	130	55	4.3
38	32	40	180	140	130	68	5.5
39	40	40	200	150	166	73	8.4
75 72 40	50	40	230	165	166	80	10.2
53	65	16	290	185	245	89	18.7
54	65	40	290	185	245	89	19
55	80	40	310	200	245	97	20.5
Range of Adjustment			0.5 - 10 bar				

Goetze KG : 431mGFO

**Please Specify the Seal from EPDM or FKM when ordering.

DIN Safty Valves

Safety Relief Valves (DIN)

Brass, Spring-loaded

BSP Female Threaded Ends

Low Capacity Maximum 10 bar

Safety relief valves with threaded connection, can be used for many simple applications. Suitable for gases, vapours and liquids.

Specific features and applications:

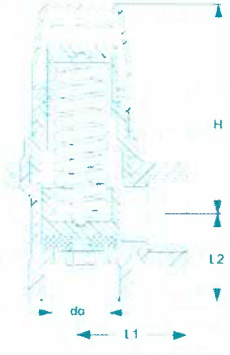
Model 517/518 : Saturated steam and hot water, available including Stoomwezen/Lloyd's Register test certificate on request.

Model 527 : Including diaphragm, for water, air and other non-aggressive gases.

517

518

527



Material Specification

Component	Material	EN and/or (DIN)
Model 517/518		
Body, Disc, Bonnet	Brass	CuZn39Pb3
Disc Sealing Ring	FPM(Viton)	
Spring	Spring steel	
Model 527		
Body, Bonnet	Brass	CuZn40Pb2
Diaphragm	NBR	
Spring	Spring steel	

Temperature Range
Model 517/518 +150 °C
Model 527 +95 °C (for oil +30 °C)

Model 517 – Viton Disc Seal without Disc Cover

How to order: CODE

Safety relief valve (DIN), brass, spring-loaded, BSP female threaded ends, model 517, SIZE DN

Unit Per Pc

CODE	DN	Size mm				Weight Kgs
		do	L1	L2	H	
75 70 01	1/2"	13	32	26	70	0.4
02	3/4"	19	37	30	75	0.6
03	1"	25	43	36	105	1.0
04	1-1/4"	31	50	40	105	1.4
05	1-1/2"	36	60	40	125	2.3
75 70 06	2"	50	70	52	130	3.2

Econosto Model No 517

Model 518 – Viton Disc Seal with Disc Lever

How to order: CODE

Safety relief valve (DIN), brass, spring-loaded, BSP female threaded ends, model 518, SIZE DN

Unit Per Pc

CODE	DN	Size mm				Weight Kgs
		do	L1	L2	H	
75 70 11	1/2"	13	32	26	110	0.8
12	3/4"	19	37	30	121	1.0
13	1"	25	43	36	147	1.5
14	1-1/4"	31	50	40	150	2.0
15	1-1/2"	36	60	40	175	3.3
75 70 16	2"	50	70	52	171	4.0

Econosto Model No. 518

Model 527 – Nitrile Disc Seal with Disc Lever

How to order: CODE

Safety relief valve (DIN), brass, spring-loaded, BSP female threaded ends, model 527, SIZE DN

Unit Per Pc

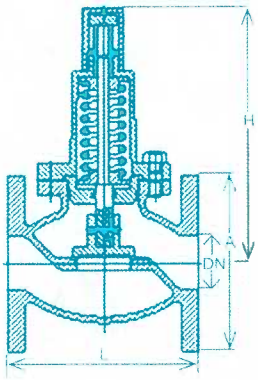
CODE	DN	Size mm				Weight Kgs
		do	L1	L2	H	
75 70 21	1/2"	13	26	21	95	0.4
22	3/4"	14	30	26	116	0.6
23	1"	16	36	30	123	0.7

Econosto Model No. 527

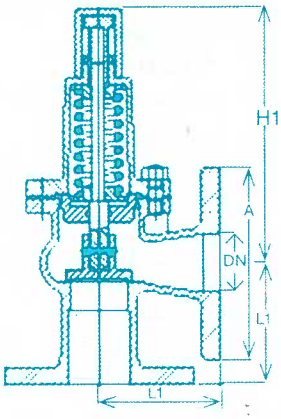
Overflow Valves (DIN)
Bronze, DIN Flanges
Globe Type
Straight and Angle Pattern

Bronze overflow valves are primarily applied in the maritime segment for pressure regulation in liquid systems. Suitable for salt and fresh water, oil, steam and air.

Remark: This valve may also be used as a safety valve aboard ships. In connection with the PED guidelines, this is not permitted for installations on land, if the set pressure is >0.5 bar.



Straight



Angle

Temperature Range: 120°C

Material Specification

Component	Material	EN and/or (DIN)
Body	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))
Disc, Stem, Guide Bush	Brass	CuZn39Pb3
Spring	Spring steel	
Gasket	Graphite	
Bonnet DN15-DN20	Brass	CuZn39Pb3
Bonnet DN25-DN125	Bronze	CuSn5Zn5Pb5-C (G-CuSn5ZnPb (Rg 5))

How to order: CODE

Overflow valve (DIN), bronze, DIN flanges, STRAIGHT or ANGLE, SIZE DN

Straight

Unit Per Pc

CODE	DN	Max. Set Pressure (bar)	Size mm			Weight Kgs
			A	L	H	
75 70 31	15	0 - 16	95	120	185	4.0
32	20	0 - 16	105	120	185	4.1
33	25	0 - 16	115	140	200	5.5
34	32	0 - 15	140	150	200	7.8
35	40	0 - 15	150	155	235	9.8
75 70 36	50	0 - 15	165	180	245	14.0
37	65	0 - 10	185	200	330	18.0
38	80	0 - 8	200	240	345	23.2
39	100	0 - 6	220	270	435	35.5
40	125	0 - 4	250	320	450	50

Econosto Model No. 523

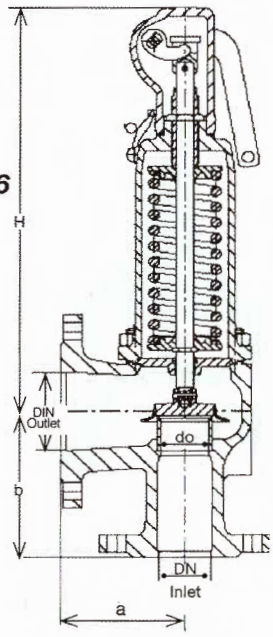
Angle

Unit Per Pc

CODE	DN	Max. Set Pressure (bar)	Size mm			Weight Kgs
			A	L1	H1	
75 70 41	15	0 - 16	95	65	175	4.0
42	20	0 - 16	105	65	175	4.1
43	25	0 - 16	115	70	185	5.5
44	32	0 - 15	140	90	185	7.8
45	40	0 - 15	150	90	220	9.8
75 70 46	50	0 - 15	165	105	225	14.0
47	65	0 - 10	185	115	320	18.0
48	80	0 - 8	200	125	335	23.2
49	100	0 - 6	220	145	395	35.5
50	125	0 - 4	250	174	490	50

Econosto Model No. 524

Safety Valves (DIN)
Cast Steel, Spring-Loaded DIN Flanges, High Capacity Pressure Rating PN 40/16



Full lift Safety Valves are mainly applied to vapours (including steam) and gases. Suitable for liquids in large volumes.

Type of Approval: TUV-SV,,, -576 D/G/F, PED, ASME NB, BV, DNV, GL, LROS and RINA.

Material Specification

Component	Material	EN and/or (DIN)
Body	Cast steel	GP240GH +N (GS-C25)
Seat	Stainless steel	X2CrNiMo17-12-2 (G-X2CrNiMo 18 10)
Disc	Stainless steel	X39CrMo17-1 (X35CrMo17)
Stem	Stainless steel	X20Cr13
Spring	Spring steel	
Bonnet	Ductile cast iron	GJS-400-15 (GGG-40)

Temperature Range (DIN EN)
-85/+450°C*

* Above 200°C, provided with heat-resistant spring and above 400°C also provided with SS bolts and nuts for the bonnet.

Flange: Inlet flange (on the bottom) – according to DIN PN40.

Outlet flange (on the side) – according to DIN PN16.

How to order: CODE

Safety valve (DIN), cast steel, spring-loaded, DIN flanged ends, pressure rating PN 40/16 SIZE DN

Unit Per Pc.

CODE	DN		do	Max. Set Pressure (bar)	a	b	H	Weight Kgs
	Inlet	Outlet						
75 70 51	25	40	25	40	100	105	234	9
52	32	50	29	40	110	115	331	12
53	40	65	37	40	115	140	372	16
54	50	80	46	40	120	150	419	22
55	65	100	60	40	140	170	529	32
75 70 56	80	125	74	32	160	195	606	56
57	100	150	92	40	180	220	663	75
58	125	200	98	28	200	250	663	85
59	150	250	125	17	225	285	735	131
60	200	300	165	20	300	290	1,090	285

Econosto Model No. : 567

Capacity Table

I Saturated steam in kg/h
II Air at 0°C and 1,013 mbar in mn^3/h
III Water at 20°C in $10^3kg/h$

DN	20			25			32		
do	18			23			29		
p	I	II	III	I	II	III	I	II	III
0.2	85	99	3.19	139	161	5.21	222	257	8.28
0.5	134	157	4.51	219	257	7.37	348	409	11.7
1	198	237	6.11	324	386	9.97	515	614	15.9
2	317	383	8.64	517	625	14.1	822	993	22.4
3	427	522	10.6	697	852	17.3	1,108	1,354	27.5
4	533	655	12.2	870	1,069	19.9	1,382	1,700	31.7
5	638	788	13.7	1,041	1,287	22.3	1,656	2,047	35.5
6	743	922	15.0	1,213	1,505	24.4	1,928	2,393	38.8
7	845	1,055	16.2	1,380	1,723	26.4	2,193	2,739	42.0
8	949	1,189	17.3	1,550	1,941	28.2	2,464	3,086	44.8
9	1,053	1,322	18.3	1,719	2,159	29.9	2,733	3,432	47.6
10	1,157	1,456	19.3	1,889	2,377	31.5	3,003	3,778	50.1
12	1,365	1,722	21.2	2,228	2,812	34.6	3,542	4,471	54.9
14	1,568	1,989	22.9	2,560	3,248	37.3	4,070	5,164	59.3
16	1,775	2,256	24.4	2,898	3,684	39.9	4,608	5,856	63.4
18	1,983	2,523	25.9	3,237	4,119	42.3	5,147	6,549	67.3
20	2,191	2,790	27.3	3,577	4,555	44.6	5,686	7,242	70.9
22	2,392	3,057	28.7	3,906	4,991	46.8	6,209	7,934	74.4
24	2,600	3,324	29.9	4,246	5,427	48.9	6,750	8,627	77.7
26	2,809	3,590	31.1	4,586	5,862	50.9	7,291	9,320	80.9
28	3,018	3,857	32.3	4,928	6,298	52.8	7,835	10,012	83.9
30	3,228	4,124	35.5	5,271	6,734	54.6	8,379	10,705	86.3
32	3,439	4,391	34.6	5,615	7,169	56.4	8,926	11,398	89.7
34		4,658	35.6		7,605	58.2		12,090	92.5
36		4,925	36.7		8,041	59.8		12,783	95.1
38		5,192	37.7		8,476	61.5		13,476	97.7
40		5,459	38.6		8,912	63.1		14,169	100

DN	40			50			65		
do	37			46			60		
p	I	II	III	I	II	III	I	II	III
0.2	361	418	13.5	558	646	20.8	949	1,099	35.4
0.5	566	665	19.1	875	1,028	29.5	1,489	1,749	50.1
1	839	999	25.8	1,296	1,545	39.9	2,205	2,628	67.9
2	1,339	1,617	36.5	2,069	2,499	56.4	3,520	4,251	69.0
3	1,804	2,204	44.7	2,788	3,406	69.1	4,744	5,795	118
4	2,250	2,768	51.6	3,478	4,278	79.8	5,918	7,278	136
5	2,695	3,331	57.7	4,165	5,149	89.2	7,087	8,761	152
6	3,138	3,895	63.2	4,850	6,021	97.7	8,252	10,243	166
7	3,570	4,459	68.3	5,518	6,892	106	9,388	11,726	180
8	4,010	5,023	73.0	6,198	7,763	113	10,545	13,208	192
9	4,450	5,587	77.4	6,878	8,635	120	11,701	14,691	204
10	4,889	6,150	81.6	7,556	9,506	126	12,856	16,173	215
12	5,766	7,278	89.4	8,913	11,249	138	15,163	19,138	235
14	6,625	8,405	96.6	10,241	12,992	149	17,423	22,104	254
16	7,501	9,533	103	11,594	14,735	160	19,725	25,069	271
18	8,378	10,661	110	12,949	16,478	169	22,030	28,034	288
20	9,256	11,788	115	14,306	18,220	178	24,339	30,999	304
22	10,107	12,916	121	15,623	19,963	187	26,579	33,964	318
24	10,987	14,043	126	16,982	21,706	195	28,892	36,929	333
26	11,869	15,171	132	18,345	23,449	203	31,211	39,894	346
28	12,753	16,298	137	19,712	25,192	211	33,537	42,859	359
30	13,640	17,426	141	21,083	26,935	219	35,869	45,824	372
32	14,530	18,554	146	22,459	28,677	226	38,210	48,790	384
34		19,681	151		30,420	233		51,755	396
36		20,809	155		32,163	239		54,720	407
38		21,936	159		33,906	246		57,685	418
40		23,064	163		35,649	252		60,650	429

DN	80			100			125		
do	74			92			98		
p	I	II	III	I	II	III	I	II	III
0.2	1,444	1,672	53.9	2,232	2,584	83.3	2,532	2,932	94.6
0.5	2,265	2,661	76.3	3,502	4,113	118	3,973	4,667	134
1	3,355	3,998	103	5,185	6,179	160	5,883	7,011	181
2	5,355	6,467	146	8,277	9,995	226	9,392	11,341	256
3	7,216	8,816	179	11,153	13,626	276	12,655	15,461	314
4	9,002	11,071	206	13,913	17,111	319	15,787	19,416	362
5	10,780	13,326	231	16,662	20,597	357	18,906	23,371	45
6	12,552	15,581	253	19,401	24,083	391	22,014	27,326	444
7	14,281	17,836	273	22,073	27,568	422	25,046	31,281	479
8	16,041	20,091	292	24,794	31,054	451	28,133	35,237	512
9	17,799	22,346	310	27,510	34,540	479	31,216	39,192	543
10	19,555	24,601	326	30,225	38,025	505	34,296	43,147	573
12	23,065	29,112	358	35,650	44,997	553	40,452	51,057	627
14	26,502	33,622	386	40,962	51,968	597	46,479	58,967	678
16	30,004	38,132	413	46,376	58,939	638	52,622	66,878	724
18	33,510	42,642	438	51,795	65,910	677	58,772	74,788	768
20	37,023	47,153	462	57,224	72,882	714	64,932	82,698	810
22	40,430	51,663	484	62,491	79,853	748	70,907	90,608	849
24	43,948	56,173	506	67,928	86,824	782	77,078	98,519	887
26	47,475	60,684	526	73,380	93,796	814		106,429	923
28	51,013	65,194	546	78,848	100,767	844		114,339	958
30	54,561	69,704	565	84,333	107,738	874		122,249	992
32	58,121	74,214	584	89,835	114,710	903		130,160	1,024
34		78,725	602		121,681	931		138,070	1,056
36		83,235	619		128,652	957		145,980	1,086
38		87,745	636		135,623	984		153,890	1,116
40		92,255	653		142,595	1,009		161,801	1,145

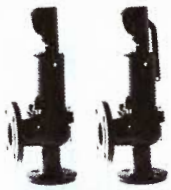
DN	150			200		
do	125			165		
p	I	II	III	I	II	III
0.2	4,120	4,770	154	7,178	8,311	268
0.5	6,464	7,593	218	11,263	13,230	379
1	9,572	11,407	295	16,678	19,876	513
2	15,280	18,452	417	26,623	32,150	726
3	20,589	25,154	510	35,873	43,828	889
4	25,685	31,589	589	44,753	55,040	1,027
5	30,758	38,023	659	53,593	66,252	1,148
6	35,815	44,458	722	62,404	77,463	1,257
7	40,748	50,893	779	71,000	88,675	1,358
8	45,770	57,327	833	79,750	99,887	1,452
9	50,786	63,762	884	88,489	111,099	1,540
10	55,797	70,197	932	97,221	122,311	1,623
12	65,812	83,066	1,021	114,671	144,734	1,778
14	75,619	95,936	1,102	131,758	167,158	1,921
16	85,612	108,805	1,178	149,170	189,582	2,053
18	95,617	121,674	1,250	166,603	212,005	2,178
20	105,639	134,544	1,317	184,066	234,429	2,296
22	115,361	147,413	1,382	201,005	256,853	2,408
24	124,339	160,282	1,443	218,496	279,276	2,515
26		173,152	1,502			
28		186,021	1,559			
30		198,891	1,614			
32		211,760	1,666			
34		224,629	1,718			
36		237,499	1,768			
38		250,368	1,816			
40		263,238	1,863			

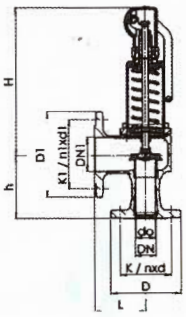
Safety Valves

Spheroidal Graphite Cast Iron with Stainless Steel Spring

Angular shaped spring loaded safety valves made of spheroidal graphite cast iron (GGG 40.3) with stainless steel spring. Set pressure is protected by seal. Internal parts made of stainless steel. Suitable for the protection of pressure tanks and systems for neutral, non-sticking liquids, provided boiling temperature is not reached under atmospheric pressure. Available two types; Model 352 F without lifting device, and Model 352 FL with lever for lifting.

Component	Material	DIN EN	ASTM /AISI
Body	GGG 40.3	0.7043	A536-87
Internal Parts	Stainless steel	1.4571	AISI 316Ti
Pressure Spring	Stainless steel	1.4310	AISI 301





Model 352 sFO: Without Lifting Device

Unit Per Pc.

CODE		75 62 55	75 62 56
Connection		DN 40 / PN 16	DN 50 / PN 16
Ranges of Adjustment		0.5 - 16 bar	
Size mm	DN1 / PN1	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L	115	120
	D	150	165
	D1	185	200
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
Weight Kgs		17	19

Goetze KG : Model 352 sFO

Model 352 sFL: With Lever for Lifting

Unit Per Pc.

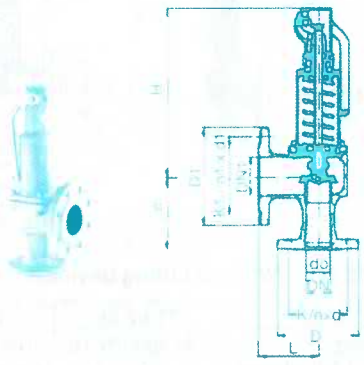
CODE		75 62 57	75 62 58
Connection		DN 40 / PN 16	DN 50 / PN 16
Ranges of Adjustment		0.5 - 16 bar	
Size mm	DN1 / PN1	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L	115	120
	D	150	165
	D1	185	200
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
Weight Kgs		17	19

Goetze KG : Model 352 sFL

Safety Valves
Red Brass
with Stainless Steel Spring

Angular shaped spring-loaded safety valves made of red brass with stainless steel spring. Set pressure is protected by seal cap. Valve cone can be lifted using lever. Suitable to protect thermostatically protected closed-circuit water heating systems with flow temperatures up to 120 deg. C. For all static heights or nominal powers of more than 350 kW as well as for protection of solar plants up to 120 deg. C, and also to protect indirectly heated heat generators in accordance with DIN 4751 part 2 the safety valves only have to be rated for the flow rate of the expansion water.

Component	Material	DIN EN	ASTM /AISI
Body	Red Brass	CC491K	B62 C83600
Internal Parts	Brass	CW614N	B124 C37700
Seat	Stainless steel	1.4571	AISI 316Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



Unit Per Pc

CODE		75 62 79	75 62 80
Connection		DN 40 / PN 25	DN 50 / PN 25
Ranges of Adjustment		0.5 - 16 bar	
Size mm	DN1 / PN1	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L	115	120
	D	150	165
	D1	185	200
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
Weight Kgs		17	19

Goetze KG Model 852 bHL

Safety Valves
Gunmetal with Stainless Steel Spring
Stainless Steel & Spheroidal Graphite Cast Iron

Marine Type Approvals held for these valves:
- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd
- Lloyds Register

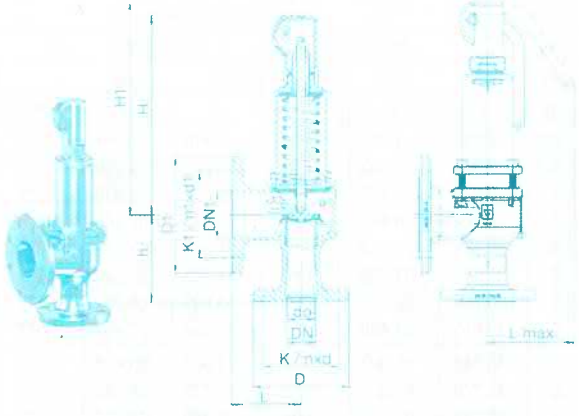
Angular shaped spring-loaded safety valves made of gunmetal with stainless steel spring. Internal parts are made of gunmetal and sea-water resistant. Suitable for the protection of pressure tanks and systems for non-neutral and neutral gas, steam and liquids, and of steam boilers. Also suitable for combustible and toxic gas, steam and liquids

Available three models in:
Gunmetal with Stainless Steel Spring: 852
Stainless Steel: 452
Spheroidal Graphite Cast Iron: 352
- **Model 852/452/352 tGFO gastight without lifting device**
- **Model 852/452/352 tGFL gastight with lever for lifting**
- **Model 852/452/352 bGFO gastight with bellows without lifting device**
- **Model 852/452/352 bGFL gastight with bellows with lever for lifting.**

Available seals :
- **NBR**
- **EPDM**
- **FKM**
- **PTFE**
- **PTFE+carbon (standard from 25 bar)**
- **FFKM**
- **metal-to-metal sealing**

Model 852 : Gunmetal with Stainless Steel Spring

Component	Material	DIN EN	ASTM / AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



Model 852tGFO: Gastight without Lifting Device

Unit Per Pc

CODE		75 62 81	75 62 82
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
Size mm	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L	115	120
	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	17	19

Goetze KG Model 852 tGFO

Model 852tGFL: Gastight with Lever for Lifting

Unit Per Pc

CODE		75 62 83	75 62 84
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L L max	115/150	120/150
Size mm	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	17	19

Goetze KG · Model 852 tGFL

Model 852bGFO: Gastight with Bellows without Lifting Device

Unit Per Pc

CODE		75 62 85	75 62 86
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H1	362	362
	h	140	150
	L	115	120
Size mm	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	18	20

Goetze KG · Model 852 bGFO

Model 852bGFL: Gastight with Bellows and Lever for Lifting

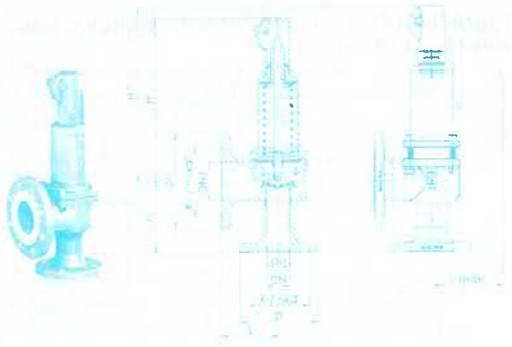
Unit Per Pc

CODE		75 62 87	75 62 88
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H1	362	362
	h	140	150
	L/Lmax	115/150	120/150
	D	150	165
Size mm	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	18	20

Goetze KG · Model 852 bGFL

Model 352: Spheroidal Graphite Cast Iron

Component	Material	DIN EN	ASTM / AISI
Body	Spheroidal Graphite Cast Iron	0 7043	A 536-87
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



Model 352tGFO: Gastight Without Lifting Device

Unit Per Pc

CODE		75 62 71	75 62 72
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L	115	120
Size mm	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	17	19

Goetze KG · Model 352 tGFO

Model 352tGFL: Gastight with Lever for Lifting

Unit Per Pc

CODE		75 62 73	75 62 74
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L/Lmax	115/150	120/150
Size mm	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	17	19

Goetze KG · Model 352 tGFL

Model 352bGFO: Gastight with Bellows without Lifting Device

Unit Per Pc

CODE		75 62 75	75 62 76
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H1	362	362
	h	140	150
	L	115	120
Size mm	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	18	20

Goetze KG · Model 352 bGFO

Model 352bGFL: Gastight with Bellows and Lever for Lifting

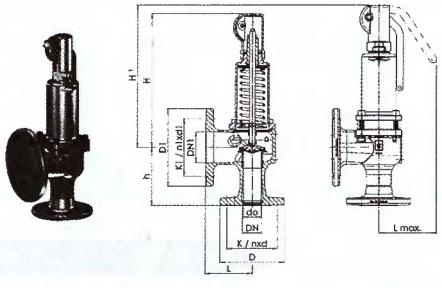
Unit Per Pc.

CODE		75 62 77	75 62 78
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
Size mm	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H1	362	362
	h	140	150
	L/Lmax	115/150	120/150
	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	18	20

Goetze KG : Model 352 bGFL

Model 452: Stainless Steel

Component	Material	DIN EN	ASTM / AISI
Body	Stainless steel	1.4408	ASTM A351 CF-8M
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



Model 452tGFO: Gastight Without Lifting Device

Unit Per Pc.

CODE		75 62 89	75 62 90
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
Size mm	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L	115	120
	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	17	19

Goetze KG : Model 452 tGFO

Model 452tGFL: Gastight with Lever for Lifting

Unit Per Pc.

CODE		75 62 91	75 62 92
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
Size mm	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H	345	345
	h	140	150
	L/Lmax	115/150	120/150
	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	17	19

Goetze KG : Model 452 tGFL

Model 452bGFO: Gastight with Bellows without Lifting Device

Unit Per Pc.

CODE		75 62 93	75 62 94
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
Size mm	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H1	362	362
	h	140	150
	L	115	120
	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	18	20

Goetze KG : Model 452 bGFO

Model 452bGFL: Gastight with Bellows and Lever for Lifting

Unit Per Pc.

CODE		75 62 95	75 62 96
Connection		DN 40 / PN 40	DN 50 / PN 40
Ranges of Adjustment		0.5 - 25 bar	
Size mm	Outlet DN/PN	DN 65 / PN 16	DN 80 / PN 16
	H1	362	362
	h	140	150
	L/Lmax	115/150	120/150
	D	150	165
	K / n x d	110 / 4 x 18	125 / 4 x 18
	K1 / n1 x d1	145 / 4 x 18	160 / 8 x 18
	d0	37	46
	Weight kgs	18	20

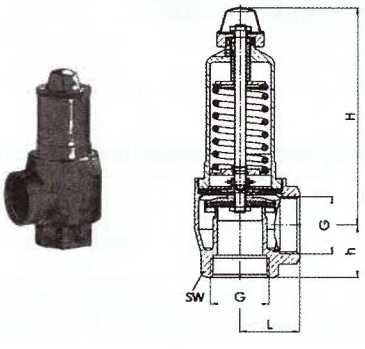
Goetze KG : Model 452 bGFL

Diaphragm Safety Valves

Red Brass

Angular shape, spring loaded diaphragm safety valve made of red brass. Seal cap prevents unauthorized changing of set pressure. Knurled nut to lift the valve cone. Upper part is removable without changing the set pressure. Installed diaphragm prevents medium from entering the spring chamber. Suitable for protecting closed-circuit water heating systems up to max. 95 deg.C.

Component	Material	DIN EN	ASTM/AISI
Body	Red brass	CC491K	B62 C83600
Internal Parts	Brass	CW614N	B124 C37700
Pressure Spring	Spring steel	1.1200	-



Unit Per Pc.

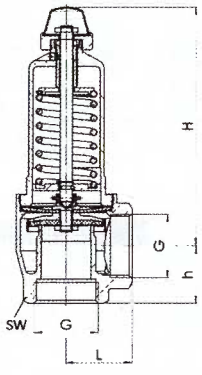
CODE		75 70 71	75 70 72	75 70 73
Connection		G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		6; 8; 10 bar		
Size mm	L	26	31	35
	H	70	70	80
	h	17	18	22
	SW	27	32	40
	D0	10	13	16
Weight Kgs		0.2	0.3	0.5
CODE		75 70 74	75 70 75	75 70 76
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		6; 8; 10 bar		
Size mm	L	40	46	54
	H	100	140	155
	h	25	28	34
	SW	49	56	68
	D0	18	22	25
Weight Kgs		0.7	1.2	1.6

Goetze KG : Model 651mWIK

Diaphragm Safety Valves
Red Brass

Angular shaped diaphragm safety valves made of red brass. Upper part can be removed without changing the set pressure. Installed diaphragm prevents medium from entering spring chamber. Suitable for protecting thermally protected closed-circuit water heating systems with flow temperatures of up to 120 deg. C.

Component	Material	DIN EN	ASTM/AISI
Body	Red brass	CC491K	B62 C83600
Internal Parts	Brass	CW614N	B124 C37700
Pressure Spring	Spring steel	1.1200	-



Unit Per Pc.

CODE		75 70 81	75 70 82	75 70 83	75 70 84	75 70 85
Connection		G 1/2"	G 3/4"	G 1"	G 1-1/4"	G 1-1/2"
Set Pressures		2.5; 3; 3.5 bar				
Size mm	H	65	72	86	160	183
	h	24	28	30	40	40
	L	26	30	38	42	53
	SW	26	32	39	49	56
Weight Kgs		0.25	0.4	0.7	1.6	2.5

Goetze KG : Model 651 mHIK

Safety Valves
Gunmetal & Stainless Steel with Stainless Steel Spring

Marine Type Approvals held for these valves:
- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd,
- Lloyds Register

Angular shaped spring loaded safety valves made of gunmetal with stainless steel spring Seal cap prevents unauthorized changing of set pressure. Suitable for the protection of pressure tanks and systems for air, neutral vapours and gases.

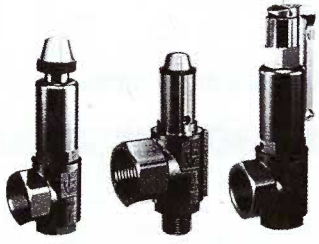
Available models:
- **851 sGK with twist-type lifting mechanism**
- **851 sGL with lifting lever**
- **851bGFK with bellows and twist-type lifting mechanism**
- **851bGFL with bellows and lifting lever**

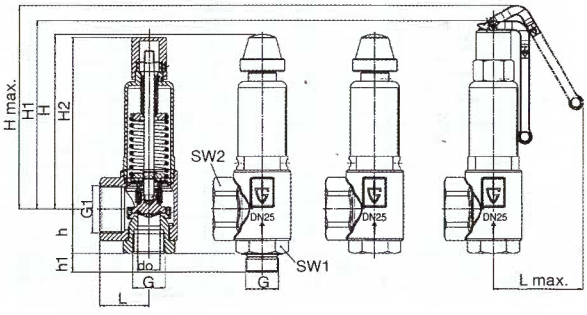
Available seals:
- **NBR**
- **EPDM**
- **FKM**
- **PTFE**
- **PTFE + carbon (standard from 25 bar)**
- **FFKM**
- **metal-to-metal sealing**

All models are also available in **Stainless Steel**: series **451**.

Series 851 (Gunmetal):

Component	Material	DIN EN	ASTM / AISI
Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Brass	CW614N	UNS C37700
Pressure Spring	Stainless steel	1.4310	AISI 301





Model: 851 sGK with twist-type lifting mechanism

Unit Per Pc

CODE		75 70 70	75 70 77	75 70 78	75 70 79	75 70 80
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25 1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G1-1/4"	G1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

Unit Per Pc.

CODE		75 70 95	75 70 96	75 70 97
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG : Model 851 sGK

Model: 851 sGL with lifting lever

Unit Per Pc

CODE		75 70 98	75 70 99	75 71 09	75 71 10	75 71 19
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25 1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G1-1/4"	G1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

Unit Per Pc

CODE		75 71 20	75 71 32	75 71 33
Connection		G1-1/4"	G-1 1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG : Model 851 sGL

Model: 851 bGFK with belows and twist-type lifting mechanism

Unit Per Pc

CODE		75 71 34	75 70 86	75 71 35	75 70 87	75 70 88
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25 1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G 1-1/4"	G 1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

Unit Per Pc

CODE		75 70 89	75 71 36	75 71 37
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG . Model 851 bGFK

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Model: 851 bGFL with belows and lifting lever

Unit Per Pc.

CODE		75 71 38	75 70 91	75 71 39	75 70 92	75 70 93
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25.1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G 1-1/4"	G 1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

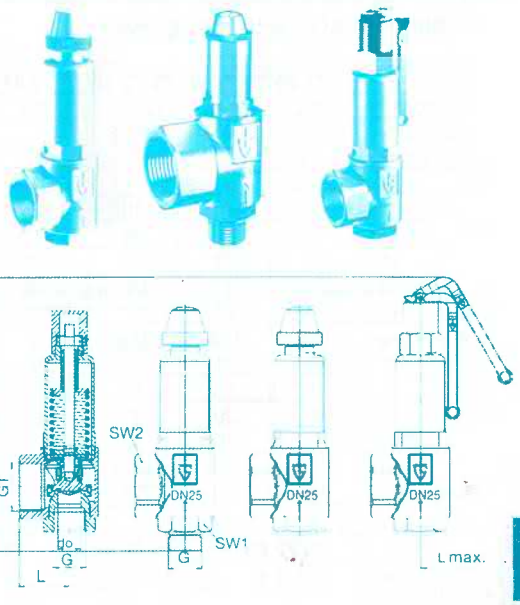
Unit Per Pc.

CODE		75 70 94	75 71 40	75 71 48
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG : Model 851 bGFL

Series 451 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Body	Stainless steel	1.4571/ 1.4408	AISI 316 Ti / ASTM A 351 CF-8M
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



Model: 451 sGK with twist-type lifting mechanism

Unit Per Pc

CODE		75 72 56	75 72 57	75 72 58	75 72 59	75 72 60
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25.1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G1-1/4"	G1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

Unit Per Pc

CODE		75 72 68	75 72 69	75 72 70
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG . Model 451 sGK

Model: 451 sGL with lifting lever

Unit Per Pc.

CODE		75 72 78	75 72 79	75 72 80	75 72 81	75 72 82
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25.1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G 1-1/4"	G 1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

Unit Per Pc.

CODE		75 72 83	75 72 84	75 72 85
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG : Model 451 sGL

Model: 451 bGFK with belows and twist-type lifting mechanism

Unit Per Pc.

CODE		75 72 86	75 72 87	75 72 88	75 72 89	75 72 90
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25.1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G 1-1/4"	G 1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

Unit Per Pc.

CODE		75 72 91	75 72 92	75 72 93
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG : Model 451 bGFK

Model: 451 bGFL with belows and lifting lever

Unit Per Pc.

CODE		75 72 94	75 72 95	75 72 96	75 72 97	75 72 98
Connection		G 1/2"	G 1/2"	G 1/2"	G 3/4"	G 1"
Ranges of Adjustment		1/2"x1/2": 0.5 - 25 bar	1/2"x1": 0.5 - 25 bar	1/2"x1": 25.1 - 50 bar	0.5 - 50 bar	
Size mm	G1	G 1/2"	1"	1"	G 1-1/4"	G 1-1/2"
	L	34	40	40	43	50
	Lmax	65	65	65	91	92
	H	79	77	131	138	178
	H1	93	91	149	158	192
	H2	79	77	131	139	175
	Hmax	105	103	164	173	207
	h	28	30	30	39	45
	h1	15	15	15	16	18
	SW1	30	30	30	36	46
	SW2	-	40	40	50	58
	d0	15.8	15.8	15.8	18	23
Weight Kgs		0.4	0.4	0.8	1	1.8

Unit Per Pc.

CODE		75 72 99	75 73 07	75 73 08
Connection		G1-1/4"	G1-1/2"	G 2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	2"	2"	2"
	L	61	61	61
	Lmax	92	92	92
	H	241	241	241
	H1	264	264	264
	H2	241	241	241
	Hmax	277	277	277
	h	55	55	55
	h1	20	23	25
	SW1	55	55	70
	SW2	70	70	70
	d0	30	30	30
Weight Kgs		4.0	4.0	4.0

Goetze KG : Model 451 bGFL

Safety Valves

Brass & Stainless Steel with Stainless Steel Spring

Atmospheric discharge safety valves made of brass with stainless steel spring. Suitable for the protection of pressure tanks and systems for air and other neutral, non-poisonous and non-flammable gases which can be freely discharge into the environment. with twist-type lifting mechanism.

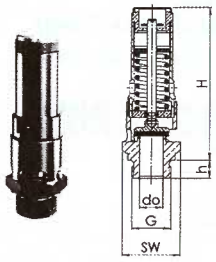
(to be continued)

Available models:
- 810sGK
Available in 1/4" up to 1"

All models are also available in **Stainless Steel** : series **410**.

Series 810 (Brass):
- **810sGK FKM with FKM seal (0.2 – 25 bar)**
- **810sGK PTFE with PTFE seal (25.1 - 50 bar)**

Component	Material	DIN EN	ASTM / AISI
Body	Brass	CW614N	UNS C37700
Internal Parts	Brass	CW614N	UNS C37700
Pressure Spring	Stainless steel	1.4310	AISI 301



- 810sGK FKM with FKM seal (0.2 – 25 bar)

Unit Per Pc.

CODE		75 73 09	75 73 10	75 73 17	75 73 18	75 73 19
Connection		DN8/ 1/4"	DN10/ 3/8"	DN15/ 1/2"	DN20/ 3/4"	DN25/ 1"
Ranges of Adjustment		0.2 - 50 bar				
Size mm	H	60	65/78	66/79	94/104	111
	h	10	10	12	12	14
	SW	19	24	27	34	41
	d0	7.5	10	11	16	20
Weight Kgs		0.1	0.4/0.16	0.17/0.19	0.35/0.4	0.6

Goetze KG : Model 810sGK FKM

- 810sGK PTFE seal (25.1 – 50 bar)

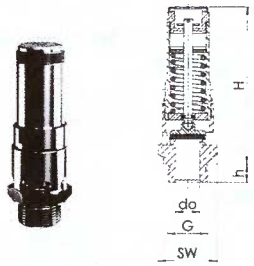
Unit Per Pc.

CODE		75 73 20	75 73 29	75 73 30	75 73 38	75 73 39
Connection		DN8/ 1/4"	DN10/ 3/8"	DN15/ 1/2"	DN20/ 3/4"	DN25/ 1"
Ranges of Adjustment		25.1 - 50 bar				
Size mm	H	60	65/78	66/79	94/104	111
	h	10	10	12	12	14
	SW	19	24	27	34	41
	d0	7.5	10	11	16	20
Weight Kgs		0.1	0.4/0.16	0.17/0.19	0.35/0.4	0.6

Goetze KG : Model 810sGK PTFE

Series 410 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Body	Stainless steel	1.4571	AISI 316 Ti
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



- 410sGK FKM with FKM seal (0.2 – 25 bar)

Unit Per Pc.

CODE		75 73 48	75 73 49	75 73 50	75 73 51	75 73 52
Connection		DN8/ 1/4"	DN10/ 3/8"	DN15/ 1/2"	DN20/ 3/4"	DN25/ 1"
Ranges of Adjustment		0.2 - 50 bar				
Size mm	H	60	78	79	104	111
	h	10	10	12	12	14
	SW	19	24	27	34	41
	d0	7.5	10	11	16	20
Weight Kgs		0.1	0.16	0.19	0.4	0.6

Goetze KG : Model 410sGK FKM

- 410sGK PTFE with PTFE seal (25.1 – 50 bar)

Unit Per Pc.

CODE		75 73 53	75 73 54	75 73 55	75 73 56	75 73 57
Connection		DN8/ 1/4"	DN10/ 3/8"	DN15/ 1/2"	DN20/ 3/4"	DN25/ 1"
Ranges of Adjustment		25.1 - 50 bar				
Size mm	H	60	78	79	104	111
	h	10	10	12	12	14
	SW	19	24	27	34	41
	d0	7.5	10	11	16	20
Weight Kgs		0.1	0.16	0.19	0.4	0.6

Goetze KG : Model 410sGK PTFE

Safety Valves
Brass & Stainless Steel
With Stainless Steel Spring

Marine Type Approvals held for these valves:
- American Bureau of Shipping,
- Bureau Veritas,
- DNV,
- Germanischer Lloyd,
- Lloyds Register

Atmospheric discharge safety valves made of brass with stainless steel spring. Suitable for the protection of pressure tanks and systems for air and other neutral, non-poisonous and non-flammable gases which can be freely discharge into the environment. With twist-type lifting mechanism.

Available models :
- 812/412 sGK

Available seals:
- NBR
- FKM
- PTFE

Available in 1/2" up to 2"

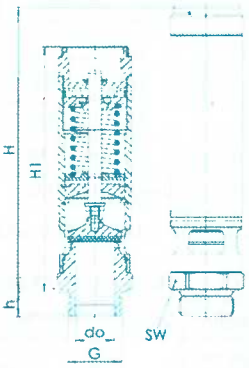
All models are also available in **Stainless Steel**: Series **412**.

How to order: CODE

Safety Valve (DIN), Brass or Stainless Steel, with Stainless Steel Spring, SIZE DN, SPECIFY THE SEALS FROM "NBR", "FKM" or "PTFE"

Series 812 (Brass):

Component	Material	DIN EN	ASTM / AISI
Body	Brass	CW614N	UNS C37700
Internal Parts	Brass/ Stainless steel	CW614N	UNS C37700/ AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



Model 812 sGK

Unit Per Pc.

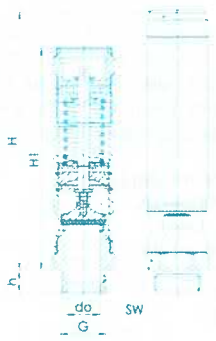
CODE	DN	Connection	Size mm H	h	SW	d0	Range of Adjustment	Weight Kgs
75 73 58	15	1/2"	144	12	32	14		0.6
59	20	3/4"	177	15	41	20		1.3
60	25	1"	177	15	41	24	0.2-45 bar	1.3
61	32	1-1/4"	215	22.5	55	32		2.6
62	40	1-1/2"	215	22.5	55	32		2.6
75 73 63	50	2"	282	26	80	48	0.2-30 bar	5.0

Goetze KG: 812 sGK

** Please Specify the Seal from "NBR", "FKM" or "PTFE" when ordering.

Series 412 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Body	Stainless steel	1.4571	AISI 316 Ti
Internal Parts	Stainless steel	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301



Model 412 sGK

Unit Per Pc

CODE	DN	Connection	Size mm H	h	SW	d0	Range of Adjustment	Weight Kgs
75 73 64	15	1/2"	144	12	32	14		0.6
65	20	3/4"	177	15	41	20		1.3
66	25	1"	177	15	41	24	0.2-45 bar	1.3
67	32	1-1/4"	215	22.5	55	32		2.6
68	40	1-1/2"	215	22.5	55	32		2.6
75 73 69	50	2"	282	26	80	48	0.2-30 bar	5.4

Goetze KG: 412 sGK

** Please Specify the Seal from "NBR", "FKM" or "PTFE" when ordering.

Safety Valves

Gunmetal & Stainless Steel with Stainless Steel Spring

Marine Type Approvals held for these valves:

- American Bureau of Shipping.
- Bureau Veritas,
- DNV.
- Germanischer Lloyd,
- Lloyds Register

Angular shaped spring loaded safety valves made of gunmetal with stainless steel spring and inlet body. Seal cap prevents unauthorized changing of set pressure. Suitable for the protection of pressure tanks and systems for neutral /non-neutral vapours, gases and liquids, steam boilers and steam plants.

Available models:

- **861sGK non-gastight version with twist-type lifting mechanism**
- **861sGL non-gastight version with lifting lever**
- **861tG0 gastight for gases without lifting device**
- **861tF0 gastight for liquids without lifting device**
- **861tGF0 gastight for gases and liquids without lifting device**

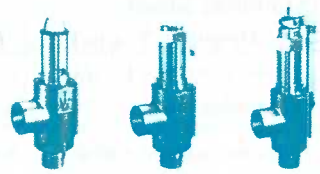
Available seals:

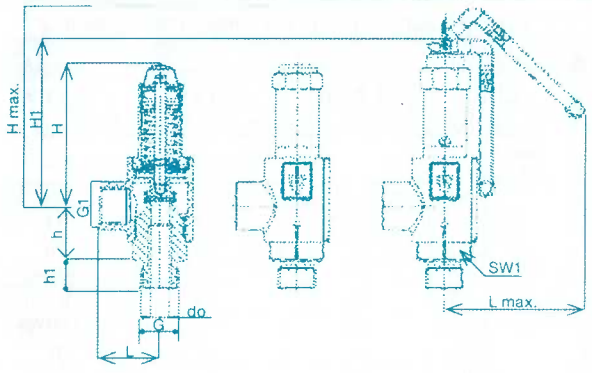
- PTFE up to 22 bar
- PTFE + carbon from 22.1 bar up to 50 bar

All models are also available in **Stainless Steel:** series **461.**

Series 861 (Gunmetal):

Component	Material	DIN EN	ASTM / AISI
Inlet Body	Stainless steel	1.4571	AISI 316 Ti
Outlet Body	Gunmetal	CC499K	UNS C83600
Internal Parts	Brass	CW614N	UNS C37700
Pressure Spring	Stainless steel	1.4310	AISI 301





- 861sGK non-gastight version with twist-type lifting mechanism

Unit Per Pc.

CODE		75 73 71	75 73 72	75 73 73
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79
	H1	93	93	93
	Hmax	111	111	111
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6

Goetze KG : Model 861 sGK

- 861sGL non-gastight version with lifting lever

Unit Per Pc

CODE		75 73 74	75 73 75	75 73 76
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79
	H1	93	93	93
	Hmax	111	111	111
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6

Goetze KG : Model 861 sGL

- 861tG0 gastight for gases without lifting device

Unit Per Pc.

CODE		75 73 77	75 73 78	75 73 79
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79
	H1	93	93	93
	Hmax	111	111	111
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6

Goetze KG : Model 861 tG0

- 861tF0 gastight for liquids without lifting device

Unit Per Pc.

CODE		75 73 80	75 73 81	75 73 82
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79
	H1	93	93	93
	Hmax	111	111	111
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6

Goetze KG : Model 861 tF0

- 861tGF0 gastight for liquids without lifting device

Unit Per Pc

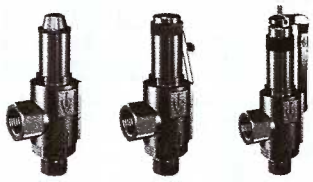
CODE		75 73 83	75 73 84	75 73 85
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 50 bar		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79
	H1	93	93	93
	Hmax	111	111	111
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6

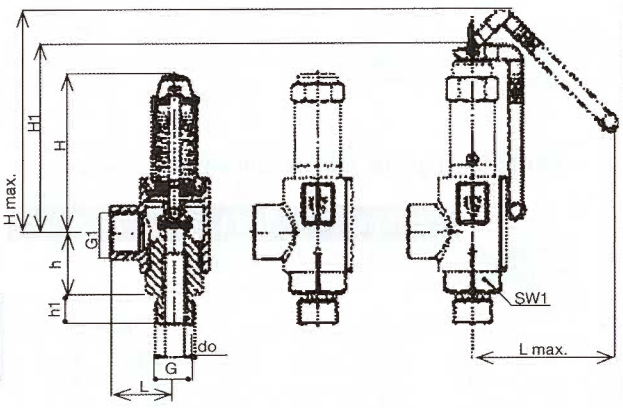
Goetze KG : Model 861 tGF0

Series 461 (Stainless Steel):

Component	Material	DIN EN	ASTM / AISI
Inlet Body	Stainless steel	1.4571	AISI 316 Ti
Outlet Body	Stainless steel	1.4408	ASTM A 351 CF-8M
Internal Parts	Brass	1.4571	AISI 316 Ti
Pressure Spring	Stainless steel	1.4310	AISI 301

(to be continued)





- 461sGK non-gastight version with twist-type lifting mechanism

Unit Per Pc.

CODE		75 73 86	75 73 87	75 73 88
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 70 bar (50.1-70 bar)		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79/133
	H1	93	93	93/150
	Hmax	111	111	111/168
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6/1

Goetze KG : Model 461 sGK

- 461sGL non-gastight version with lifting lever

Unit Per Pc.

CODE		75 73 89	75 73 90	75 73 91
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 70 bar (50.1-70 bar)		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79/133
	H1	93	93	93/150
	Hmax	111	111	111/168
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6/1

Goetze KG : Model 461 sGL

- 461tG0 gastight for gases without lifting device

Unit Per Pc.

CODE		75 73 92	75 73 93	75 73 94
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 70 bar (50.1-70 bar)		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79/133
	H1	93	93	93/150
	Hmax	111	111	111/168
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6/1

Goetze KG : Model 461 tG0

- 461tF0 gastight for liquids without lifting device

Unit Per Pc.

CODE		75 73 95	75 73 96	75 73 97
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 70 bar (50.1-70 bar)		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79/133
	H1	93	93	93/150
	Hmax	111	111	111/168
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6/1

Goetze KG : Model 461 tF0

- 461tGF0 gastight for gases and liquids without lifting device

Unit Per Pc.

CODE		75 73 98	75 73 99	75 74 00
Connection		DN8 / G 1/4"	DN10 / G 3/8"	DN15 / G 1/2"
Ranges of Adjustment		0.5 - 70 bar (50.1-70 bar)		
Size mm	G1	DN15 / G 1/2"	DN15 / G 1/2"	DN15 / G 1/2"
	L	34	34	34
	Lmax	78	78	78
	H	79	79	79/133
	H1	93	93	93/150
	Hmax	111	111	111/168
	h	31	31	31
	h1	12	12	12
	SW	30	30	30
	d0	6	8	10
Weight Kgs		0.5	0.5	0.6/1

Goetze KG : Model 461 tGF0

American National Standard Institute (ANSI) for Marine Services

The following tables are a cross comparison from JIS (Japan Industrial Standard) to ANSI (American National Standard Institute), and from ANSI to JIS for your reference purpose. The tables are classified according to similar material, working pressure and general design. However, as you understand, the basic specification of material, dimensions and flanges are essentially different between JIS standard and ANSI standard.
We are not held responsible for any possible accident or damage caused by using these tables.

Comparison List - JIS to equivalent design ANSI Valves

Globe Valves

Material & W.P.	Type	JIS No.	Size	CODE	ANSI Model	CODE	Class	Size
Cast Steel 10 kgf/cm² Flanged	Straight	F-7319	50-300mm	**75 04 11 - 19**	1820	**75 71 41 - 47**	150	2" - 12"
Cast Steel 120 kgf/cm² Flanged	Straight	F-7313	32-250mm	**75 04 31 - 40**	1821	**75 71 51 - 57**	300	2" - 12"

Gate Valves

Material & W.P.	Type	JIS No.	Size	CODE	ANSI Model	CODE	Class	Size
Cast Iron 10 kgf/cm²	Flanged	F-7364	50-600mm	**75 08 21 - 35**	1800	**75 72 41 - 48**	125	2" - 12"
Cast Iron 16 kgf/cm²	Flanged	F-7369	300-400mm	**75 08 41 - 43**	1800	**75 72 41 - 48**	125	2" - 12"
Cast steel 10 kgf/cm²	Flanged	F-7366	50-400mm	**75 09 01 - 11**	1850	**75 72 61 - 67**	150	2" - 12"

Swing Check Valves

Material & W.P.	Type	JIS No.	Size	CODE	ANSI Model	CODE	Class	Size
Cast Iron 10 kgf/cm² Flanged	Straight	F-7373	50-200mm	**75 14 31 - 37**	1803 1810	**75 73 21 - 28** **75 73 31 - 37**	125 150	2" - 12" 2" - 12"

Remark : ANSI model is referred to Econosto products.

Comparison List - ANSI to equivalent design JIS Valves

Globe Valves

Material & W.P.	Type	ANSI Model	Size	CODE	JIS No.	CODE	Max. W/P	Size
Carbon Steel Class 150 Flanged	Straight	1820	2" - 12"	**75 71 41 - 47**	F-7319	**75 04 11 - 19**	10 kgf/cm²	50-300mm
Carbon Steel Class 300 Flanged	Straight	1821	2" - 12"	**75 71 51 - 57**	F-7313	**75 04 31 - 40**	20 kgf/cm²	32-250mm

Gate Valves

Material & W.P.	Type	ANSI Model	Size	CODE	JIS No.	CODE	Max. W/P	Size
Cast Iron Class 125	Flanged	1800	2" - 12"	**75 72 41 - 48**	F-7364 F-7369	**75 08 21 - 35** **75 08 41 - 43**	10 kgf/cm² 16 kgf/cm²	50-600mm 300-400mm
Carbon Steel Class 150	Flanged	1850	2" - 12"	**75 72 61 - 67**	F-7366	**75 09 01 - 11**	10 kgf/cm²	50-400mm

Swing Check Valves

Material & W.P.	Type	ANSI Model	Size	CODE	JIS No.	CODE	Max. W/P	Size
Cast Iron Class 125 Flanged	Straight	1803	2" - 12"	**75 73 21 - 28**	F-7373	**75 14 31 - 37**	10 kgf/cm²	50-200mm
Cast Steel Class 150 Flanged	Straight	1810	2" - 12"	**75 73 31 - 37**	F-7373	**75 14 31 - 37**	10 kgf/cm²	50-200mm

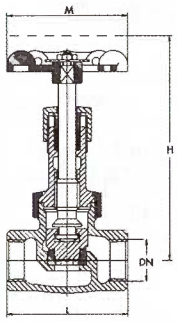
Remark : ANSI model is referred to Econosto products.

ANSI Globe Valves

Globe Valves (ANSI)
Bronze
NPT Female Treaded
Union Bonnet Metal
Seated

Globe valves with union bonnet, SS disc and hardened seat, renewable disc and seat, straight pattern, NPT female threaded connection according to ANSI B1.20.1, inside screwed stem and rising handwheel.

Application : Water, oil, air, gas, saturated steam etc.



Pressure and Temperature Range

	0/65°C	287°C
1/2" - 2"	27.5 bar	13.7 bar
	200 lbs SWP at 550° F and 400 lbs WOG at 150° F (non-shock)	

Material Specification

Component	Material	US
Body	Bronze	ASTM B61
Bonnet	Bronze	ASTM B61
Bonnet Nut	Bronze	ASTM B61
Disc	Stainless steel	AISI 420
Stem	Bronze	ASTM B61
Seat (Hardened)	Stainless steel	AISI 420
Gland Packing	Graphite	
Handwheel	Cast iron	

How to order: CODE
Globe valve (ANSI), bronze, NPT female threaded, union bonnet metal seated, SIZE DN

Unit Per Pc.

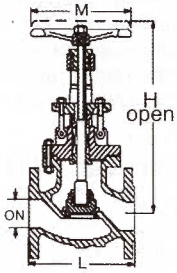
CODE	DN	Size mm			Weight
		L	H	M	Kgs
75 71 01	1/4"	56	106	57	0.4
02	3/8"	60	108	57	0.5
03	1/2"	64	114	76	0.7
04	3/4"	75	130	83	1.0
05	1"	86	133	102	1.6
75 71 06	1-1/4"	98	157	120	2.6
07	1-1/2"	114	184	140	3.5
08	2"	124	208	152	6.2

Econosto Model No. : 1410

Globe Valves (ANSI)
Cast Steel
ASME Flanges
150 lbs and 300 lbs

Cast steel globe valves with stainless steel trim, pressure rating 150 lbs and 300 lbs, straight pattern, flanged end acc. to ASME B16.5 ("raised face – smooth finish"), outside screw & yoke, rising handwheel. On request, supplied including EN 10204 3.1.B material and test certificate.

Application: Steam, water, oil, vapours and gases.



Pressure and Temperature Range

	ASTM A216 WCB						
	-29/38°C	93°C	149°C	204°C	260°C	316°C	343°C
150 lbs	19.7 bar	17.9	15.9	13.8	11.7	9.7	8.6
300 lbs	51 bar	46.5	45.2	43.8	41.4	37.9	36.9
	371°C	399°C	427°C	454°C	482°C	510°C	538°C
150 lbs	7.6 bar	6.6	5.5	4.5	3.4	2.4	1.4
300 lbs	36.9 bar	34.8	28.3	18.6	11.7	7.2	3.4
	ASTM A216 WCB is not recommended for long-term duty above 426°C.						

Material Specification

Component	Material	US
Body	Cast steel	ASTM A216-WCB
Bonnet	Cast steel	ASTM A216-WCB
Disc	Stainless steel	AISI 410
Seat (Body)	Stainless steel	AISI 410 stellited
Stem	Stainless steel	AISI 410
Gland	Forged steel	ASTM A105(N)
Gland Packing	Graphite	Grafiet
Bonnet gasket 1) (SS insert)	Graphite	Grafiet
Handwheel	Malleable cast iron	Malleable cast iron

1) Spiral wound gasket

Pressure Rating 150 lbs

How to order: CODE
Globe valve (ANSI), cast steel, ASME flanges, pressure rating 150 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight
		L	H	M	Kgs
75 71 41	2"	203	338	200	21
42	3"	241	396	250	35
43	4"	292	476	300	58
44	6"	406	524	350	100
45	8"	495	588	400	160
75 71 46	10"	622	738	500	253
47	12"	699	862	500	398

Econosto Model No. : 1820

Pressure Rating 300 lbs

How to order: CODE
Globe valve (ANSI), cast steel, ASME flanges, pressure rating 300 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight
		L	H	M	Kgs
75 71 51	2"	267	354	200	25
52	3"	318	421	250	49
53	4"	356	496	350	76
54	6"	445	675	500	168
55	8"	559	912	560	282
75 71 56	10"	622	949	600	385
57	12"	711	1,032	650	724

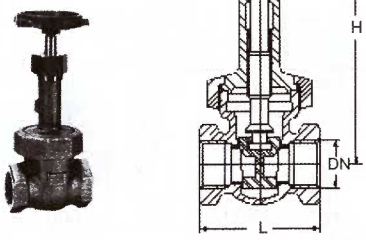
Econosto Model No. : 1821

ANSI Gate Valves

Gate Valves (ANSI)
Bronze
NPT Female Threaded Ends
Union Bonnet
Pressure Rating 200 lbs

Bronze gate valves with union bonnet, solid bronze wedge, stainless steel seat, NPT female threaded ends acc. to ANSI B1.20.1, inside screwed stem and rising stem and rising handwheel, complies with requirements of MSS SP-80 type 2.

Application: water, oil, air, gas, saturated steam etc.



Pressure and Temperature Range

	0/20°C	197°C
1/4" - 3"	27.5 bar	13.7 bar
	200 lbs SWP and 400 lbs WOG (non-shock)	

Material Specification

Component	Material	US
Body	Bronze	ASTM B61
Bonnet Nut	Bronze	ASTM B61
Stem	Bronze	ASTM B61
Wedge	Bronze	ASTM B61
Seats (Body)	Stainless steel	AISI 410
Gland Packing	Graphite	
Handwheel	Cast iron	

How to order: CODE

Gate valve (ANSI), bronze, NPT female threaded ends, union bonnet, pressure rating 200 lbs, SIZE DN

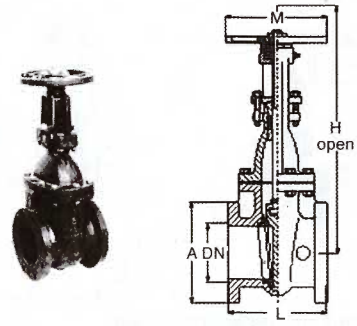
Unit Per Pc.

CODE	D	Size mm			Weight
		L	H open	M	Kgs
75 72 01	1/4"	46	5.125	130	0.5
02	3/8"	48	5.125	130	0.6
03	1/2"	57	5.5	140	0.8
04	3/4"	64	6.25	159	1.0
05	1"	73	7.1875	183	1.4
75 72 06	1-1/4"	83	8.5625	218	2.0
07	1-1/2"	99	9.5625	243	2.9
08	2"	95	11.75	299	4.5

Econosto Model No. : 1400

Gate Valves (ANSI)
Cast Iron
ASME Flanges
Pressure Rating 125 lbs

Cast iron gate valves with solid wedge, bronze seats, pressure rating 125 lbs, full bore, rising stem, non-rising handwheel, bolted bonnet with yoke, flat flanges acc. to ASME B16.1 (125#), face to face acc. to ASME B16. 10, complies with requirements of MSS SP-70.



Pressure and Temperature Range

	0/20°C	178°C
2" - 12"	13.8 bar	8.6 bar
	125 lbs SWP and 200 lbs WOG (non-shock)	

Material Specification

Component	Material	US
Body	Cast iron	ASTM A126 Gr.B
Bonnet	Cast iron	ASTM A126 Gr.B
Wedge (2" – 3")	Bronze	ASTM B62
Wedge (4" – 12")	Cast iron	ASTM A126 Gr.B
Seats (Body)	Bronze	ASTM B62
Seats (Wedge)	Bronze	ASTM B62
Stem	Brass	
Gland	Cast iron	ASTM A126 gr,B
Gland Packing	Graphite	Graphite
Bonnet Gasket	Graphite	Graphite
Handwheel	Cast iron	

How to order: CODE

Gate valve (ANSI), cast iron, ASME flanges, pressure rating 125 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight
		L	H open	M	Kgs
75 72 41	2"	178	381	178	19
42	2-1/2"	191	429	203	25
43	3"	203	476	203	34
44	4"	229	578	254	51
45	6"	267	765	305	77
75 72 46	8"	292	1,019	356	124
47	10"	330	1,226	406	218
48	12"	356	1,445	457	299

Econosto Model No. : 1800

Gate Valves (ANSI)

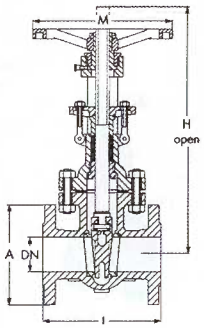
Cast Steel

ASME Flanges

Pressure Rating 150 lbs and 300 lbs

Cast steel gate valves with flexible wedge, stainless steel seats, pressure rating 150 lbs and 300 lbs, full bore, rising stem, non-rising handwheel, bolted bonnet with yoke, flanged connection acc. to ASME B16.5 ("raised face – smooth finish"), face to face acc. to ASME B16.10. On request, supplied including EN 10204 3.1.B material and test certificate.

Application: steam, water, oil, vapours and gases.



Pressure and Temperature Range

	ASTM A216 WCB						
	-29/38°C	93°C	149°C	204°C	260°C	316°C	343°C
150 lbs	19.7 bar	17.9	15.9	13.8	11.7	9.7	8.6
300 lbs	51 bar	46.5	45.2	43.8	41.4	37.9	36.9
	371°C	399°C	427°C	454°C	482°C	510°C	538°C
150 lbs	7.6 bar	6.6	5.5	4.5	3.4	2.4	1.4
300 lbs	36.9 bar	34.8	28.3	18.6	11.7	7.2	3.4
	ASTM A216 WCB is not recommended for long-term duty above 426°C						

Material Specification

Component	Material	US
	Model 1850	
Body and Bonnet	Cast steel	ASTM A216-WCB
Wedge (2" – 10")	Alloyed steel	ASTM A217-CA15
Wedge (12")	Steel, armoured	ASTM A216 WCB / 13Cr armoured
Seats (Body)	Steel, stellited	ASTM A105 stellited
Stem	Stainless steel	ASTM A182-F6a
Gland Packing	Graphite	Graphite
Bonnet Gasket (SS insert)	Graphite	Graphite
Handwheel	Malleable cast iron	Malleable cast iron
	Model 1870	
Body and Bonnet	Cast steel	ASTM A216-WCB
Wedge (2" – 8")	Alloyed steel	ASTM A217-CA15
Wedge (10 - 12")	Steel, armoured	ASTM A216 WCB / 13Cr armoured
Seats (Body)	Steel, stellited	ASTM A105 stellited
Stem	Stainless steel	ASTM A182-F6a
Gland Packing	Graphite	Graphite
Bonnet Gasket 1) (SS insert)	Graphite	Graphite
Handwheel	Malleable cast iron	Malleable cast iron

1) Spiral wound gasket

Pressure Rating 150 lbs

How to order: CODE

Gate valve (ANSI), cast steel, ASME flanges, Pressure rating 150 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight
		L	H open	M	Kgs
75 72 61	2"	178	387	200	18
62	3"	203	481	250	32
63	4"	229	585	300	50
64	6"	267	765	300	77
65	8"	292	956	350	121
75 72 66	10"	330	1,149	400	178
67	12"	356	1,351	450	265

Econosto Model No. : 1850

Pressure Rating 300 lbs

How to order: CODE

Gate valve (ANSI), cast steel, ASME flanges, Pressure ratig 300 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight
		L	H open	M	Kgs
75 72 71	2"	216	410	200	23
72	3"	283	509	250	50
73	4"	305	612	250	71
74	6"	403	805	350	144
75	8"	419	1,000	400	209
75 72 76	10"	457	1,209	450	322
77	12"	502	1,416	500	482

Econosto Model No. : 1870

ANSI Check Valves

Check Valves (ANSI)

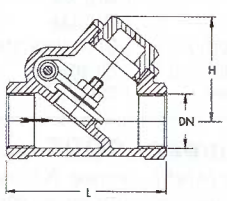
Bronze

NPT Female Threaded Ends

Swing Type

Bronze swing type check valves, bronze seat NPT female threaded ends acc. to ANSI B1.20.1, reduced bore and threaded bonnet. Suitable for horizontal installation.

Application: Steam, water, oil, vapours and gases.



Pressure and Temperature Range

	0/65°C	218°C
1/2" - 2"	27.5 bar	13.7 bar
	200 lbs SWP and 425° F and 400 lbs WOG at 150° F (non-shock)	

Material Specification

Component	Material	US
Body	Bronze	ASTM B61
Bonnet	Bronze	ASTM B61
Seats (Body and Disc)	Bronze	ASTM B61
Disc	Bronze	ASTM B61
Bonnet Gasket	Asbestos-free	

How to order: CODE

Check valve (ANSI), bronze, NPT female threaded ends, swing type, SIZE DN

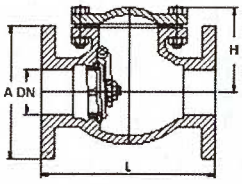
Unit Per Pc.

CODE	DN	Size mm L	Size mm H	Weight Kgs	CODE	DN	Size mm L	Size mm H	Weight Kgs
75 73 11	1/2"	41.3	44.5	0.22	**75 73 14**	1-1/4"	111.1	76.2	0.67
12	3/4"	76.2	49.2	0.33	**15**	1-1/2"	117.5	84.1	0.85
13	1"	93.7	63.5	0.48	**16**	2"	149.2	101.6	1.20

Econost Model No. : 1430

Check Valves (ANSI)
Cast Iron, ASME Flanges
Swing Type
Pressure Rating 125 lbs

Cast iron swing type check valves, bronze seat, pressure rating 125 lbs, straight pattern, full bore, bolted bonnet, flat faced flanges as per ASME B16.1 (125#), face to face as per ASME B16.10, complies with requirements of MSS SP-71 type 1.



Pressure and Temperature Range

	0/65°C	176°C
2" - 12"	13.8 bar	8.6 bar
	125 lbs SWP and 350° F and 200 lbs WOG at 150° F (non-shock)	

Material Specification

Component	Material	US
Body	Cast iron	ASTM A126 Gr.B
Bonnet	Cast iron	ASTM A126 Gr.B
Seat	Bronze	ASTM B62
Hinge Pin	Brass	
Hinge Arm	Cast iron	ASTM A126 Gr.B
Bonnet Gasket	Graphite	Graphite

Remark : 5" though 12" are manufactured with a cast iron disc with bronze sealing ring.

How to order: CODE

Check valve (ANSI), cast iron, ASME flanges, swing type, pressure rating 125 lbs, SIZE DN

Unit Per Pc.

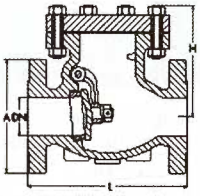
CODE	DN	Size mm L	Size mm A	Size mm H	Weight Kgs
75 73 21	2"	203	152	100	19
28	2-1/2"	216	178	114	25
22	3"	241	191	130	34
23	4"	292	229	156	51
24	6"	356	279	203	77
75 73 25	8"	495	343	240	124
26	10"	622	406	306	218
27	12"	699	483	410	299

Econosto Model No. : 1803

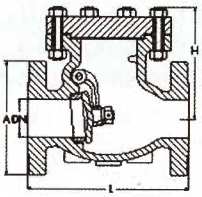
Check Valves (ANSI)
Cast Steel, ASME Flanges
Swing Type
Pressure Rating 150 lbs and 300 lbs

Cast steel swing type check valves, stainless steel seat, pressure rating 150 lbs and 300 lbs, straight pattern, full bore, bolted bonnet, flange sizes acc. to ASME B 16.5 ("raised face – smooth finish") and face to face acc. to ASME B16.10. Suitable for horizontal and vertical (upward flow) installation. On request, supplied including EN 10204 3.1B material and test certificate.

Application: Steam, water, oil, vapours and gases.



1810



1811

Pressure and Temperature Range

	ASTM A216 WCB						
	-29/38°C	93°C	149°C	204°C	260°C	316°C	343°C
150 lbs	19.7 bar	17.9	15.9	13.8	11.7	9.7	8.6
300 lbs	51 bar	46.5	45.2	43.8	41.4	37.9	36.9
	371°C	399°C	427°C	454°C	482°C	510°C	538°C
150 lbs	7.6 bar	6.6	5.5	4.5	3.4	2.4	1.4
300 lbs	36.9 bar	34.8	28.3	18.6	11.7	7.2	3.4
	ASTM A216 WCB is not recommended for long-term duty above 426°C						

Material Specification

Component	Material	US
Body	Cast steel	ASTM A216-WCB
Bonnet (2" – 4")	Forged steel	ASTM A105
Bonnet (5" – 12")	Cast steel	ASTM A216-WCB
Seat	Steel, stellited	ASTM A105 stellited
Disc	Alloyed steel	ASTM A217-CA15
Hinge Pin	Stainless steel	ASTM A276-420
Hinge Arm	Cast steel	ASTM A216-WCB
Bonnet Gasket 1) (SS insert)	Graphite	Graphite

1) Spiral wound seat

Pressure Rating 150 lbs

How to order: CODE

Check valve (ANSI), cast steel, ASME flanges, swing type, pressure rating 150 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L	H	
75 73 31	2"	152	203	151	14
32	3"	191	241	171	25
33	4"	229	292	204	40
34	6"	279	356	297	71
35	8"	343	495	352	118
75 73 36	10"	406	622	390	117
37	12"	483	699	438	263

Econosto Model No. : 1810

Pressure Rating 300 lbs

How to order: CODE

Check valve (ANSI), cast steel, ASME flanges, swing type, pressure rating 300 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm			Weight Kgs
		A	L	H	
75 73 41	2"	165	267	176	20
42	3"	210	318	216	38
43	4"	254	356	259	64
44	6"	318	445	317	115
45	8"	381	533	380	191
75 73 46	10"	445	622	434	310
47	12"	521	711	511	450

Econosto Model No. : 1811

7TH 75

ANSI Strainers

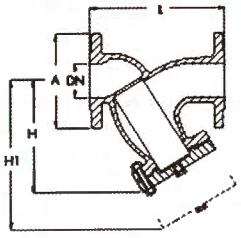
Strainers (ANSI)

Cast Steel, Y-Type

ASME Flanges

Pressure Rating 150 lbs and 300 lbs

Application : steam, water, oil and other process liquids. Fitted with drain plug. On request, supplied including EN 10204 3.1B certificate.



Pressure and Temperature Range

	ASTM A216 WCB						
	-29/38°C	93°C	149°C	204°C	260°C	316°C	343°C
150 lbs	19.7 bar	17.9	15.9	13.8	11.7	9.7	8.6
300 lbs	51 bar	46.5	45.2	43.8	41.4	37.9	36.9
	371°C	399°C	427°C	454°C	482°C	510°C	538°C
150 lbs	7.6 bar	6.6	5.5	4.5	3.4	2.4	1.4
300 lbs	36.9 bar	34.8	28.3	18.6	11.7	7.2	3.4
	ASTM A216 WCB is not recommended for long-term duty above 426°C						

Material Specification

Component	Material	US
Body	Cast steel	ASTM A 216-WCB
Bolter Cover	Forged steel	ASTM A 105(N)
Drain Plug	Stainless steel	AISI 304
Strainer Screen	Stainless steel	AISI 304
Perforation Size 0.6 mm		

Pressure Rating 150 lbs

How to order: CODE

Strainer (ANSI), cast steel, Y-type, ASME flanges, pressure rating 150 lbs, SIZE DN

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	H1	
75 76 01	2"	152	203	205	340	12
02	3"	191	241	255	420	24
03	4"	229	292	300	500	40
04	6"	280	406	390	630	71
05	8"	343	495	490	780	120
75 76 06	10"	406	622	550	850	175
07	12"	483	699	640	1,000	260

Econosto Model No. : 1174

Pressure Rating 300 lbs

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	L	H	H1	
75 76 11	2"	165	267	235	370	22
12	3"	210	318	285	460	37
13	4"	254	356	320	555	56
14	6"	318	445	420	745	116
15	8"	381	559	480	750	180
75 76 16	10"	445	622	600	1,000	271
17	12"	521	711	690	1,100	400

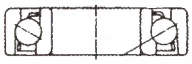
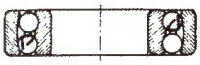
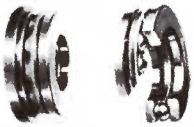
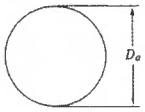
Econosto Model No. : 1176

Capacity for Water in kg/hour at 20°C

P [bar]	DN [mm]									
	15	20	25	32	40	50	65	80	100	125
0.5	341	607	948	1,553	2,427	3,792	6,408	9,706	15,166	23,697
1	483	858	1,341	2,196	3,432	5,362	9,062	13,727	21,448	33,513
1.5	591	1051	1,642	2,690	4,203	6,567	11,098	16,812	26,268	41,044
2	682	1,213	1,896	3,106	4,853	7,583	12,815	19,412	30,332	47,394
3	836	1,486	2,322	3,804	5,944	9,287	15,695	23,775	37,148	58,044
4	965	1,716	2,681	4,393	6,863	10,724	18,124	27,453	42,896	67,025
5	1,079	1,918	2,997	4,911	7,673	11,990	20,262	30,693	47,958	
6	1,182	2,101	3,284	5,380	8,406	13,134	22,196	33,623	52,536	
7	1,277	2,270	3,547	5,811	9,079	14,187	23,975	36,317		
8	1,365	2,427	3,792	6,212	9,706	15,166	25,631	38,825		
9	1,448	2,574	4,021	6,589	10,295	16,086	27,184			
10	1,526	2,713	4,239	6,945	10,852	16,956	28,656			
11	1,601	2,845	4,446	7,284	11,381	17,784				
12	1,672	2,972	4,644	7,608	11,887	18,574				
13	1,740	3,093	4,833	7,919	12,373	19,333				
14	1,806	3,210	5,016	8,218	12,840	20,063				
15	1,869	3,323	5,192	8,506	13,291	20,767				
16	1,930	3,432	5,362							

77

BEARINGS

Bearings P. 77-1 ~ 4	Single Row Deep Groove Radial Ball Bearings P. 77-4 ~ 6
Single Row Angular Contact Ball Bearings  P. 77-6	Double Row Self-Aligning Ball Bearings  P. 77-6 ~ 7
Cylindrical Roller Bearings P. 77-7 ~ 8	Tapered Roller Bearings P. 77-8 ~ 9
Spherical Roller Bearings P. 77-9 ~ 10	Needle Roller Bearings P. 77-10
Thrust Ball Bearings  P. 77-10 ~ 12	Steel Balls for Ball Bearings  P. 77-12
Bearings Units P. 77-12	

Bearings

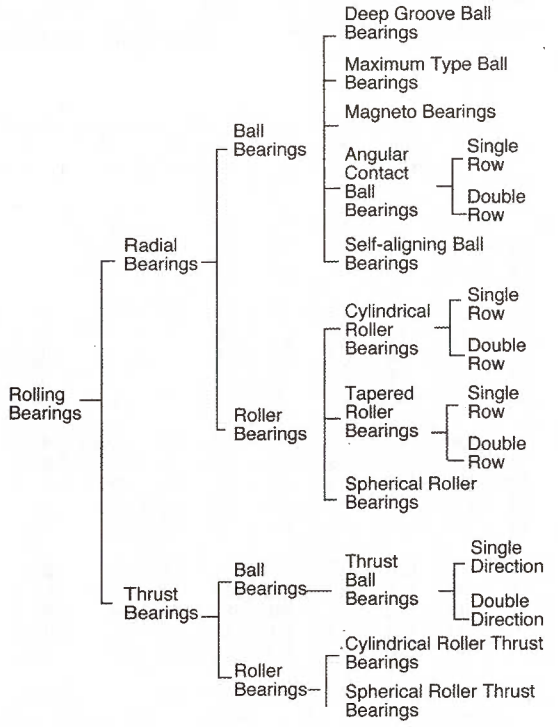
The necessary information for ordering a certain bearing type is almost always located on the bearing itself in the form of a bearing number. The bearings themselves may only have a basic number on the inner or outer ring but the outer cover or shield of the bearing will usually show the complete bearing number.

If there are several numbers marked on the bearing or the numbers have been worn out and are hard to read, the following numbers and sizes will help you in ordering the proper bearing. The bearing numbers can also be insightful as to what bearings can be used in the place of others in a situation where there are no spares. For example, double shield bearings can be used instead of single shield, or single shield bearings can be used instead of no shield, and snap ring bearings can be substituted for non snap ring bearings.

By showing the bearing numbers as well as prefixes and suffixes, the correct bearing size and construction may be obtained without sending the bearing ashore for identification or waiting until a vendor can board the ship.

Bearings should be kept in their original packing for easy identification and stored in a clean, dry place. If dirt gets mixed in with the workings of the bearings, the life of the bearings will be shortened. Therefore, only clean lubricants should be used with the bearings.

Tables for the Classification of All Bearings



Main Manufacturer's Suffix Table

Manufacturers	Manufacturers Abbreviation	One-side Metal Shielded	Two-side Metal Shielded	With Snap Ring Groove	With Groove & Snap Ring	One-side Rubber Sealed	Two-side Rubber Sealed
SKF Multitech AB, Sweden	SKF	Z	2Z	N	NR	RS	2RS
RHP Bearing Ltd. U.K.	RHP	Z	ZZ	N	NR	RS	2RS
FAG Kugelfischer Georg Schafer KGaA, Germany	FAG	Z	2Z	N	NR	RS	2RS
The Timken Corporation U.S.A.	Timken	D	DD	-	G	P	PP
Koyo Seiko Co., Ltd. Japan	KOYO	Z	ZZ	N	NR	RS	2RS
The Toyo Bearing MFG Co., Ltd. Japan	NTN	Z	ZZ	N	NR	LU	LLU
Nippon Seiko KK Japan	NSK	Z	ZZ	N	NR	DU	DDU

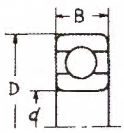
(to be continued)

Summary of Ball & Roller Bearing

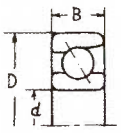
Type	Name	Light Duty	Medium Duty
Radial Bearing			
	Single Row Deep Groove Ball Bearing	6000 6200 6400 6800 6900 16000	6300
	Single Row Angular Contact Ball Bearing	7200	7300
	Double Row Self Aligning Ball Bearing	1200 1200K 2200 2200K	1300 1300K 2300 2300K
Radial Bearing			
	Cylindrical Roller Bearing	N200 NU200 NJ200 NF200	N300 NU300 NJ300 NF300 NH300
Ball & Roller Bearing			
	Tapered Roller Bearing	30200 32200	30300 32300
	Spherical Roller Bearing	22200 22200K	22300 22300K
	Needle Roller Bearing	NA4900	
Thrust Ball Bearing			
	Single Direction Trust Ball Bearing	51100 51200 53200 53200U	51300 53300 53300U
	Double Direction Trust Ball Bearing	52200 54200 54200U	52300 54300 54300U

Ball & Roller Bearing (Light Duty)

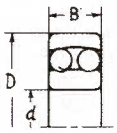
Type & Main Size Table



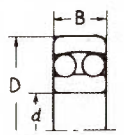
6200 Type



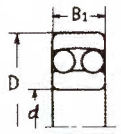
7200 Type



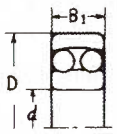
1200 Type



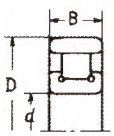
1200K Type



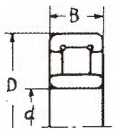
2200 Type



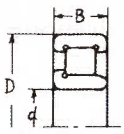
2200K Type



N200 Type



NU200 Type



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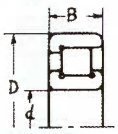
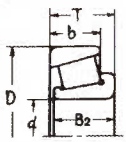
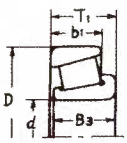


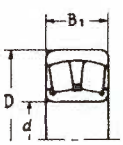
NF200 Type



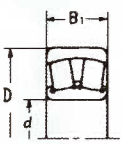
30200 Type



32200 Type



22200 Type



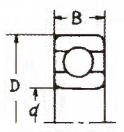
22200K Type

Unit :mm

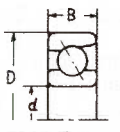
No.	d	D	B	B_1	B_2	B_3	T	T_1
00	10	30	9	14				
01	12	32	10	14				
02	15	35	11	14				
03	17	40	12	16	12		13.25	
04	20	47	14	18	14		15.25	
05	25	52	15	18	15		16.25	
06	30	62	16	20	16	20	17.25	21.25
07	35	72	17	23	17	23	18.25	24.25
08	40	80	18	23	18	23	19.75	24.75
09	45	85	19	23	19	23	20.75	24.75
10	50	90	20	23	20	23	21.75	24.75
11	55	100	21	25	21	25	22.75	26.75
12	60	110	22	28	22	28	23.75	29.75
13	65	120	23	31	23	31	24.75	32.75
14	70	125	24	31	24	31	26.75	33.25
15	75	130	25	31	25	31	27.25	33.25
16	80	145	26	33	26	33	28.25	33.25
17	85	150	28	36	28	36	30.5	38.5
18	90	160	30	40	30	40	32.5	42.5
19	95	170	32	43	32	43	34.5	45.5
20	100	180	34	46	34	46	37	49

Ball & Roller Bearing (Medium Duty)

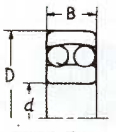
Type & Main Size Table



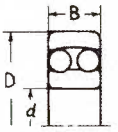
6300 Type



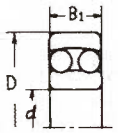
7300 Type



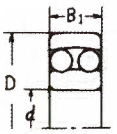
1300 Type



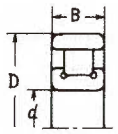
1300K Type



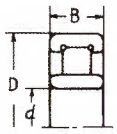
2300 Type



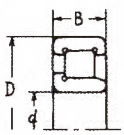
2300K Type



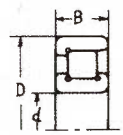
N300 Type



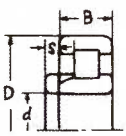
NU300 Type



NJ300 Type



NF300 Type



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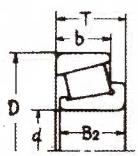
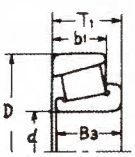
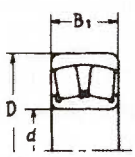


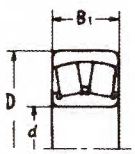
30300 Type



32300 Type



22300 Type



22300K Type

Unit :mm

No.	d	D	B	B_1	B_2	B_3	T	T_1
00	10	35	11	17				
01	12	37	12	17				
02	15	42	13	17	13		14.25	
03	17	47	14	19	14		15.25	
04	20	52	15	21	15		16.25	
05	25	62	17	24	17	24	18.25	25.25
06	30	72	19	27	19	27	20.75	28.75
07	35	80	21	31	21	31	22.75	32.75
08	40	90	23	33	23	33	25.25	35.25
09	45	100	25	36	25	36	27.25	38.25
10	50	110	27	40	27	40	29.25	42.25
11	55	120	29	43	29	43	31.5	45.5
12	60	130	31	46	31	46	33.5	48.5
13	65	140	33	48	33	48	36	51
14	75	150	35	51	35	51	38	54
15	75	160	37	55	37	55	40	58
16	80	170	39	58	39	58	42.5	61.5
17	85	180	41	60	41	60	44.5	63.5
18	90	190	43	64	43	64	46.5	67.5
19	95	200	45	67	45	67	49.5	71.5
20	100	215	47	73	47	73	51.5	77.5

Single Row Deep Groove

Radial Ball Bearings

These are the most widely used ball bearing types which incorporate deep, uninterrupted raceways making the bearing suitable for radial loads or a combination of radial and thrust loads in either direction. The simple symmetrical design of these bearings makes them easy to refine to super-precision tolerance for operations at high speed.

Suffixes for Bearings

NO SUFFIX	Open type
Z	One-side metal shielded
ZZ.....	Two-side metal shielded
N	With snap ring groove
NR	With groove & snap ring
ZNR.....	One-side metal shielded with snap ring
LU or RS	One-side rubber sealed
LLU or 2RS.....	Two-side rubber sealed
C3	Radial clearance larger than normal
M	Machined brass cage, ball riding
N	Circular groove for snap ring
RSR.....	One seal
T	Moulded snap type cage of glass-fibre reinforced polyamide
ZR.....	One shield
ZRN.....	One shield•circular groove for snap ring
2RSR.....	Two seals
2ZR.....	Two shields
2ZRN.....	Two shields•circular groove for snap ring

Series 6000 Open Type

Unit Per Pc.

Series 6000 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 01 01	6000	10	26	8	**77 01 17**	6016	80	125	22
02	01	12	28	8	**18**	17	85	130	22
03	02	15	32	9	**19**	18	90	140	24
04	03	17	35	10	**20**	19	95	145	24
05	04	20	42	12	**21**	20	100	150	24
77 01 06	6005	25	47	12	**77 01 22**	6021	105	160	26
07	06	30	55	13	**23**	22	110	170	28
08	07	35	62	14	**24**	24	120	180	28
09	08	40	68	15	**25**	26	130	200	33
10	09	45	75	16	**26**	28	140	210	33
77 01 11	6010	50	80	16	**77 01 27**	6030	150	225	35
12	11	55	90	18	**28**	32	160	240	38
13	12	60	95	18	**29**	34	170	260	42
14	13	65	100	18	**30**	36	180	280	46
15	14	70	110	20	**31**	38	190	290	46
77 01 16	6015	75	115	20	**77 01 32**	6040	200	310	51

Series 6000Z One Side Shielded

Unit Per Pc.

Series 6000Z One-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 01 41	6000Z	10	26	8	**77 01 49**	6008Z	40	68	15
42	01Z	12	28	8	**50**	09Z	45	75	16
43	02Z	15	32	9	**51**	10Z	50	80	16
44	03Z	17	35	10	**52**	11Z	55	90	18
45	04Z	20	42	12	**53**	12Z	60	95	18
77 01 46	6005Z	25	47	12	**77 01 54**	6013Z	65	100	18
47	06Z	30	55	13	**55**	14Z	70	110	20
48	07Z	35	62	14	**56**	15Z	75	115	20

Series 6000ZZ Two-Side Shielded

Unit Per Pc.

Series 6000ZZ Two-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 01 61	6000ZZ	10	26	8	**77 01 69**	6008ZZ	40	68	15
62	01ZZ	12	28	8	**70**	09ZZ	45	75	16
63	02ZZ	15	32	9	**71**	10ZZ	50	80	16
64	03ZZ	17	35	10	**72**	11ZZ	55	90	18
65	04ZZ	20	42	12	**73**	12ZZ	60	95	18
77 01 66	6005ZZ	25	47	12	**77 01 74**	6013ZZ	65	100	18
67	06ZZ	30	55	13	**75**	14ZZ	70	110	20
68	07ZZ	35	62	14	**76**	15ZZ	75	115	20

Series 6200 Open Type

Unit Per Pc.

Series 6200 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 02 01	6200	10	30	9	**77 02 16**	6215	75	130	25
02	01	12	32	10	**17**	16	80	140	26
03	02	15	35	11	**18**	17	85	150	28
04	03	17	40	12	**19**	18	90	160	30
05	04	20	47	14	**20**	19	95	170	32
77 02 06	6205	25	52	15	**77 02 21**	6220	100	180	34
07	06	30	62	16	**22**	21	105	190	36
08	07	35	72	17	**23**	22	110	200	38
09	08	40	80	18	**24**	24	120	215	40
10	09	45	85	19	**25**	26	130	230	40
77 02 11	6210	50	90	20	**77 02 26**	6228	140	250	42
12	11	55	100	21	**27**	30	150	270	45
13	12	60	110	22					
14	13	65	120	23					
15	14	70	125	24					

Series 6200Z One-Side Shielded

Unit Per Pc.

Series 6200Z One-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 02 31	6200Z	10	30	9	**77 02 39**	6208Z	40	80	18
32	01Z	12	32	10	**40**	09Z	45	85	19
33	02Z	15	35	11	**41**	10Z	50	90	20
34	03Z	17	40	12	**42**	11Z	55	100	21
35	04Z	20	47	14	**43**	12Z	60	110	22
77 02 36	6205Z	25	52	15	**77 02 44**	6213Z	65	120	23
37	06Z	30	62	16	**45**	14Z	70	125	24
38	07Z	35	72	17	**46**	15Z	75	130	25

Series 6200ZZ Two-Side Shielded

Unit Per Pc.

Series 6200ZZ Two-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 02 51	6200ZZ	10	30	9	**77 02 59**	6208ZZ	40	80	18
52	01ZZ	12	32	10	**60**	09ZZ	45	85	19
53	02ZZ	15	35	11	**61**	10ZZ	50	90	20
54	03ZZ	17	40	12	**62**	11ZZ	55	100	21
55	04ZZ	20	47	14	**63**	12ZZ	60	110	22
77 02 56	6205ZZ	25	52	15	**77 02 64**	6213ZZ	65	120	23
57	06ZZ	30	62	16	**65**	14ZZ	70	125	24
58	07ZZ	35	72	17	**66**	15ZZ	75	130	25

Series 6200RS One-side Sealed

Unit Per Pc.

Series 6200RS One-Side Rubber Sealed

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 02 71	6200RS	10	30	9	**77 02 79**	6208RS	40	80	18
72	01RS	12	32	10	**80**	09RS	45	85	19
73	02RS	15	35	11	**81**	10RS	50	90	20
74	03RS	17	40	12	**82**	11RS	55	100	21
75	04RS	20	47	14	**83**	12RS	60	110	22
77 02 76	6205RS	25	52	15	**77 02 84**	6213RS	65	120	23
77	06RS	30	62	16	**85**	14RS	70	125	24
78	07RS	35	72	17	**86**	15RS	75	130	25

Series 6200-2RS Two-Side Sealed

Unit Per Pc.

Series 6200-2RS Two-Side Rubber Sealed

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 03 01	6200-2RS	10	30	9	**77 03 09**	6208-2RS	40	80	18
02	01-2RS	12	32	10	**10**	09-2RS	45	85	19
03	02-2RS	15	35	11	**11**	10-2RS	50	90	20
04	03-2RS	17	40	12	**12**	11-2RS	55	100	21
05	04-2RS	20	47	14	**13**	12-2RS	60	110	22
77 03 06	6205-2RS	25	52	15	**77 03 14**	6213-2RS	65	120	23
07	06-2RS	30	62	16	**15**	14-2RS	70	125	24
08	07-2RS	35	72	17	**16**	15-2RS	75	130	25

Series 6300 Open Type

Unit Per Pc.

Series 6300 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 03 21	6300	10	35	11	**77 03 35**	6314	70	150	35
22	01	12	37	12	**36**	15	75	160	37
23	02	15	42	13	**37**	16	80	170	39
24	03	17	47	14	**38**	17	85	180	41
25	04	20	52	15	**39**	18	90	190	43
77 03 26	6305	25	62	17	**77 03 40**	6319	95	200	45
27	06	30	72	19	**41**	20	100	215	47
28	07	35	80	21	**42**	21	105	225	49
29	08	40	90	23	**43**	22	110	240	50
30	09	45	100	25	**44**	24	120	260	55
77 03 31	6310	50	110	27	**77 03 45**	6326	130	280	58
32	11	55	120	29	**46**	28	140	300	62
33	12	60	130	31	**47**	30	150	320	65
34	13	65	140	33					

7TH
77

Series 6300Z One-Side Shielded

Unit Per Pc.

Series 6300Z One-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 03 51	6300Z	10	35	11	**77 03 59**	6308Z	40	90	23
52	01Z	12	37	12	**60**	09Z	45	100	25
53	02Z	15	42	13	**61**	10Z	50	110	27
54	03Z	17	47	14	**62**	11Z	55	120	29
55	04Z	20	52	15	**63**	12Z	60	130	31
77 03 56	6305Z	25	62	17	**77 03 64**	6313Z	65	140	33
57	06Z	30	72	19	**65**	14Z	70	150	35
58	07Z	35	80	21	**66**	15Z	75	160	37

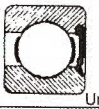
Series 6300ZZ Two-Side Shielded

Unit Per Pc.

Series 6300ZZ Two-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 03 71	6300ZZ	10	35	11	**77 03 79**	6308ZZ	40	90	23
72	01ZZ	12	37	12	**80**	09ZZ	45	100	25
73	02ZZ	15	42	13	**81**	10ZZ	50	110	27
74	03ZZ	17	47	14	**82**	11ZZ	55	120	29
75	04ZZ	20	52	15	**83**	12ZZ	60	130	31
77 03 76	6305ZZ	25	62	17	**77 03 84**	6313ZZ	65	140	33
77	06ZZ	30	72	19	**85**	14ZZ	70	150	35
78	07ZZ	35	80	21	**86**	15ZZ	75	160	37

Series 6300RS One-Side Sealed



Unit Per Pc.

Series 6300RS One-Side Sealed

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 04 01	6300RS	10	35	11	**77 04 09**	6308RS	40	90	23
02	01RS	12	37	12	**10**	09RS	45	100	25
03	02RS	15	42	13	**11**	10RS	50	110	27
04	03RS	17	47	14	**12**	11RS	55	120	29
05	04RS	20	52	15	**13**	12RS	60	130	31
77 04 06	6305RS	25	62	17	**77 04 14**	6313RS	65	140	33
07	06RS	30	72	19	**15**	14RS	70	150	35
08	07RS	35	80	21	**16**	15RS	75	160	37

Series 6300-2RS Two-Side Sealed

Unit Per Pc.

Series 6300-2RS Two-Side Sealed

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 04 21	6300-2RS	10	35	11	**77 04 29**	6308-2RS	40	90	23
22	01-2RS	12	37	12	**30**	09-2RS	45	100	25
23	02-2RS	15	42	13	**31**	10-2RS	50	110	27
24	03-2RS	17	47	14	**32**	11-2RS	55	120	29
25	04-2RS	20	52	15	**33**	12-2RS	60	130	31
77 04 26	6305-2RS	25	62	17	**77 04 34**	6313-2RS	65	140	33
27	06-2RS	30	72	19	**35**	14-2RS	70	150	35
28	07-2RS	35	80	21	**36**	15-2RS	75	160	37

Series 6400 Open Type

Unit Per Pc.

Series 6400 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 04 41	6403	17	62	17	**77 04 49**	6411	55	140	33
42	04	20	72	19	**50**	12	60	150	35
43	05	25	80	21	**51**	13	65	160	37
44	06	30	90	23	**52**	14	70	180	42
45	07	35	100	25	**53**	15	75	190	45
77 04 46	6408	40	110	27	**77 04 54**	6416	80	200	48
47	09	45	120	29	**55**	17	85	210	52
48	10	50	130	31	**56**	18	90	225	54

Series 600-620-630 OpenType

Unit Per Pc.

Series 600-620-630 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 04 61	634	4	16	5	**77 04 64**	627	7	22	7
62	635	5	19	6	**65**	608	8	22	7
63	626	6	19	6	**66**	629	9	26	8

Bearings
Single Row Deep Groove
Series 6000 C3

Open Type and radial clearance is larger than normal series 6000.

Unit Per Pc.

Series 6000 C3 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 05 01	6000 C3	10	26	8	**77 05 17**	6016 C3	80	125	22
02	6001 C3	12	28	8	**18**	6017 C3	85	130	22
03	6002 C3	15	32	9	**19**	6018 C3	90	140	24
04	6003 C3	17	35	10	**20**	6019 C3	90	145	24
05	6004 C3	20	42	12	**21**	6020 C3	100	150	24
77 05 06	6005 C3	25	47	12	**77 05 22**	6021 C3	105	160	26
07	6006 C3	30	55	13	**23**	6022 C3	110	170	28
08	6007 C3	35	62	14	**24**	6024 C3	120	180	28
09	6008 C3	40	68	15	**25**	6026 C3	130	200	33
10	6009 C3	45	75	16	**26**	6028 C3	140	210	33
77 05 11	6010 C3	50	80	16	**77 05 27**	6030 C3	150	225	35
12	6011 C3	55	90	18	**28**	6032 C3	160	240	38
13	6012 C3	60	95	18	**29**	6034 C3	170	260	42
14	6013 C3	65	100	18	**30**	6036 C3	180	280	46
15	6014 C3	70	110	20	**31**	6038 C3	190	290	46
77 05 16	6015 C3	75	115	20	**77 05 32**	6040 C3	200	310	51

Series 6000Z C3

One-Side Shielded and radial clearance is larger than normal series 6000Z.

Unit Per Pc.

Series 6000Z C3 One-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 05 41	6000Z C3	10	26	8	**77 05 49**	6008Z C3	40	68	15
42	6001Z C3	12	28	8	**50**	6009Z C3	45	75	16
43	6002Z C3	15	32	9	**51**	6010Z C3	50	80	16
44	6003Z C3	17	35	10	**52**	6011Z C3	55	90	18
45	6004Z C3	20	42	12	**53**	6012Z C3	60	95	18
77 05 46	6005Z C3	25	47	12	**77 05 54**	6013Z C3	65	100	18
47	6006Z C3	30	55	13	**55**	6014Z C3	70	110	20
48	6007Z C3	35	62	14	**56**	6015Z C3	75	115	20

Series 6000ZZ C3

Two-Side Shielded and radial clearance is larger than normal series 6000ZZ.

Unit Per Pc.

Series 6000ZZ C3 Two-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 05 61	6000ZZ C3	10	26	8	**77 05 69**	6008ZZ C3	40	68	15
62	6001ZZ C3	12	28	8	**70**	6009ZZ C3	45	75	16
63	6002ZZ C3	15	32	9	**71**	6010ZZ C3	50	80	16
64	6003ZZ C3	17	35	10	**72**	6011ZZ C3	55	90	18
65	6004ZZ C3	20	42	12	**73**	6012ZZ C3	60	95	18
77 05 66	6005ZZ C3	25	47	12	**77 05 74**	6013ZZ C3	65	100	18
67	6006ZZ C3	30	55	13	**75**	6014ZZ C3	70	110	20
68	6007ZZ C3	35	62	14	**76**	6015ZZ C3	75	115	20

Series 6200 C3

Open Type and radial clearance is larger than normal series 6200.

Unit Per Pc.

Series 6200 C3 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 06 01	6200 C3	10	30	9	**77 06 16**	6215 C3	75	130	25
02	6201 C3	12	32	10	**17**	6216 C3	80	140	26
03	6202 C3	15	35	11	**18**	6217 C3	85	150	28
04	6203 C3	17	40	12	**19**	6218 C3	90	160	30
05	6204 C3	20	47	14	**20**	6219 C3	95	170	32
77 06 06	6205 C3	25	52	15	**77 06 21**	6220 C3	100	180	34
07	6206 C3	30	62	16	**22**	6221 C3	105	190	36
08	6207 C3	35	72	17	**23**	6222 C3	110	200	38
09	6208 C3	40	80	18	**24**	6224 C3	120	215	40
10	6209 C3	45	85	19	**25**	6226 C3	130	230	40
77 06 11	6210 C3	50	90	20	**77 06 26**	6228 C3	140	250	42
12	6211 C3	55	100	21	**27**	6230 C3	150	270	45
13	6212 C3	60	110	22					
14	6213 C3	65	120	23					
15	6214 C3	70	125	24					

Series 6200Z C3

One-Side Shielded and radial clearance is larger than normal series 6200Z.

Unit Per Pc.

Series 6200Z C3 One-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 06 31	6200Z C3	10	30	9	**77 06 39**	6208Z C3	40	80	18
32	6201Z C3	12	32	10	**40**	6209Z C3	45	85	19
33	6202Z C3	15	35	11	**41**	6210Z C3	50	90	20
34	6203Z C3	17	40	12	**42**	6211Z C3	55	100	21
35	6204Z C3	20	47	14	**43**	6212Z C3	60	110	22
77 06 36	6205Z C3	25	52	15	**77 06 44**	6213Z C3	65	120	23
37	6206Z C3	30	62	16	**45**	6214Z C3	70	125	24
38	6207Z C3	35	72	17	**46**	6215Z C3	75	130	25

Series 6200ZZ C3

Two-Side Shielded and radial clearance is larger than normal series 6200ZZ.

Unit Per Pc.

Series 6200ZZ C3 Two-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 06 51	6200ZZ C3	10	30	9	**77 06 59**	6208ZZ C3	40	80	18
52	6201ZZ C3	12	32	10	**60**	6209ZZ C3	45	85	19
53	6202ZZ C3	15	35	11	**61**	6210ZZ C3	50	90	20
54	6203ZZ C3	17	40	12	**62**	6211ZZ C3	55	100	21
55	6204ZZ C3	20	47	14	**63**	6212ZZ C3	60	110	22
77 06 56	6205ZZ C3	25	52	15	**77 06 64**	6213ZZ C3	65	120	23
57	6206ZZ C3	30	62	16	**65**	6214ZZ C3	70	125	24
58	6207ZZ C3	35	72	17	**66**	6215ZZ C3	75	130	25

Series 6300 C3

Open Type and radial clearance is larger than normal series 6300.

Unit Per Pc.

Series 6300 C3 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 07 01	6300 C3	10	35	11	**77 07 16**	6315 C3	75	160	37
02	6301 C3	12	37	12	**17**	6316 C3	80	170	39
03	6302 C3	15	42	13	**18**	6317 C3	85	180	41
04	6303 C3	17	47	14	**19**	6318 C3	90	190	43
05	6304 C3	20	52	15	**20**	6319 C3	95	200	45
77 07 06	6305 C3	25	62	17	**77 07 21**	6320 C3	100	215	47
07	6306 C3	30	72	19	**22**	6321 C3	105	225	49
08	6307 C3	35	80	21	**23**	6322 C3	110	240	50
09	6308 C3	40	90	23	**24**	6324 C3	120	260	55
10	6309 C3	45	100	25	**25**	6326 C3	130	280	58
77 07 11	6310 C3	50	110	27	**77 07 26**	6328 C3	140	300	62
12	6311 C3	55	120	29	**27**	6330 C3	150	320	65
13	6312 C3	60	130	31					
14	6313 C3	65	140	33					
15	6314 C3	70	150	35					

Series 6300Z C3

One-Side Shielded and radial clearance is larger than normal series 6300Z.

Unit Per Pc.

Series 6300Z C3 One-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 07 31	6300Z C3	10	35	11	**77 07 39**	6308Z C3	40	90	23
32	6301Z C3	12	37	12	**40**	6309Z C3	45	100	25
33	6302Z C3	15	42	13	**41**	6310Z C3	50	110	27
34	6303Z C3	17	47	14	**42**	6311Z C3	55	120	29
35	6304Z C3	20	52	15	**43**	6312Z C3	60	130	31
77 07 36	6305Z C3	25	62	17	**77 07 44**	6313Z C3	65	140	33
37	6306Z C3	30	72	19	**45**	6314Z C3	70	150	35
38	6307Z C3	35	80	21	**46**	6315Z C3	75	160	37

Series 6300ZZ C3

Two-Side Shielded and radial clearance is larger than normal series 6300ZZ.

Unit Per Pc.

Series 6300ZZ C3 Two-Side Metal Shielded

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 07 51	6300ZZ C3	10	35	11	**77 07 59**	6308ZZ C3	40	90	23
52	6301ZZ C3	12	37	12	**60**	6309ZZ C3	45	100	25
53	6302ZZ C3	15	42	13	**61**	6310ZZ C3	50	110	27
54	6303ZZ C3	17	47	14	**62**	6311ZZ C3	55	120	29
55	6304ZZ C3	20	52	15	**63**	6312ZZ C3	60	130	31
77 07 56	6305ZZ C3	25	62	17	**77 07 64**	6313ZZ C3	65	140	33
57	6306ZZ C3	30	72	19	**65**	6314ZZ C3	70	150	35
58	6307ZZ C3	35	80	21	**66**	6315ZZ C3	75	160	37

Series 6400 C3

Open Type and radial clearance is larger than normal series 6400.

Unit Per Pc.

Series 6400 C3 Open Type

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 07 71	6403 C3	17	62	17	**77 07 79**	6411 C3	55	140	33
72	6404 C3	20	72	19	**80**	6412 C3	60	150	35
73	6405 C3	25	80	21	**81**	6413 C3	65	160	37
74	6406 C3	30	90	23	**82**	6414 C3	70	180	42
75	6407 C3	35	100	25	**83**	6415 C3	75	190	45
77 07 76	6408 C3	40	110	27	**77 07 84**	6416 C3	80	200	48
77	6409 C3	45	120	29	**85**	6417 C3	85	210	52
78	6410 C3	50	130	31	**86**	6418 C3	90	225	54

7TH
77

Single Row Angular Contact Ball Bearings

The raceways of these bearings have a high shoulder on one side and a very low shoulder on the other side and the inner and outer raceways are assembled opposite to each other so that the bearings are primarily designated to carry thrust load in one direction. This construction permits use of the optimum number and size of balls for maximum load capacity. Since these bearings will carry thrust load in one direction only, they are usually mounted in a pair opposed to each other and the axial clearance is adjusted by shims, threaded members, or preloading springs. The standard contact angle is 30° and bearings made to 40° contact angle have the suffix "B".

Series 7200

30° Angular Contact

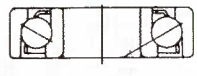
Unit Per Pc.

Series 7200-30° Angular Contact

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 08 01	7200	10	30	9	**77 08 12**	7211	55	100	21
02	7201	12	32	10	**13**	7212	60	110	22
03	7202	15	35	11	**14**	7213	65	120	23
04	7203	17	40	12	**15**	7214	70	125	24
05	7204	20	47	14	**16**	7215	75	130	25
77 08 06	7205	25	52	15	**77 08 17**	7216	80	140	26
07	7206	30	62	16	**18**	7217	85	150	28
08	7207	35	72	17	**19**	7218	90	160	30
09	7208	40	80	18	**20**	7219	95	170	32
10	7209	45	85	19	**21**	7220	100	180	34
77 08 11	7210	50	90	20	**77 08 22**	7221	105	190	36

Series 7300

30° Angular Contact



Unit Per Pc.

Series 7300-30° Angular Contact

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 08 31	7300	10	35	11	**77 08 42**	7311	55	120	29
32	01	12	37	12	**43**	7312	60	130	31
33	02	15	42	13	**44**	7313	65	140	33
34	03	17	47	14	**45**	7314	70	150	35
35	04	20	52	15	**46**	7315	75	160	37
77 08 36	7305	25	62	17	**77 08 47**	7316	80	170	39
37	06	30	72	19	**48**	7317	85	180	41
38	07	35	80	21	**49**	7318	90	190	43
39	08	40	90	23	**50**	7319	95	200	45
40	09	45	100	25	**51**	7320	100	215	47
77 08 41	7310	50	110	27	**77 08 52**	7321	105	225	49

Double Row Self-Aligning Ball Bearings

This design of bearing utilizes two rows of balls with the inner ring having two deep groove raceways while the outer ring has a single continuous spherical raceway. This permits the inner and outer rings to be misaligned relative to each other through a comparatively large angle without imposing moment loads upon the balls. This bearing is frequently used when the inner ring is to be mounted upon an adapter sleeve or when conditions in the machine make it difficult to assure accurate alignment of the inner and outer rings. The boundary dimensions of 1200 and 1300 series are identical with those of 6200 and 6300 single row deep groove bearings. Due to the small contact angle, the thrust capacity of these bearings is limited.

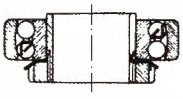
Series 1200-Cylindrical Bore

Unit Per Pc.

Series 1200-Cylindrical Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 10 01	1200	10	30	9	**77 10 13**	1212	60	110	22
02	1201	12	32	10	**14**	1213	65	120	23
03	1202	15	35	11	**15**	1214	70	125	24
04	1203	17	40	12	**16**	1215	75	130	25
05	1204	20	47	14	**17**	1216	80	140	26
77 10 06	1205	25	52	15	**77 10 18**	1217	85	150	28
07	1206	30	62	16	**19**	1218	90	160	30
08	1207	35	72	17	**20**	1219	95	170	32
09	1208	40	80	18	**21**	1220	100	180	34
10	1209	45	85	19	**22**	1221	105	190	36
77 10 11	1210	50	90	20	**77 10 23**	1222	110	200	38
12	1211	55	100	21					

Series 1200K–1/12 Tapered Bore



These types of bearings have to be used with adapter sleeves.

Unit Per Pc.

Series 1200K-1/12 Tapered Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 10 31	1204K	20	47	14	**77 10 40**	1213K	65	120	23
32	1205K	25	52	15	**41**	1215K	75	130	25
33	1206K	30	62	16	**42**	1216K	80	140	26
34	1207K	35	72	17	**43**	1217K	85	150	28
35	1208K	40	80	18	**44**	1218K	90	160	30
77 10 36	1209K	45	85	19	**77 10 45**	1219K	95	170	32
37	1210K	50	90	20	**46**	1220K	100	180	34
38	1211K	55	100	21	**47**	1222K	110	200	38
39	1212K	60	110	22					

* K means 1/12 tapered bore bearing.

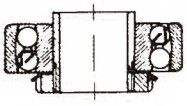
Series 1300–Cylindrical Bore

Unit Per Pc.

Series 1300-Cylindrical Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 10 51	1300	10	35	11	**77 10 63**	1312	60	130	31
52	1301	12	37	12	**64**	1313	65	140	33
53	1302	15	42	13	**65**	1314	70	150	35
54	1303	17	47	14	**66**	1315	75	160	37
55	1304	20	52	15	**67**	1316	80	170	39
77 10 56	1305	25	62	17	**77 10 68**	1317	85	180	41
57	1306	30	72	19	**69**	1318	90	190	43
58	1307	35	80	21	**70**	1319	95	200	45
59	1308	40	90	23	**71**	1320	100	215	47
60	1309	45	100	25	**72**	1321	105	225	49
77 10 61	1310	50	110	27	**77 10 73**	1322	110	240	50
62	1311	55	120	29					

Series 1300K–1/12 Tapered Bore



These types of bearings have to be used with adapter sleeves.

Unit Per Pc.

Series 1300K-1/12 Tapered Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 10 81	1304K	20	52	15	**77 10 90**	1313K	65	140	33
82	1305K	25	62	17	**91**	1315K	75	160	37
83	1306K	30	72	19	**92**	1316K	80	170	39
84	1307K	35	80	21	**93**	1317K	85	180	41
85	1308K	40	90	23	**94**	1318K	90	190	43
77 10 86	1309K	45	100	25	**77 10 95**	1319K	95	200	45
87	1310K	50	110	27	**96**	1320K	100	215	47
88	1311K	55	120	29	**97**	1322K	110	240	50
89	1312K	60	130	31					

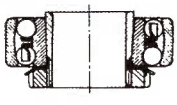
Series 2200–Cylindrical Bore

Unit Per Pc.

Series 2200-Cylindrical Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 11 01	2200	10	30	14	**77 11 13**	2212	60	110	28
02	2201	12	32	14	**14**	2213	65	120	31
03	2202	15	35	14	**15**	2214	70	125	31
04	2203	17	40	16	**16**	2215	75	130	31
05	2204	20	47	18	**17**	2216	80	140	33
77 11 06	2205	25	52	18	**77 11 18**	2217	85	150	36
07	2206	30	62	20	**19**	2218	90	160	40
08	2207	35	72	23	**20**	2219	95	170	43
09	2208	40	80	23	**21**	2220	100	180	46
10	2209	45	85	23	**22**	2221	105	190	50
77 11 11	2210	50	90	23	**77 11 23**	2222	110	200	53
12	2211	55	100	25					

Series 2200K–1/12 Tapered Bore



This type bearing must have an adapter sleeve when in use.

Unit Per Pc.

Series 2200K-1/12 Tapered Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 11 31	2204K	20	47	18	**77 11 40**	2213K	65	120	31
32	2205K	25	52	18	**41**	2215K	75	130	31
33	2206K	30	62	20	**42**	2216K	80	140	33
34	2207K	35	72	23	**43**	2217K	85	150	36
35	2208K	40	80	23	**44**	2218K	90	160	40
77 11 36	2209K	45	85	23	**77 11 45**	2219K	95	170	43
37	2210K	50	90	23	**46**	2220K	100	180	46
38	2211K	55	100	25	**47**	2222K	110	200	53
39	2212K	60	110	28					

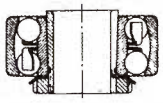
Series 2300–Cylindrical Bore

Unit Per Pc.

Series 2300-Cylindrical Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 11 51	2300	10	35	17	**77 11 63**	2312	60	130	46
52	2301	12	37	17	**64**	2313	65	140	48
53	2302	15	42	17	**65**	2314	70	150	51
54	2303	17	47	19	**66**	2315	75	160	55
55	2304	20	52	21	**67**	2316	80	170	58
77 11 56	2305	25	62	24	**77 11 68**	2317	85	180	60
57	2306	30	72	27	**69**	2318	90	190	64
58	2307	35	80	31	**70**	2319	95	200	67
59	2308	40	90	33	**71**	2320	100	215	73
60	2309	45	100	36	**72**	2321	105	225	77
77 11 61	2310	50	110	40	**77 11 73**	2322	110	240	80
62	2311	55	120	43					

Series 2300K–1/12 Tapered Bore



This type bearing must have adapter sleeves when in use.

Unit Per Pc.

Series 2300K. 1/12 Tapered Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 11 81	2304K	20	52	21	**77 11 90**	2313K	65	140	48
82	2305K	25	62	24	**91**	2315K	75	160	55
83	2306K	30	72	27	**92**	2316K	80	170	58
84	2307K	35	80	31	**93**	2317K	85	180	60
85	2308K	40	90	33	**94**	2318K	90	190	64
77 11 86	2309K	45	100	36	**77 11 95**	2319K	95	200	67
87	2310K	50	110	40	**96**	2320K	100	215	73
88	2311K	55	120	43	**97**	2322K	110	240	80
89	2312K	60	130	46					

Cylindrical Roller Bearings

The rollers of these bearings are essentially cylindrical in shape providing modified line contact with the cylindrical inner and outer rings raceways. The rollers are accurately guided by ground ribs on either the inner ring or the outer ring, thus making these bearings suitable for heavy radial loads and high speed operation. For best results, these bearings should be accurately aligned. The cylindrical shape of the rollers allows the inner ring to have considerable axial movement relative to the outer ring except for the bearings with the prefix "NH". This feature is valuable in accommodating thermal expansion in applications where both the inner and outer ring must be press-fitted. Since the inner and outer rings can be separated from each other, the assembly of equipment is frequently facilitated.

Series N-200

Unit Per Pc.

Series N-200-Roller Bearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 15 01	N-203	17	40	12	**77 15 13**	N-215	75	130	25
02	N-204	20	47	14	**14**	N-216	80	140	26
03	N-205	25	52	15	**15**	N-217	85	150	28
04	N-206	30	62	16	**16**	N-218	90	160	30
05	N-207	35	72	17	**17**	N-219	95	170	32
77 15 06	N-208	40	80	18	**77 15 18**	N-220	100	180	34
07	N-209	45	85	19	**19**	N-221	105	190	36
08	N-210	50	90	20	**20**	N-222	110	200	38
09	N-211	55	100	21	**21**	N-224	120	215	40
10	N-212	60	110	22	**22**	N-226	130	230	40
77 15 11	N-213	65	120	23	**77 15 23**	N-228	140	250	42
12	N-214	70	125	24	**24**	N-230	150	270	45

Series N-300

Unit Per Pc.

Series N-300-Roller Bearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 15 31	N-304	20	52	15	**77 15 41**	N-314	70	150	35
32	N-305	25	62	17	**42**	N-315	75	160	37
33	N-306	30	72	19	**43**	N-316	80	170	39
34	N-307	35	80	21	**44**	N-317	85	180	41
35	N-308	40	90	23	**45**	N-318	90	190	43
77 15 36	N-309	45	100	25	**77 15 46**	N-319	95	200	45
37	N-310	50	110	27	**47**	N-320	100	215	47
38	N-311	55	120	29	**48**	N-321	105	225	49
39	N-312	60	130	31	**49**	N-322	110	240	50
40	N-313	65	140	33	**50**	N-324	120	260	55

Series NU-200

Unit Per Pc.

Series NU-200 Roller Bearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 15 61	NU-203	17	40	12	**77 15 73**	NU-215	75	130	25
62	NU-204	20	47	14	**74**	NU-216	80	140	26
63	NU-205	25	52	15	**75**	NU-217	85	150	28
64	NU-206	30	62	16	**76**	NU-218	90	160	30
65	NU-207	35	72	17	**77**	NU-219	95	170	32
77 15 66	NU-208	40	80	18	**77 15 78**	NU-220	100	180	34
67	NU-209	45	85	19	**79**	NU-221	105	190	36
68	NU-210	50	90	20	**80**	NU-222	110	200	38
69	NU-211	55	100	21	**81**	NU-224	120	215	40
70	NU-212	60	110	22	**82**	NU-226	130	230	40
77 15 71	NU-213	65	120	23	**77 15 83**	NU-228	140	250	42
72	NU-214	70	125	24	**84**	MU-230	150	270	45

Series NU-300

Unit Per Pc.

Series NU-300 Roller Bearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 16 01	NU-304	20	52	15	**77 16 13**	NU-316	80	170	39
02	NU-305	25	62	17	**14**	NU-317	85	180	41
03	NU-306	30	72	19	**15**	NU-318	90	190	43
04	NU-307	35	80	21	**16**	NU-319	95	200	45
05	NU-308	40	90	23	**17**	NU-320	100	215	47
77 16 06	NU-309	45	100	25	**77 16 18**	NU-321	105	225	49
07	NU-310	50	110	27	**19**	NU-322	110	240	50
08	NU-311	55	120	29	**20**	NU-324	120	260	55
09	NU-312	60	130	31	**21**	NU-326	130	280	58
10	NU-313	65	140	33	**22**	NU-328	140	300	62
77 16 11	NU-314	70	150	35	**77 16 23**	NU-330	150	320	65
12	NU-315	75	160	37					

(to be continued)

Series NF-200

Unit Per Pc.

Series NF-200 RollerBearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 16 31	NF-203	17	40	12	**77 16 43**	NF-215	75	130	25
32	NF-204	20	47	14	**44**	NF-216	80	140	26
33	NF-205	25	52	15	**45**	NF-217	85	150	28
34	NF-206	30	62	16	**46**	NF-218	90	160	30
35	NF-207	35	72	17	**47**	NF-219	95	170	32
77 16 36	NF-208	40	80	18	**77 16 48**	NF-220	100	180	34
37	NF-209	45	85	19	**49**	NF-221	105	190	36
38	NF-210	50	90	20	**50**	NF-222	110	200	38
39	NF-211	55	100	21	**51**	NF-224	120	215	40
40	NF-212	60	110	22	**52**	NF-226	130	230	40
77 16 41	NF-213	65	120	23	**77 16 53**	NF-228	140	250	42
42	NF-214	70	125	24	**54**	NF-230	150	270	45

Series NF-300

Unit Per Pc.

Series NF-300 Roller Bearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 16 61	NF-304	20	52	15	**77 16 71**	NF-314	70	150	35
62	NF-305	25	62	17	**72**	NF-315	75	160	37
63	NF-306	30	72	19	**73**	NF-316	80	170	39
64	NF-307	35	80	21	**74**	NF-317	85	180	41
65	NF-308	40	90	23	**75**	NF-318	90	190	43
77 16 66	NF-309	45	100	25	**77 16 76**	NF-319	95	200	45
67	NF-310	50	110	27	**77**	NF-320	100	215	47
68	NF-311	55	120	29	**78**	NF-321	105	225	49
69	NF-312	60	130	31	**79**	NF-322	110	240	50
70	NF-313	65	140	33	**80**	NF-324	120	260	55

Series NH-300

Unit Per Pc.

Series NH-300 Roller Bearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 17 01	NH-306	30	72	19	**77 17 12**	NH-317	85	180	41
02	NH-307	35	80	21	**13**	NH-318	90	190	43
03	NH-308	40	90	23	**14**	NH-319	95	200	45
04	NH-309	45	100	25	**15**	NH-320	100	215	47
05	NH-310	50	110	27	**16**	NH-321	105	225	49
77 17 06	NH-311	55	120	29	**77 17 17**	NH-322	110	240	50
07	NH-312	60	130	31	**18**	NH-324	120	260	55
08	NH-313	65	140	33	**19**	NH-326	130	280	58
09	NH-314	70	150	35	**20**	NH-328	140	300	62
10	NH-315	75	160	37	**21**	NH-330	150	320	65
77 17 11	NH-316	80	170	39					

Tapered Roller Bearings

This design utilizes conical rollers and raceways arranged so that all elements of the roller & raceway cones meet at a common apex on the axis of rotation. The roller is guided by contact between the large end of the roller and a rib on the inner rings. This construction provides high capacity for radial loads & single direction thrust loads. The bearings are usually mounted in pairs with axial adjustment to provide proper running clearance within the bearings. Being separable, the inner and outer rings may be mounted individually. For heavy thrust loads the type 30300D with large contact angle is preferable.

Series 30200

Unit Per Pc.

Series 30200 Tapered Roller

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 20 01	30202	15	35	11	**77 20 12**	30213	65	120	23
02	203	17	40	12	**13**	214	70	125	24
03	204	20	47	14	**14**	215	75	130	25
04	205	25	52	15	**15**	216	80	140	26
05	206	30	62	16	**16**	217	85	150	28
77 20 06	30207	35	72	17	**77 20 17**	30218	90	160	30
07	208	40	80	18	**18**	219	95	170	32
08	209	45	85	19	**19**	220	100	180	34
09	210	50	90	20	**20**	221	105	190	36
10	211	55	100	21	**21**	222	110	200	38
77 20 11	30212	60	110	22	**77 20 22**	30224	120	215	40

Series 30300

Unit Per Pc.

Series 30300 Tapered Roller

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 20 31	30302	15	42	13	**77 20 42**	30313	65	140	33
32	303	17	47	14	**43**	314	70	150	35
33	304	20	52	15	**44**	315	75	160	37
34	305	25	62	17	**45**	316	80	170	39
35	306	30	72	19	**46**	317	85	180	41
77 20 36	30307	35	80	21	**77 20 47**	30318	90	190	43
37	308	40	90	23	**48**	319	95	200	45
38	309	45	100	25	**49**	320	100	215	47
39	310	50	110	27	**50**	321	105	225	49
40	311	55	120	29	**51**	322	110	240	50
77 20 41	30312	60	130	31	**77 20 52**	30324	120	260	55

Series 32200

Unit Per Pc.

Series 32200 Tapered Roller

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 20 61	32206	30	62	20	**77 20 70**	32215	75	130	31
62	207	35	72	23	**71**	216	80	140	33
63	208	40	80	23	**72**	217	85	150	36
64	209	45	85	23	**73**	218	90	160	40
65	210	50	90	23	**74**	219	95	170	43
77 20 66	32211	55	100	25	**77 20 75**	32220	100	180	46
67	212	60	110	28	**76**	221	105	190	50
68	213	65	120	31	**77**	222	110	200	53
69	214	70	125	31	**78**	224	120	215	58

Series 32300

Unit Per Pc.

Series 32300 Tapered Roller

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 20 81	32305	25	62	24	**77 20 91**	32315	75	160	55
82	306	30	72	27	**92**	316	80	170	58
83	307	35	80	31	**93**	317	85	180	60
84	308	40	90	33	**94**	318	90	190	64
85	309	45	100	36	**95**	319	95	200	67
77 20 86	32310	50	110	40	**77 20 96**	32320	100	215	73
87	311	55	120	43	**97**	321	105	225	77
88	312	60	130	46	**98**	322	110	240	80
89	313	65	140	48	**99**	324	120	260	86
90	314	70	150	51					

Spherical Roller Bearings

In this design, two rows of rollers operate in separate raceways ground into the inner ring with a guide rib to guide the rollers. The outer ring has a single spherical raceway, thus allowing the inner ring and rollers to freely compensate for angular errors due to inaccurate machine components or due to elastic deflection of the shaft or housing under loads. As a result of the line contact, a large number of rollers, and the substantial contact angle, these bearings have large radial and thrust load capacity. They are suitable for heavy shock and impact loads.

7TH 77

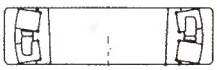
Series 22200–Cylindrical Bore

Unit Per Pc.

Series 22200-Cylindrical Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 25 01	22208	40	80	23	**77 25 16**	22226	130	230	64
02	209	45	85	23	**17**	228	140	250	68
03	210	50	90	23	**18**	230	150	270	73
04	211	55	100	25	**19**	232	160	290	80
05	212	60	110	28	**20**	234	170	310	86
77 25 06	22213	65	120	31	**77 25 21**	22236	180	320	86
07	214	70	125	31	**22**	238	190	340	92
08	215	75	130	31	**23**	240	200	360	98
09	216	80	140	33	**24**	244	220	400	108
10	217	85	150	36	**25**	248	240	440	120
77 25 11	22218	90	160	40	**77 25 26**	22252	260	480	130
12	219	95	170	43	**27**	256	280	500	130
13	220	100	180	46	**28**	260	300	540	140
14	222	110	200	53	**29**	264	320	580	150
15	224	120	215	58					

Series 22200K·1/12 Tapered Bore



This type of bearing must have an adapter sleeve when in use.

Unit Per Pc.

Series 22200K 1/12 Tapered Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 25 41	22208K	40	80	23	**77 25 56**	22226K	130	230	64
42	209K	45	85	23	**57**	228K	140	250	68
43	210K	50	90	23	**58**	230K	150	270	73
44	211K	55	100	25	**59**	232K	160	290	80
45	212K	60	110	28	**60**	234K	170	310	86

(to be continued)

Unit Per Pc.

Series 22200K 1/12 Tapered Bore

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 25 46	22213K	65	120	31	**77 25 61**	22236K	180	320	86
47	214K	70	125	31	**62**	238K	190	340	92
48	215K	75	130	31	**63**	240K	200	360	98
49	216K	80	140	33	**64**	244K	220	400	108
50	217K	85	150	36	**65**	248K	240	440	120
77 25 51	22218K	90	160	40	**77 25 66**	22252K	260	480	130
52	219K	95	170	43	**67**	256K	280	500	130
53	220K	100	180	46	**68**	260K	300	540	140
54	222K	110	200	53	**69**	264K	320	580	150
55	224K	120	215	58					

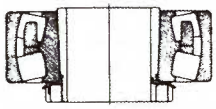
Series 22300–Cylindrical Bore

Unit Per Pc.

Series 22300 Cylindrical Bore Bearing

CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 26 01	22308	40	90	23	**77 26 15**	22324	120	260	86
02	309	45	100	26	**16**	326	130	280	93
03	310	50	110	40	**17**	328	140	300	102
04	311	55	120	43	**18**	330	150	320	108
05	312	60	130	46	**19**	332	160	340	114
77 26 06	22313	65	140	48	**77 26 20**	22334	170	360	120
07	314	70	150	51	**21**	336	180	380	126
08	315	75	160	55	**22**	338	190	400	132
09	316	80	170	58	**23**	340	200	420	138
10	317	85	180	60	**24**	344	220	460	145
77 26 11	22318	90	190	64	**77 26 25**	22348	240	500	155
12	319	95	200	67	**26**	352	260	540	165
13	320	100	215	73	**27**	356	280	580	175
14	322	110	240	80					

Series 22300K–Tapered Bore



Unit Per Pc.

Series 22300K-1/12 Taperd Bore Bearing

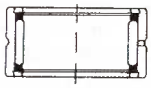
CODE	Bearing No.	Dimensions mm			CODE	Bearing No.	Dimensions mm		
		I.D.	O.D.	Thick			I.D.	O.D.	Thick
77 26 41	22308K	40	90	23	**77 26 55**	22324K	120	260	86
42	309K	45	100	26	**56**	326K	130	280	93
43	310K	50	110	40	**57**	328K	140	300	102
44	311K	55	120	43	**58**	330K	150	320	108
45	312K	60	130	46	**59**	332K	160	340	114
77 26 46	22313K	65	140	48	**77 26 60**	22334K	170	360	120
47	314K	70	150	51	**61**	336K	180	380	126
48	315K	75	160	55	**62**	338K	190	400	132
49	316K	80	170	58	**63**	340K	200	420	138
50	317K	85	180	60	**64**	344K	220	460	145
77 26 51	22318K	90	190	64	**77 26 65**	22348K	240	500	155
52	319K	95	200	67	**66**	352K	260	540	165
53	320K	100	215	73	**67**	356K	280	580	175
54	322K	110	240	80					

Needle Roller Bearings

The needle like small diameter rollers of these bearings are cylindrical in shape and can be fitted to spindles where you do not want a large outside mount as in roller bearings. When ordering, specify the INSIDE and OUTSIDE DIAMETER, the THICKNESS and whether the bearing should be WITH or WITHOUT inner rings.

Series NTN-RNA 4900

Without Inner Ring



Unit Per Pc.

Series RNA-4900 Without Inner Ring

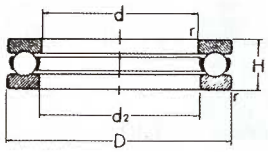
CODE	Bearing No.	Dimensions mm			Maximum R.P.M.
		I.D.	O.D.	Thick	
77 30 01	RNA-4900	10	22	13	28,000
02	-4901	12	24	13	25,000
03	-4902	15	28	13	20,000
04	-4903	17	30	13	18,000
05	-4904	20	37	17	16,000
77 30 06	RNA-49/22	22	39	17	14,000
07	-4905	25	42	17	13,000
08	-49/28	28	45	17	12,000
09	-4906	30	47	17	11,000
10	-49/32	32	52	20	10,000
77 30 11	RNA-4907	35	55	20	9,000
12	-4908	40	62	22	8,000
13	-4909	45	68	22	8,000
14	-4910	50	72	22	7,000
15	-4911	55	80	25	6,000
77 30 16	RNA-4912	60	85	25	6,000
17	-4913	65	90	26	5,000
18	-4914	70	100	30	5,000
19	-4915	75	105	30	5,000
20	-4916	80	110	30	4,000
77 30 21	RNA-4917	85	120	35	4,000
22	-4918	90	125	35	4,000
23	-4919	95	130	35	3,000
24	-4920	100	140	40	3,000

Thrust Ball Bearings

Thrust ball bearings are composed of washer-like bearing rings with raceway grooves for the balls. The ring attached to the shaft is called the inner ring or shaft washer while that attached to the housing is called the outer ring or housing washer. In double direction thrust ball bearings, there are three rings with the central one being fixed to the shaft. Single direction and double direction thrust ball bearings can support thrust loads in one or both directions respectively. There are also thrust ball bearings with an aligning seat washer beneath the outer ring in order to compensate for shaft misalignment or mounting errors. Pressed-steel cages are usually used in the smaller bearings and machined cages are generally used in the larger ones.

Series 51100

With Flat Seat



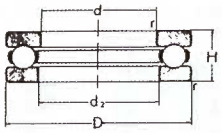
Unit Per Pc.

Series 51100 Single Thrust Ball with Flat Seat

CODE	Bearing No.	Dimensions mm			
		I.D.(d)	I.D.(d2)	O.D.(D)	Thick
77 35 01	51100	10	11	24	9
02	101	12	13	26	9
03	102	15	16	28	9
04	103	17	18	30	9
05	104	20	21	35	10
77 35 06	51105	25	26	42	11
07	106	30	32	47	11
08	107	35	37	52	12
09	108	40	42	60	13
10	109	45	47	65	14
77 35 11	51110	50	52	70	14
12	111	55	57	78	16
13	112	60	62	85	17
14	113	65	67	90	18
15	114	70	72	95	18
77 35 16	51115	75	77	100	19
17	116	80	82	105	19
18	117	85	87	110	19
19	118	90	92	120	20
20	120	100	102	135	25

Series 51200

With Flat Seat



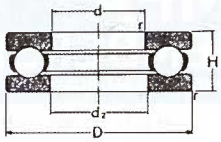
Unit Per Pc.

Series 51200 Single Thrust Ball with Flat Seat

CODE	Bearing No.	Dimensions mm			
		I.D.(d)	I.D.(d2)	O.D.(D)	Thick
77 35 31	51200	10	12	26	11
32	201	12	14	28	11
33	202	15	17	30	12
34	203	17	19	35	12
35	204	20	22	40	14
77 35 36	51205	25	27	47	15
37	206	30	32	52	16
38	207	35	37	62	18
39	208	40	42	68	19
40	209	45	47	73	20
77 35 41	51210	50	52	78	22
42	211	55	57	90	25
43	212	60	62	95	26
44	213	65	67	100	27
45	214	70	72	105	27
77 35 46	51215	75	77	110	27
47	216	80	82	115	28
48	217	85	88	125	31
49	218	90	93	135	35
50	220	100	103	150	38

Series 51300

With Flat Seat



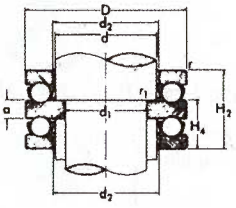
Unit Per Pc.

Series 51300 Single Thrust Ball with Flat Seat

CODE	Bearing No.	Dimensions mm			
		I.D.(d)	I.D.(d2)	O.D.(D)	Thick
77 35 61	51305	25	27	52	18
62	306	30	32	60	21
63	307	35	37	68	24
64	308	40	42	78	26
65	309	45	47	85	28
77 35 66	51310	50	52	95	31
67	311	55	57	105	35
68	312	60	62	110	35
69	313	65	67	115	36
70	314	70	72	125	40
77 35 71	51315	75	77	135	44
72	316	80	82	140	44
73	317	85	88	150	49
74	318	90	93	155	50
75	320	100	103	170	55
77 35 76	51322	110	113	190	63
77	324	120	123	210	70

Series 52200

With Flat Seat



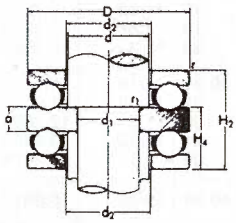
Unit Per Pc.

Series 52200 Double Thrust Ball with Flat Seat

CODE	Bearing No.	Dimensions mm			
		I.D.(d)	I.D.(d2)	O.D.(D)	Thick (H_2)
77 37 31	52202	15	17	32	22
32	04	20	22	40	26
33	05	25	27	47	28
34	06	30	32	52	29
35	07	35	37	62	34
77 37 36	52208	40	42	68	36
37	09	45	47	73	37
38	10	50	52	78	39
39	11	55	57	90	45
40	12	60	62	95	46
77 37 41	52213	65	67	100	47
42	14	70	72	105	47
43	15	75	77	110	47
44	16	80	82	115	48
45	17	85	88	125	55
77 37 46	52218	90	93	135	62
47	20	100	103	150	67
48	22	110	113	160	67

Series 52300

With Flat Seat



Unit Per Pc.

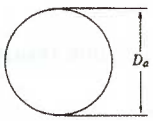
Series 52300 Double Thrust Ball with Flat Seat

CODE	Bearing No.	Dimensions mm			
		I.D.(d)	I.D.(d2)	O.D.(D)	Thick (H_2)
77 37 61	52305	25	27	52	34
62	06	30	32	60	38
63	07	35	37	68	44
64	08	40	42	78	49
65	09	45	47	85	52
77 37 66	52310	50	52	95	58
67	11	55	57	105	64
68	12	60	62	110	64
69	13	65	67	115	65
70	14	70	72	125	72
77 37 71	52315	75	77	135	79
72	16	80	82	140	79
73	17	85	88	150	87
74	18	90	93	155	88
75	20	100	103	170	97
77 37 76	52322	110	113	190	110
77	24	120	123	210	123

7TH
77

Steel Balls for Ball Bearing

Made of high carbon chromium bearing steel.

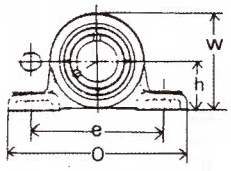


Unit Per Pc.

CODE	Nominal Size Inch	Basic Diam.mm Da	CODE	Nominal Size Inch	Basic Diam.mm Da
77 40 01	0.5 mm	0.5000	**77 40 27**	5/8	15.8750
02	0.6 "	0.6000	**28**	21/32	16.0688
03	0.8 "	0.8000	**29**	11/16	17.4625
04	1.0 "	1.0000	**30**	23/32	18.2562
05	1.2 "	1.2000	**31**	3/4	19.0500
77 40 06	1.5 "	1.5000	**77 40 32**	25/32	19.8438
07	1/16	1.5875	**33**	13/16	20.6375
08	2.0mm	2.0000	**34**	27/32	21.4312
09	3/32	2.3812	**35**	7/8	22.2250
10	3.0mm	3.0000	**36**	29/32	23.0188
77 40 11	1/8	3.1750	**77 40 37**	15/16	23.8125
12	5/32	3.9688	**38**	31/32	24.6062
13	3/16	4.7625	**39**	1	25.400
14	7/32	5.5562	**40**	1-1/16	26.9875
15	1/4	6.3500	**41**	1-1/8	28.5750
77 40 16	9/32	7.1438	**77 40 42**	1-3/16	30.1625
17	5/16	7.9375	**43**	1-1/4	31.7500
18	11/32	8.7312	**44**	1-5/16	33.3375
19	3/8	9.5250	**45**	1-3/8	34.9250
20	13/32	10.3188	**46**	1-7/16	36.5125
77 40 21	7/16	11.1125	**77 40 47**	1-1/2	38.1000
22	15/32	11.9062	**48**	1-5/8	41.2750
23	1/2	12.7000	**49**	1-3/4	44.4500
24	17/32	13.4938	**50**	1-7/8	47.6250
25	9/16	14.2875	**51**	2	50.8000
77 40 26	19/32	15.0812			

Bearing Units

These are a combination of a block and a self aligning ball bearings used generally where normal loads are required. When ordering, specify the shaft diameter, distance between bolt holes, and the base-to-center height in order to attain a correct fit.

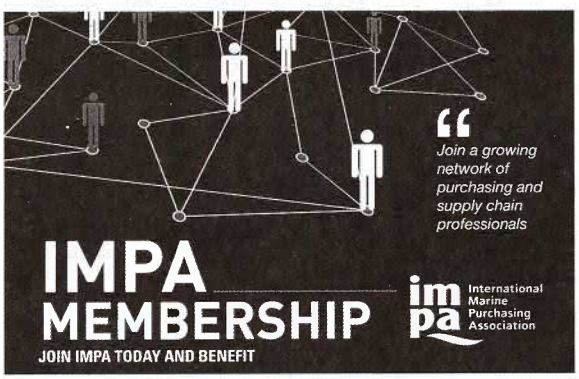


Series UCP-200

Unit Per Pc.

Series UCP-200 For Metric Shaft

CODE	Bearing Unit No.	Shaft Diam mm	Dimensions mm			
			O	W	e	h
77 41 01	UCP-201	12	127	62	95	30.2
02	-202	15	127	62	95	30.2
03	-203	17	127	62	95	30.2
04	-204	20	127	65	95	33.3
05	-205	25	140	70	105	36.5
77 41 06	UCP-206	30	165	83	121	42.9
07	-207	35	167	94	127	47.6
08	-208	40	184	100	137	49.2
09	-209	45	190	108	146	54
10	-210	50	206	114	159	57.2
77 41 11	UCP-211	55	219	126	171	63.5
12	-212	60	241	138	184	69.8
13	-213	65	265	150	203	76.2
14	-214	70	266	156	210	79.4
15	-215	75	275	163	217	82.6
77 41 16	UCP-216	80	292	175	232	88.9
17	-217	85	310	187	247	95.2
18	-218	90	327	200	262	101.6



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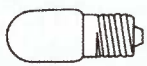
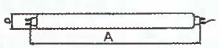
ELECTRICAL EQUIPMENT

Lamps P. 79-1 ~ 4	Pilot Lamps  P. 79-4 ~ 7	Reflector Lamps P. 79-8	Sodium Lamps/ Halogen Lamps P. 79-8 ~ 10
Fluorescent Lamps  P. 79-10 ~ 15	Lighting Fixtures P. 79-15 ~ 25	Hand Lamps P. 79-25 ~ 27	Warning Lights P. 79-27
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790101	79-1	790209	79-2	790343	79-3	790461	79-4	790549	79-4	790615	79-4	790681	79-5
790102	79-1	790216	79-2	790346	79-3	790462	79-4	790550	79-4	790616	79-5	790682	79-5
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790104	79-1	790218	79-2	790348	79-3	790464	79-4	790552	79-4	790618	79-5	790684	79-5
790105	79-1	790219	79-2	790351	79-3	790465	79-4	790553	79-4	790619	79-5	790685	79-5
790106	79-2	790220	79-2	790352	79-3	790466	79-4	790554	79-4	790620	79-5	790686	79-5
790107	79-2	790221	79-2	790353	79-3	790471	79-4	790555	79-4	790621	79-5	790687	79-5
790108	79-2	790222	79-2	790356	79-3	790472	79-4	790556	79-4	790622	79-5	790688	79-5
790109	79-2	790223	79-2	790357	79-3	790473	79-4	790557	79-4	790623	79-5	790689	79-5
790110	79-2	790224	79-2	790358	79-3	790474	79-4	790558	79-4	790624	79-5	790690	79-5
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790122	79-1	790232	79-2	790402	79-3	790476	79-4	790560	79-4	790626	79-5	790692	79-5
790123	79-1	790233	79-2	790403	79-3	790481	79-4	790561	79-4	790627	79-4	790693	79-5
790124	79-1	790236	79-2	790404	79-3	790482	79-4	790562	79-4	790628	79-4	790694	79-5
790125	79-1	790237	79-2	790405	79-3	790483	79-4	790563	79-4	790629	79-4	790695	79-5
790126	79-2	790238	79-2	790406	79-3	790484	79-4	790564	79-4	790630	79-4	790696	79-5
790127	79-2	790241	79-2	790407	79-3	790485	79-4	790565	79-4	790631	79-5	790697	79-5
790128	79-2	790242	79-2	790408	79-3	790486	79-4	790566	79-4	790632	79-5	790698	79-5
790129	79-2	790243	79-2	790409	79-3	790501	79-4	790567	79-4	790633	79-5	790699	79-5
790130	79-2	790246	79-2	790410	79-3	790502	79-4	790568	79-4	790634	79-5	790701	79-6
790141	79-2	790247	79-2	790411	79-3	790503	79-4	790569	79-4	790635	79-4	790702	79-6
790142	79-2	790248	79-2	790412	79-3	790504	79-4	790570	79-4	790636	79-4	790703	79-6
790143	79-2	790251	79-3	790413	79-3	790505	79-4	790571	79-4	790637	79-4	790704	79-6
790144	79-2	790252	79-3	790414	79-3	790506	79-4	790572	79-4	790638	79-4	790705	79-6
790145	79-2	790253	79-3	790415	79-3	790507	79-4	790573	79-4	790639	79-5	790706	79-6
790146	79-2	790254	79-3	790416	79-3	790508	79-4	790574	79-4	790640	79-5	790707	79-6
790147	79-2	790255	79-3	790417	79-3	790509	79-4	790575	79-4	790641	79-5	790708	79-7
790148	79-2	790256	79-3	790418	79-3	790510	79-4	790576	79-4	790642	79-5	790709	79-7
790149	79-2	790257	79-3	790419	79-3	790511	79-4	790577	79-4	790643	79-5	790710	79-7
790150	79-2	790258	79-3	790420	79-3	790512	79-4	790578	79-4	790644	79-5	790711	79-6
790161	79-2	790259	79-3	790421	79-3	790513	79-4	790579	79-4	790645	79-5	790712	79-6
790162	79-2	790260	79-3	790422	79-3	790514	79-4	790580	79-4	790646	79-5	790713	79-6
790163	79-2	790261	79-3	790423	79-3	790515	79-4	790581	79-4	790647	79-5	790714	79-7
790164	79-2	790262	79-3	790424	79-3	790516	79-4	790582	79-4	790648	79-5	790715	79-7
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790166	79-2	790264	79-3	790426	79-3	790518	79-4	790584	79-4	790650	79-5	790717	79-6
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794085	79-55	794189	79-57	794308	79-58	794401	79-60	794602	79-62	794717	79-63	794849	79-65
794086	79-55	794190	79-57	794309	79-58	794402	79-60	794603	79-62	794718	79-63	794850	79-65
794087	79-55	794191	79-57	794310	79-58	794403	79-60	794606	79-62	794719	79-63	794851	79-65
794088	79-55	794192	79-57	794311	79-58	794404	79-60	794607	79-62	794720	79-63	794852	79-65
794089	79-55	794201	79-57	794312	79-58	794405	79-60	794608	79-62	794721	79-63	794853	79-65
794090	79-55	794202	79-57	794315	79-58	794406	79-60	794611	79-62	794722	79-63	794854	79-65
794091	79-55	794203	79-57	794316	79-58	794407	79-60	794612	79-62	794723	79-63	794855	79-65
794096	79-56	794204	79-57	794317	79-58	794408	79-60	794613	79-62	794741	79-63	794856	79-65
794101	79-56	794206	79-57	794318	79-58	794409	79-60	794614	79-62	794742	79-63	794857	79-65
794102	79-56	794207	79-57	794319	79-58	794410	79-60	794615	79-62	794743	79-63	794858	79-65
794103	79-56	794208	79-57	794326	79-58	794411	79-60	794616	79-62	794744	79-63	794859	79-65
794104	79-56	794211	79-57	794327	79-58	794412	79-60	794617	79-62	794751	79-63	794860	79-65
794105	79-56	794212	79-57	794328	79-58	794413	79-60	794621	79-62	794752	79-63	794861	79-65
794106	79-56	794213	79-57	794329	79-58	794414	79-60	794622	79-62	794753	79-63	794862	79-65
794111	79-56	794214	79-57	794331	79-59	794415	79-60	794623	79-62	794754	79-63	794863	79-65
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796156	79-55

1. Lamps

Introduction for Ordering Lamps

Due to the wide variety of lamps available and in order to assist the purchase of lamps required for each individual purpose, below listed are standard illustrations of designations for bulbs, filaments and bases. Each lamp/bulb can be either specified under its full name or abbreviation.

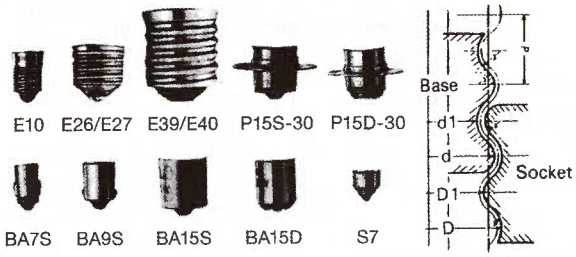
A. Bulb Designations

Bulbs are available in the shapes shown below and each shape is designed for a particular purpose. Soft glass is normally used but hard glass is used for high wattages and outdoor applications. In order to increase the effective illumination the insides of the bulbs receive various coatings, including reflecting aluminium mirrors. Coloured bulbs are also available for special applications.

Type	Name	Abbre-viation	Application
	Ordinary Shape	A	General household factory or ships illumination.
	Ball Tubular Shape	BT	Used for mercury or high sodium lamp.
	Flame Shape	C	Ornamental, Decrative Lighting
	Globe (ball) Shape	G	- " -
	Pear Shaped Straight Neck	PS	Used for Illuminations repuiring 80 Watt and more.
	Parabolic Shape	PAR	Outdoor Spot or Flood Lighting
	Reflection Shape	R	Deck Flood Light etc.
	Straight Shape	S	Low Watt Illumination
	Tubular Shape	T	General Household Factory or Ships Low Watt Illumination
	Tubular (Fluorescent) Shape	T	Fluorescent Lighting

B. Lamp Base Designations

A wide range of bases are provided for above lamps. In addition to the screw bases used for most incandescent lamps, there are also bayonet, pin, lug and other bases. Fluorescent lamps use single-pin, bipin and double-contact recessed bases.



Edison Screw Size Table

Size	Base				Socket			
	O.D.d		Valley d_1		Valley D		I.D. D_1	
	Mini	Maxi	Mini	Maxi	Mini	Maxi	Mini	Maxi
E10	9.31	9.53	8.29	8.51	9.59	9.74	8.57	8.72
E12	11.60	11.81	10.33	10.54	11.94	12.09	10.67	10.82
E14	13.61	13.89	12.01	12.29	13.97	14.16	12.37	12.56
E17	16.28	16.53	14.91	15.16	16.68	16.83	15.31	15.46
E26	26.04	26.34	24.36	24.66	26.45	26.75	24.77	25.07
E27	26.15	26.45	23.96	24.26	26.55	26.85	24.36	24.66
E39	39.05	39.50	36.55	37.00	39.61	40.06	37.07	37.52
E40	39.05	39.50	35.45	35.90	39.60	40.05	36.00	36.45

Caution !

1. E-39 based lamp can not screw into an E-40 socket while an E-40 based lamp can screw into an E-39 socket. Please see the table above and compare figures of E-39 and E-40. (d1 of E-39 is larger than that of E-40.)
2. E-26, E-27 based lamp can screw into an E-26, E-27 socket alternatively. Can be presumed to be the same size.

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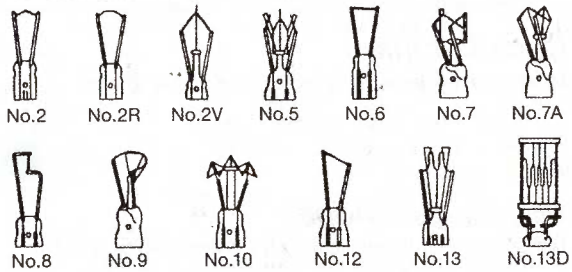
C. Filament Designations



Frosted Lamps

Vibration Service Medium Screw Base

Inside frosted, medium screw base, "Vibration service" lamps for ships use. When ordering, specify the voltage and the number of watts required from the lamps listed below.

How to order: CODE

Lamp, frosted, vibration service, E-26, VOLTAGE, WATTAGE

Unit Per Pc.

Frosted Medium Screw Base (E-26)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 01	15	25	**79 01 21**	15	25
02	20	25	**22**	20	25
03	25	25	**23**	25	25
04	30	25	**24**	30	25
05	40	25	**25**	40	25

(to be continued)

Unit Per Pc.

Frosted Medium Screw Base (E-26)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 06	60	25	**79 01 26**	60	25
07	75	25	**27**	75	25
08	100	25	**28**	100	25
09	150	25	**29**	150	25
10	200	25	**30**	200	25

Frosted Lamps

Vibration Service Double Contact Bayonet Base

Inside frosted, double contact, bayonet base B-22 "Vibration service" lamps for ships use.

How to order : CODE

Lamp, frosted, vibration service, B-22, VOLTAGE, WATTAGE

Unit Per Pc.

Frosted Bayonet Base (B-22)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 41	15	25	**79 01 61**	15	25
42	20	25	**62**	20	25
43	25	25	**63**	25	25
44	30	25	**64**	30	25
45	40	25	**65**	40	25
79 01 46	60	25	**79 01 66**	60	25
47	75	25	**67**	75	25
48	100	25	**68**	100	25
49	150	25	**69**	150	25
50	200	25	**70**	200	25

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Clear Lamps

Vibration Service Medium Screw Base

Clear, medium screw base, "Vibration service" lamps for ships use.

How to order: CODE

Lamp, clear, vibration service, E-26, VOLTAGE, WATTAGE

Unit Per Pc.

Clear Medium Screw Base (E-26)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 81	20	25	**79 01 91**	20	25
82	25	25	**92**	25	25
83	30	25	**93**	30	25
84	40	25	**94**	40	25
85	60	25	**95**	60	25
79 01 86	75	25	**79 01 96**	75	25
87	100	25	**97**	100	25
88	150	25	**98**	150	25
89	200	25	**99**	200	25

Clear Lamps

Vibration Service Double Contact Bayonet Base

Clear, double contact, bayonet base, B-22 "Vibration service" lamps for ships use.

How to order: CODE

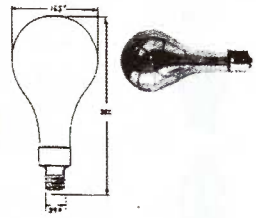
Lamp, clear, vibration service, B-22, VOLTAGE, WATTAGE

Unit Per Pc.

Clear Bayonet Base (B-22)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 02 01	20	25	**79 02 16**	20	25
02	25	25	**17**	25	25
03	30	25	**18**	30	25
04	40	25	**19**	40	25
05	60	25	**20**	60	25
79 02 06	75	25	**79 02 21**	75	25
07	100	25	**22**	100	25
08	150	25	**23**	150	25
09	200	25	**24**	200	25

Clear Mogul Screw (GES) Lamps

Standard Type (E-39)



Pear shaped lamp with a standard mogul base (E-39). A clear lamp for high watt illumination. GES denotes Goliath Edison Screw.

How to order : CODE

Lamp, clear, E-39, VOLTAGE, WATTAGE

Unit Per Pc.

Standard Clear Mogul Screw Base (E-39)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 02 31	300	10	**79 02 36**	300	10
32	500	10	**37**	500	10
33	1,000	10	**38**	1,000	10

Clear Mogul Screw (GES) Lamps (E-40)

Pear shaped with mogul base (E-40). Clear lamp bulb for high watt illumination.

How to order: CODE

Lamp, clear, E-40, VOLTAGE, WATTAGE

Unit Per Pc.

Clear Mogul Screw Base (E-40)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 02 41	300	10	**79 02 46**	300	10
42	500	10	**47**	500	10
43	1,000	10	**48**	1,000	10

LED Lamps

More cost effective innovative lamp compared to conventional incandescent lamps or fluorescent lamps. LED (Light-Emitting Diodes) lamps keep lighting lifespan for several times longer and significantly more efficient than conventional incandescent lamps. Also, it consumes less energy about 90% than conventional incandescent lamps and effects to reduce of carbon dioxide.

Unit Per Pc.

CODE	Equivalent Watt	Actual Watt	Lighting Colour	Volt	Base Size
79 02 51			Day Light		
52	40	4.1	Incandescent		
55			Cool White		
79 02 53			Day Light		
54	60	7.5	Incandescent	100V	E-26
56			Cool White		
79 02 57			Day Light		
58	100	10	Incandescent		
59			Cool White		
79 02 60			Day Light		
61	40	4	Incandescent		
62			Cool White		
79 02 63			Day Light		
64	60	8	Incandescent	220V	E-27
65			Cool White		
79 02 66			Day Light		
67	100	12	Incandescent		
68			Cool White		

Coloured Lamps

Available in red, green and yellow colours. Other colours must be made to order.

How to order: CODE

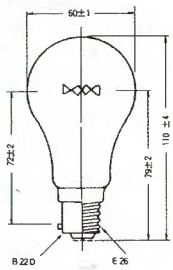
Coloured lamp, VOLTAGE, BASE SIZE, WATTAGE, KIND of COLOUR

Unit Per Pc.

E-26 Screw Base				B-22 Bayonet Base			
110-120V		220-240V		110-120V		220-240V	
CODE	Watts	CODE	Watts	CODE	Watts	CODE	Watts
Red							
79 03 01	20	**79 03 16**	20	**79 03 31**	20	**79 03 46**	20
02	40	**17**	40	**32**	40	**47**	40
03	60	**18**	60	**33**	60	**48**	60
Green							
79 03 06	20	**79 03 21**	20	**79 03 36**	20	**79 03 51**	20
07	40	**22**	40	**37**	40	**52**	40
08	60	**23**	60	**38**	60	**53**	60
Yellow							
79 03 11	20	**79 03 26**	20	**79 03 41**	20	**79 03 56**	20
12	40	**27**	40	**42**	40	**57**	40
13	60	**28**	60	**43**	60	**58**	60

Navigation Lamps

Specially designed for use with navigation lights. Made of electrolysis glass with specially constructed filament to withstand varying voltage. Can also be used with direct current. Low voltage bulbs can be used with battery (emergency) supplied power.



How to order: CODE

Lamp, navigation, BASE SIZE, VOLTAGE, WATTAGE

Unit Per Pc.

24V		110-115V		220V	
CODE	Watts	CODE	Watts	CODE	Watts
E-26 Screw Base					
79 04 01	40	**79 04 03**	40	**79 04 05**	40
02	60	**04**	60	**06**	60

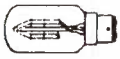
(to be continued)

B-22 Bayonet Base					
79 04 11	40	**79 04 13**	40	**79 04 15**	40
12	60	**14**	60	**16**	60

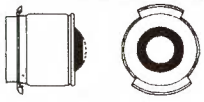
Tubular Navigation Lamps

Tubular glass bulbs with a specially constructed filament designed for navigational use.

E-26
Screw Base



BAY 15d/B-22d
Bayonet Base



P-28S
Prefocus Base

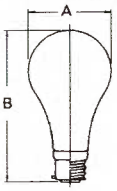
How to order: CODE

Lamp, navigation, tubular, BASE SIZE, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Volt	Watts (or cd)	Diam mm	Length mm
E-26				
79 04 07	24 V	26 cd	38	100
79 04 08	110 V	26 cd		
21		40 W		
22		60 W		
09		65 cd		
79 04 10	220 V	26 cd		
23		40 W		
24		60 W		
17		65 cd		
BAY15d (B.C. Indexing Candeiabra Base)				
79 04 18	12 V	10 W (12cd)	25	70
19		18 cd		
20		25 W (30cd)		
79 04 25	24 V	10 W (12cd)		
30		18 cd		
35		25 W		
79 04 36	110 V	40 cd	40	60
79 04 37	220 V	40 cd		
B-22d (D.C. Medium Bayonet Base)				
79 04 38	24 V	13 cd	38	100
39		26 cd		
40		35 cd		
41		65 cd		
79 04 42	110 V	13 cd		
43		26 cd		
26		40 W		
27		60 W		
44		65 cd		
79 04 45	220 V	13 cd		
46		26 cd		
47		35 cd		
28		40 W		
29		60 W		
48		65 cd		
P-28s (Medium Prefocus Base)				
79 04 49	24 V	40 W (60 cd)	38	108
79 04 50	48 V	65 W (60 cd)		
79 04 31	110 V	40 W		
32		60 W (60 cd)		
79 04 33	220 V	40 W		
34		65 W (60 cd)		

Emergency Battery Lamps



Low voltage emergency lamps powered by batteries. To be used as a lighting source in case of an emergency or "black out".

How to order: CODE

Lamp, emergency, battery, BASE SIZE, VOLTAGE, WATTAGE

E-26 Screw Base

Unit Per Pc.

12 Volt				24 Volt			
CODE	Watts	Size mm		CODE	Watts	Size mm	
		A	B			A	B
79 04 51	10	55	98	**79 04 61**	10	55	98
52	20	55	98	**62**	20	55	98
53	30	55	105	**63**	30	55	105
54	40	55	105	**64**	40	55	105
55	60	60	110	**65**	60	60	110
79 04 56	100	70	136	**79 04 66**	100	70	136

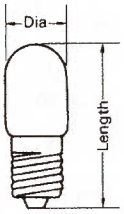
E-22 Bayonet Base

Unit Per Pc.

12 Volt				24 Volt			
CODE	Watts	Size mm		CODE	Watts	Size mm	
		A	B			A	B
79 04 71	10	55	98	**79 04 81**	10	55	98
72	20	55	98	**82**	20	55	98
73	30	55	105	**83**	30	55	105
74	40	55	105	**84**	40	55	105
75	60	60	110	**85**	60	60	110
79 04 76	100	70	136	**79 04 86**	100	70	136

2. Pilot Lamps

Pilot Lamps



As we carry quite a large assortment of pilot lamps, specify type of glass, base, length and other details such as voltage, wattage, ampere, etc.

A. Tubular Pilot Lamps

1. Screw Base

How to order: CODE

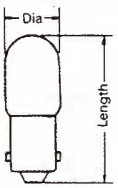
Pilot lamp, tubular, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
Base E-10, Clear, Dia. 10 x Length 28 mm (Part 1)					
79 05 01	6.3 V	0.15 A	**79 05 07**	30 V	0.11 A
02	8 V	0.15 A	**12**	48 V	2 W
03	12 V	0.11 A	**08**	48 V	3 W
04	18 V	0.11 A	**09**	60 V	3 W
05	24 V	0.11 A	**10**	110 V	5 W
79 05 06	28 V	0.11 A	**79 05 11**	220 V	5 W
Base E-10, Clear, Dia. 10 x Length 28 mm (Part 2)					
79 05 13	4 V	0.15 A	**79 05 58**	28 V	0.04 A
14	6.3 V	0.25 A	**59**	28 V	1 W
15	8 V	0.25 A	**60**	28 V	3 W
28	12 V	0.15 A	**65**	30 V	2 W
29	12 V	2 W	**66**	48 V	5 W
79 05 30	18 V	2 W	**79 05 67**	60 V	2 W
39	24 V	1 W	**72**	110 V	3 W
40	24 V	2 W	**73**	220 V	3 W
57	24 V	3 W			
Base E-12, Clear, Dia. 13 x Length 33 mm (Part 1)					
79 05 16	6.3 V	0.15 A	**79 05 22**	30 V	0.11 A
17	8 V	0.15 A	**27**	48 V	2 W
18	12 V	0.11 A	**23**	48 V	3 W
19	18 V	0.11 A	**24**	60 V	5 W
20	24 V	0.11 A	**25**	110 V	5 W
79 05 21	28V	0.11A	**79 05 26**	220 V	5 W
Base E-12, Clear, Dia. 13 x Length 33 mm (Part 2)					
79 05 74	24 V	2 W	**79 05 83**	115 V	5 W
75	24 V	3 W	**89**	220 V	3 W
81	28 V	2 W	**90**	220 V	10 W
82	30 V	2 W			
Base E-12, Clear, Dia. 15 x Length 45 mm (Part 1)					
79 05 31	6.3 V	0.15 A	**79 05 35**	28 V	0.11 A
32	12 V	0.11 A	**36**	30 V	0.11 A
33	18 V	0.11 A	**37**	110 V	5 W
34	24 V	0.11 A	**38**	220 V	5 W
Base E-12, Clear, Dia. 15 x Length 45 mm (Part 2)					
79 05 91	24 V	3 W	**79 05 95**	48 V	5 W
92	24 V	5 W	**96**	110 V	10 W
93	28 V	5 W	**97**	220 V	10 W
94	30 V	5 W			
Base E-12, Clear, Dia. 20 x Length 48 mm (Part 1)					
79 05 41	12 V	5 W	**79 05 49**	48 V	5 W
42	18 V	0.1 A	**50**	60 V	5 W
43	18 V	5 W	**51**	110 V	5 W
44	24 V	0.11 A	**52**	110 V	10 W
45	24 V	3 W	**53**	110 V	20 W
79 05 46	24 V	5 W	**79 05 54**	220 V	5 W
47	28 V	5 W	**55**	220 V	10 W
48	30 V	5 W	**56**	220 V	20 W
Base E-12, Clear, Dia. 20 x Length 48 mm (Part 2)					
79 06 13	6 V	5 W	**79 06 30**	24 V	10 W
14	8 V	5 W	**35**	24 V	20 W
15	12 V	3 W	**36**	50 V	5 W
27	12 V	10 W	**37**	115 V	10 W
28	12 V	20 W	**38**	115 V	20 W
79 06 29	18 V	3 W			
Base E-12, Clear, Dia. 20 x Length 70 mm					
79 05 61	110 V	10 W	**79 05 63**	220 V	10 W
62	110 V	15 W	**64**	220 V	15 W
Base E-14, Clear, Dia. 15 x Length 48 mm					
79 05 68	24 V	5 W	**79 05 70**	220 V	10 W
69	110 V	10 W	**71**	220 V	15 W
Base E-26, Clear, Dia. 26 x Length 60 mm					
79 05 76	24 V	5 W	**79 05 79**	220 V	10 W
77	110 V	10 W	**80**	220 V	15 W
78	110 V	15 W			
Base E-26, Clear, Dia. 26 x Length 70 mm					
79 05 84	24 V	5 W	**79 05 87**	220 V	10 W
85	110 V	10 W	**88**	220 V	15 W
86	110 V	15 W			

(to be continued)

2. Bayonet Base



How to order: CODE

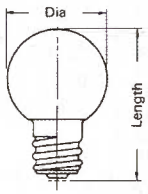
Pilot lamp, tubular, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
Base BA-9s, Clear, Dia. 9 x Length 23 mm					
79 06 39	12 V	3 W	**79 06 48**	30 V	2 W
40	24 V	50 mA	**49**	30 V	100 mA
46	24 V	80 mA	**50**	36 V	2 W
47	24 V	3 W	**59**	60 V	20 mA
Base BA-9s, Clear, Dia. 10 x Length 28 mm (Part 1)					
79 06 01	6.3 V	0.15 A	**79 06 07**	30 V	0.11 A
02	8 V	0.15 A	**12**	48 V	2 W
03	12 V	0.11 A	**08**	48 V	3 W
04	18 V	0.11 A	**09**	60 V	3 W
05	24 V	0.11 A	**10**	110 V	5 W
79 06 06	28 V	0.11 A	**79 06 11**	220 V	5 W
Base BA-9s, Clear, Dia. 10 x Length 28 mm (Part 2)					
79 06 60	6.3 V	0.25 A	**79 06 92**	28 V	0.04 A
70	8 V	0.25 A	**93**	28 V	1 W
77	12 V	0.15 A	**94**	30 V	1 W
78	12 V	2 W	**95**	30 V	2 W
79	18 V	1 W	**96**	48 V	5 W
79 06 80	24 V	1 W	**79 06 97**	60 V	2 W
90	24 V	2 W	**98**	110 V	3 W
91	24 V	3 W	**99**	220 V	3 W
Base BA-15d, Clear, Dia. 20 x Length 48 mm (Part 1)					
79 06 16	18 V	0.11 A	**79 06 22**	110 V	10 W
17	18 V	5 W	**23**	110 V	20 W
18	24 V	0.11 A	**24**	220 V	5 W
19	24 V	3 W	**25**	220 V	10 W
20	24 V	5 W	**26**	220 V	20 W
79 06 21	110 V	5 W			
Base BA-15d, Clear, Dia. 20 x Length 48 mm (Part 2)					
79 07 36	6 V	10 W	**79 07 43**	24 V	15 W
37	12 V	5 W	**44**	24 V	20 W
38	12 V	10 W	**45**	110 V	15 W
39	12 V	20 W	**46**	115 V	5 W
40	18 V	2 W	**47**	115 V	10 W
79 07 41	18 V	3 W	**79 07 48**	115 V	20 W
42	24 V	10 W			
Base BA-15d, Clear, Dia. 20 x Length 70 mm					
79 06 31	110 V	10 W	**79 06 33**	220 V	10 W
32	110 V	15 W	**34**	220 V	15 W
Base BA-15d, Clear, Dia. 25 x Length 70 mm					
79 07 76	24 V	40 W	**79 07 78**	110 V	40 W
77	110 V	15 W	**79**	220 V	25 W
Base BA-22d, Clear, Dia. 20 x Length 70 mm					
79 06 41	24 V	5 W	**79 06 44**	220 V	10 W
42	110 V	10 W	**45**	220 V	15 W
43	110 V	15 W			

B. Globular Pilot Lamps

1. Screw Base



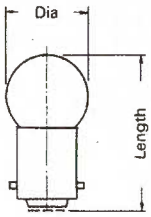
How to order: CODE

Pilot lamp, globular, BASE SIZE,
BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
Base E-10, Clear, Dia. 11 x Length 23.5 mm (Part 1)					
79 06 51	6.3 V	1 W	**79 06 58**	18 V	0.11 A
52	12 V	2 W	**54**	24 V	0.11 A
57	12 V	0.11 A	**55**	24 V	1 W
53	18 V	2 W	**56**	30 V	1 W
BaseE-10, Clear, Dia. 11 x Length 23.5 mm (Part 2)					
79 07 80	12 V	3 W	**79 07 83**	24 V	5 W
81	12 V	5 W	**84**	30 V	2 W
82	24 V	2 W			
Base E-12, Clear, Dia. 19 x Length 35 mm					
79 06 61	24 V	3 W	**79 06 65**	110 V	5 W
62	24 V	5 W	**66**	115 V	5 W
63	24 V	10 W	**67**	220 V	5 W
64	100 V	5 W			
Base E-12, Clear, Dia. 25 x Length 40 mm					
79 07 85	6.3 V	3 W	**79 07 89**	115 V	5 W
86	28 V	6 W	**90**	115 V	10 W
87	110 V	5 W	**91**	220 V	5 W
88	110 V	10 W			
Base E-26, Clear, Dia. 35 x Length 72 mm					
79 06 68	220 V	30 W	**79 06 69**	220 V	40 W

2. Bayonet Base



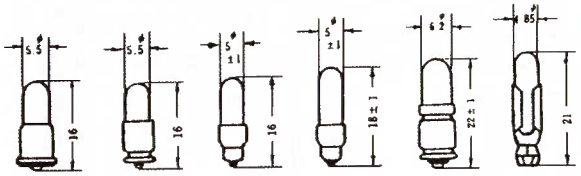
How to order: CODE

Pilot lamp, globular, BASE SIZE,
BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
Base BA-9s, Clear, Dia. 11 x Length 23.5 mm (Part 1)					
79 06 71	6.3 V	1 W	**79 06 74**	24 V	0.11 A
72	12 V	2 W	**75**	24 V	1 W
73	18 V	5 W	**76**	30 V	1 W
Base BA-9s, Clear, Dia. 11 x Length 23.5 mm (Part 2)					
79 07 92	12 V	3 W	**79 07 95**	24 V	3 W
93	18 V	2 W	**96**	30 V	2 W
94	24 V	2 W			
Base BA-15d, Clear, Dia. 19 x Length 35 mm (Part 1)					
79 06 81	6 V	8 W	**79 06 86**	100 V	5 W
82	12 V	10 W	**87**	110 V	5 W
83	24 V	3 W	**88**	115 V	5 W
84	24 V	5 W	**89**	220 V	5 W
85	24 V	10 W			
Base BA-15d, Clear, Dia. 19 x Length 35 mm (Part 2)					
79 07 97	12 V	20 W	**79 07 99**	220 V	10 W
98	24 V	20 W			

C. Miniature Pilot Lamps



F6 S5.5 S18 S5.5-0 S5.5-K L NH

How to order: CODE

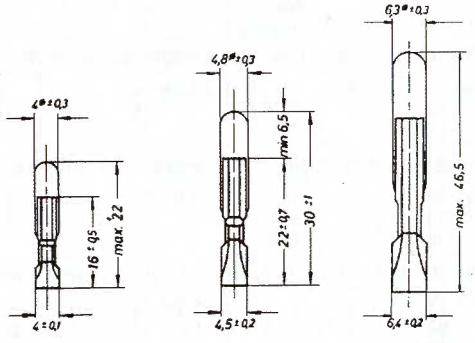
Pilot miniature lamp, TYPE, VOLTAGE, WATTAGE or AMPERE

Unit Per Pc.

CODE	Voltage	Watt or Ampere	Type	Size mm Diam. × Length
79 07 01	6	0.1 A	F6	5.5 × 16
02	6	0.2 A	"	
03	14	0.05 A	"	
04	14	0.08 A	"	
05	18	1 W	"	
06	28	0.025 A	"	
07	28	0.04 A	"	
79 07 11	6	0.2 A	S5.5 S18	5.5 × 16
12	14	0.08 A	"	
13	28	0.04 A	"	
79 07 16	14	0.05 A	S5.5-O	5 × 16
17	18	0.05 A	"	
18	28	0.04 A	"	
79 07 21	6	0.6 W	S5.5-K	5 × 18
22	12	0.6 W	"	
23	18	0.6 W	"	
24	24	0.6 W	"	
25	28	0.6 W	"	
79 07 30	15	15 mA	L	6.2 × 22
31	15	20 mA	"	
32	30	30 mA	"	
79 07 35	28	22 mA	NH	4.85 × 21

Telephone Switch Board Lamps
(Taunus Lamps)

A wide range of models are available, the standard models are listed below. When ordering, please specify lamp type, voltage and milli amperes.



T4.6 (Type 20) T5.5 (Type 30) T6.8 (Type 45)

How to order: CODE

Taunus lamp, TYPE, VOLTAGE, mA

Unit Per Pc.

CODE	Type	Voltage	Current mA	Size mm Diam. x Length
79 08 21	T4.5	6	20	4.5 x 16
22			40	
79 08 23		12	20	
24			40	
79 08 25		24	20	
26			40	
27			50	
79 08 28		30	40	
79 08 29	T4.6 (20)	6	20	4.6 x 22
30			40	
79 08 31		12	20	
32			40	
79 07 50		24	20	
51			40	
79 08 33			50	
79 07 52		30	20	
53			40	
79 08 34		36	20	
79 08 35		48	20	
79 08 36		60	20	
79 08 37	T5.5K	6	40	5.5 x 22
79 08 38		12	50	
79 08 39		24	20	
40			50	
79 08 41		30	50	
79 08 42	T5.5K (30)	6	40	5.5 x 30
43			200	
79 08 44		12	20	
45			40	
46			100	
79 07 56		24	20	
79 08 47			40	
79 07 57			50	
79 08 48			80	
79 08 49		28	40	
50			50	
79 07 58		30	20	5.5 x 30
59			40	
60			50	
79 08 51		36	20	
52			40	
53			50	
79 08 54		48	20	
55			25	
56			40	
57			50	
79 08 58		60	20	
79 08 59	T6.8 (45)	6	20	6.8 x 44
60			40	
79 08 61		12	20	
62			50	
63			100	
79 07 66		24	20	
79 08 64			25	
79 07 67			40	
68			50	
69			60	
70			90	
79 08 65		28	25	
66			45	

(to be continued)

Unit Per Pc.

CODE	Type	Voltage	Current mA	Size mm Diam. x Length
79 07 71	T6.8 (45)	30	40	6.8 x 44
79 08 67			50	
79 07 72			90	
73			120	
79 08 68		36	20	
69			40	
70			50	
79 08 71		48	20	
72			50	
79 08 73		60	20	
74			40	

Single LED Indicator Lamps

Midget Flanged T1 3/4

Midget Grooved T1 3/4

Bayonet Ba9s

Edison E10

T1 3/4, 6 x 16 mm, 24-28 volts

Unit Per Pc.

CODE	Colour	CODE	Colour
Midget Flanged		**Midget Grooved**	
79 05 98	Red	**79 07 10**	Red
99	Blue	**14**	Blue
79 06 00	Green	**15**	Green
79 07 08	Yellow	**19**	Yellow
09	White	**20**	White

Bayonet Ba9s, 10 x 24 mm

Unit Per Pc.

CODE	Colour	CODE	Colour	CODE	Colour
6 volts		**12 volts**		**24 – 28 volts**	
79 07 26	Red	**79 07 34**	Red	**79 07 62**	Red
27	Blue	**49**	Blue	**63**	Blue
28	Green	**54**	Green	**64**	Green
29	Yellow	**55**	Yellow	**65**	Yellow
33	White	**61**	White	**74**	White

Edison E10, 10 x 24 mm

Unit Per Pc.

CODE	Colour	CODE	Colour	CODE	Colour
6 volts		**12 volts**		**24 – 28 volts**	
79 07 75	Red	**79 08 15**	Red	**79 08 87**	Red
79 08 00	Blue	**20**	Blue	**88**	Blue
05	Green	**75**	Green	**89**	Green
10	Yellow	**85**	Yellow	**90**	Yellow
14	White	**86**	White	**91**	White

Indicator Lamps

BA7s Base

Unit Per Pc.

CODE	Volts	mA	Watts	Size mm Diam. x Length
79 08 76	6	100	0.6	T6.8 x 20mm
79 08 77	12	170	2	
79 08 78	24	50	1.2	
79 08 79			3	
79 08 80	12	50		T6.8 x 23mm
79 08 81		100	1.2	
79 08 82	30		2	
79 08 83	36	50	1.8	
79 08 84	60	20		

LED Panel Indicating Lights

Using a LED lighting structure increases the safety of operations, and the panel indicator lights are armed with valuable reflector optics to illuminate and intensify visibility. LED light will eliminate the downtime necessary for repairs or replacements as it does not require as much maintenance as other lighting options. Simple push-in installation mounts in any thickness material. Available in five colors: white, red, green, yellow and blue.

Fitting ϕ22mm, 24V AC/DC

Unit Per Pc.

CODE	Colour	Current mA	Dia x Length mm
79 08 92	White	20	29 x 52
93	Red		
94	Green		
95	Yellow		
96	Blue		

Fitting ϕ22mm, 110V AC

Unit Per Pc.

CODE	Colour	Current mA	Dia x Length mm
79 08 97	White	20	29 X 52
98	Red		
99	Green		
79 09 00	Yellow		
57	Blue		

Fitting ϕ22mm, 230V AC

Unit Per Pc.

CODE	Colour	Current mA	Dia x Length mm
79 09 58	White	20	29 x 52
59	Red		
60	Green		
61	Yellow		
62	Blue		

3. Reflector Lamps

Reflector Lamps

How to understand the Reflector Lamp Denotation

Reflector	Lighting Scope in Degree	Glass Material
R	F: Over 35° =Flat S: Under 35°=Spot	No Mark:Soft Glass (Indoor Use) H:Hard Glass (Outdoor Use)

Flat Reflector Lamps for Indoor Use (RF)

To be used only for indoor lighting. Preferably to be used for wide area lighting. When ordering, specify the voltage, number of watts, and screw base.

How to order: CODE

Reflector lamp, RF, flat indoor use, VOLTAGE, WATTAGE

Type "RF"

Unit Per Pc.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 01	100	E-26	**79 09 06**	100	E-26
02	150	"	**07**	150	"
03	200	"	**08**	200	"
04	300	"	**09**	300	"

Spot Reflector Lamps for Indoor Use (RS)

To be used only for indoor lighting. Especially useful in dark spots. When ordering, specify the voltage, number of watts, and the base type and size.

How to order: CODE

Reflector lamp, RS, spot indoor use, VOLTAGE, WATTAGE

Type "RS"

Unit Per Pc.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 11	100	E-26	**79 09 16**	100	E-26
12	150	"	**17**	150	"
13	200	"	**18**	200	"
14	300	"	**19**	300	"

Flat Reflector Lamps for Outdoor Use (RF-H)

Specially designed for outdoor use. Requires no shade or covering. Preferably used for wide area lighting on deck or in the engine room. Made of hardened heat resisting glass. When ordering, specify the voltage, number of watts, and screw base size.

How to order: CODE

Reflector lamp, RF-H, flat outdoor use, VOLTAGE, WATTAGE

Type "RF-H"

Unit Per Pc.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 21	100	E-26	**79 09 31**	100	E-26
22	150	"	**32**	150	"
23	200	"	**33**	200	"
79 09 24	300	E-39	**79 09 34**	300	E-39
25	500	"	**35**	500	"
26	1,000	"	**36**	1,000	"

Spot Reflector Lamps for Outdoor Use (RS-H)

Specially designed for outdoor use. Requires no shade or covering. Spot light type made of hardened heat-resisting glass.

How to order: CODE

Reflector lamp, RS-H, spot outdoor use, VOLTAGE, WATTAGE

Type "RS-H"

Unit Per Pc.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 41	100	E-26	**79 09 51**	100	E-26
42	150	"	**52**	150	"
43	200	"	**53**	200	"
79 09 44	300	E-39	**79 09 54**	300	E-39
45	500	"	**55**	500	"
46	1,000	"	**56**	1,000	"

Infrared Ray Lamps

This unit is designed for use where heat is required. For example, drying of electric motors, paints, etc. When ordering, specify the voltage, the number of watts, and the screw base required.

Denotes : IR – Infrared Ray
R – Reflector
H – Hard Glass

How to order : CODE

Infrared ray lamp, IR-RH, VOLTAGE, WATTAGE

Type "IR-RH"

Unit Per Pc.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 71	250	E-26	**79 09 76**	250	E-26
72	375	E-26	**77**	375	E-26
73	500	E-26	**78**	500	E-26
74	500	E-39	**79**	500	E-39

4. Sodium Lamps / Halogen Lamps

High Pressure Sodium Lamps

A high pressure sodium lamp which gives superior colour rendition characteristics, has a rated life of 24,000 hours, a 2100°K colour temperature factor and a very high lumen output almost twice that of comparable mercury vapour lamps. For use with a high pressure sodium lamp ballast.

BT-Bulb	BT-F-Bulb	T-Bulb	R-Bulb
NH Type	NHF Type	NHT Type	NHR Type

Denotes : BT – Ball Tubular
T – Tubular
F – Diffusion
R – Reflector
N – No external ignitor is required
H – Hard Bulb

How to order: CODE

High pressure sodium lamp, TYPE of BULB, TYPE, WATTAGE

Unit Per Pc.

CODE	Type	Wattage	Screw Base	Glass ø mm	Overall Lenght mm
		BT-Bulb			
79 12 01	NH 700	700	E-39	150	375
02	NH 1000	1,000		180	395
		BT-F-Bulb			
79 12 06	NH 700F	700	E-39	150	375
07	NH 1000F	1,000		180	395
		T-Bulb			
79 12 11	NHT 150	150	E-39	48	212
12	NHT 250	250		48	257
13	NHT 400	400		48	285
14	NHT 700	700		55	330
15	NHT1000	1,000		55	383
		R-Bulb			
79 12 18	NHR 150	150	E-39	165	310
19	NHR 250	250		165	310
20	NHR 400	400		180	320

High Pressure Sodium Lamp Ballasts

These ballasts incorporate a high-voltage pulse generator for starting the lamp. The pulse generation does not effect the lamp during arcing. An emergency thermostat is built in to cut off the power automatically in the event of any fault. As a wide range of products with respective specifications are available, when ordering, please specify the following details.

Guide of How to order

CODE **79 12 21**
Name ..... Sodium lamp ballast
Lamp Type ..... BT
Input Voltage ..... 100 V
Lamp Wattage ..... 700 W
Lamp Ampare ..... 7.9 amp.
Frequency ..... 50/60 Hz
Lamp Dimension ..... 150mm diam x 375 mm L
Lamp Base E-39
Etc ..... If any

Electronic Superimposed Ignitors
for HS Lamps 400 W

A standard version compact shape for high pressure sodium lamps (HS).

Phasing of the ignition voltage: 60–90 °el and 240–270 °el.
Max. permitted casing temperature: 105 °C.
Fastening: male nipple with pre-assembled washer and nut.
For luminaires of protection class I and II.
For luminaires of protection class I (140594, 147707).

Aluminium Casing Z 400M

Plastic Casing Z 400MK

Z 400M : Aluminium casing with screw terminals 0.75-4mm²
Z 400MK : Plastic casing with screw terminals 0.75-4mm²

Unit Per Pc.

CODE	Type	Voltage	Max. Lamp Current	Ignition Voltage	Load Capacity	Weight
79 12 22	Z 400M	220-240V	5A	4-5 kV	20-50 pF	140 grm
79 12 23	Z 400MK					130 grm

Name of Mfr. : Vossloh-Schwabe Deutschland GmbH

Illumination Halogen Lamps
E-11 Screw Base

1/20 smaller than corresponding general lighting use incandescents and provides 2,000 hrs. of service without fading.

How to order: CODE

Illumination halogen lamp, E-11 screw base, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Watts	Volt	Glass Type	Overall Length mm	Screw Base
79 12 51	75	110	T11	65	E-11
52	100	110	T11	65	
53	150	110	T13	70	
54	250	110	T13	76	
55	500	110	T13	90	
79 12 56	500	220	T13	90	

Tungsten Halogen Lamps
R7S Cap Base

Compact in size, 500W-1/10, 1,500W-1/20 of corresponding general lighting use incandescents. Used for floodlighting, spotlighting, lighting for factories, gymnasiums, photocopying, etc.

How to order: CODE

Tungusten halogen lamp, R7S cap base, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Watts	Volt	Size mm		Base Type
			Glass Diam.	Overall Length	
79 12 61	300	110	9	117	R7S
62	500	110	11	117	
66	1,000	110	11	189	
79 12 63	500	220	11	117	
67	1,000	220	11	189	
64	1,000	220	11	208	
65	1,500	220	11	248	

Tubular Shape Halogen Lamps

E-39 Screw Base

Designed for use with an E-39 screw base lamp holder.

How to order: CODE

Halogen lamp, tubular shape, E-39, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Watts	Volt	Size mm		Base Type
			Glass Dia.	Overall Length	
79 12 71	500	100-120V	38	205	E-39
79 12 72	500	200-240V	38	215	
73	1,000	"	38	255	

7TH
79

Sealed Beam Lamps

Designed for maximum safe vision under all weather conditions. Not only gives greater illumination distance but also prevents reflection from moisture particles in the air. "PAR" denotes parabolic shape.

Type "PAR"

Unit Per Pc.

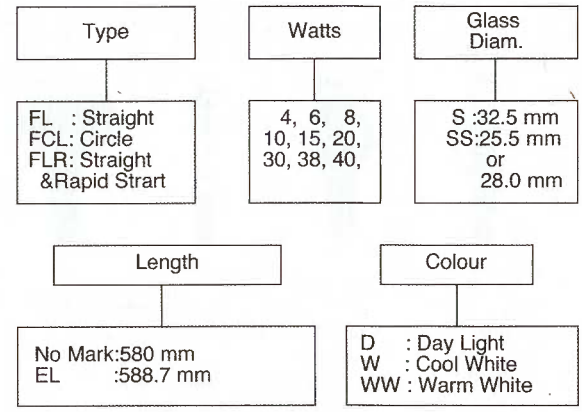
PAR TYPE

CODE	Watts	Volt	Size mm		Contact Lugs
			Glass Diam.	Overall Length	
79 12 91	50	24	145	103	3
92	75	24	178	138	3
93	80	24	145	103	2

5. Fluorescent Lamps

Fluorescent Lamps

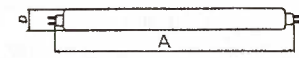
How to understand Fluorescent Lamp Denotations:



Note : S & SS marked FL lamps have the same luminosity as the conventional diameter of FL lamps.

Fluorescent Lamps

Fluorescent tube lamps requiring glow starters. Available in two colours of cool white and daylight. Specify which colour when ordering.



Cool White Colour

How to order: CODE

Fluorescent lamp, cool white, TYPE, WATTAGE

Unit Per Pc.

CODE	Type	Watts	ø mm D	L mm A	Type of Starter
79 14 01	FL- 4W	4	15.5	134.5	FG-7E or FG-7P
02	FL- 6W	6		210.5	
03	FL- 8W	8		287.0	
79 14 04	FL-10W	10	25.5	330.0	FG-1E
05	FL-15W	15		436.0	
79 14 06	FL-20	20	38.0	580.0	
79 14 07	FL-20SW	20	32.5		
08	FL-20S/18	18			
79 14 09	FL-20SS-W/18	18	28.0		
79 14 10	FL-20/EL	20	38.0	588.7	FG-1P or FG-1E
11	FL-20S/EL	20	32.5		
12	FL-20SSCW/18-24	18	25.5		
79 14 14	FL-30SW	30	32.5	630.0	FG-1P
79 14 15	FL-40	40	38.0	1,198.0	FG-4P
79 14 16	FL-40SW	40	32.5		
17	FL-40S/38	38			
79 14 18	FL-40SS-W/37	37	28.0		

Daylight Colour

How to order: CODE

Fluorescent lamp, daylight colour, TYPE, WATTAGE

Unit Per Pc.

CODE	Type	Watts	ø mm D	L mm A	Type of Starter
79 14 21	FL- 4D	4	15.5	134.5	FG-7E or FG-7P
22	FL- 6D	6		210.5	
23	FL- 8D	8		287.0	
79 14 24	FL-10D	10	25.5	330.0	
25	FL-15D	15		436.0	
79 14 26	FL-20	20	38.0	580.0	FG-1E or FG-1P
79 14 27	FL-20SD	20	32.5		
28	FL-20S/18	18			
79 14 29	FL-20SS-D/18	18	28.0		
79 14 30	FL-20/EL	20	38.0	588.7	FG-1P or FG-1E
31	FL-20S/EL	20	32.5		
32	FL-20SSCW/ 18-24	18	27.0		
79 14 34	FL-30SD	30	32.5	630.0	FG-1P
79 14 35	FL-40	40	38.0	1,198.0	FG-4P
79 14 36	FL-40SD	40	32.5		
37	FL-40S/38	38			
79 14 38	FL-40SS-D/37	37	28.0		

Rapid Start Fluorescent Lamps
(Rapid Start FL Lamps)

Rapid start lamps use a rapid start circuit ballast to start within one to two seconds. Does not require a glow starter. Please specify which colour is required when ordering.

Cool White Colour

Unit Per Pc.

CODE	Type	Watts	Size		Packed in
			Diam.	Length	
79 14 41	FLR-20SW	20	32.5	580	25
42	FLR-20	20	38.0	580	25
79 14 43	FLR-40SW	40	32.5	1,198	25
44	FLR-40	40	38.0	1,198	25

Daylight Colour

Unit Per Pc.

CODE	Type	Watts	Size		Packed in
			Diam.	Length	
79 14 46	FLR-20SD	20	32.5	580	25
47	FLR-20	20	38.0	580	25
79 14 48	FLR-40SD	40	32.5	1,198	25
49	FLR-40	40	38.0	1,198	25

LED Fluorescent Lamps T8

Innovative LED fluorescent lamps, compatible with most of magnetic ballasts (CCGs) with grow start and rapid start type as direct replacement with traditional fluorescent lamps. Energy saving up to 61%, instant 100% light without flickering.

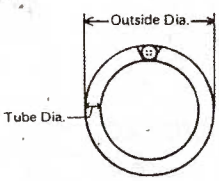
In case of Inverter Type such as FHF or electronic ballasts(ECGS), retrofit is required and wiring must be changed for direct connection.

Unit Per Pc.

CODE	Voltage	Watt	Colour	ϕ mm D	L mm A
79 14 73	AC100-245V	10	Incandescent Cool White Day Light	26	580
74					
75					
79 14 76		20	Incandescent Cool White Day Light	26	1,198
77					
78					
79 14 81	AC200-240V	8	Incandescent Cool White Day Light	28	588.7
82					
83					
79 14 84		17	Incandescent Cool White Day Light	28	1,198
85					
86					

Circle Fluorescent Lamps

Circle fluorescent lamps can be used in regular lamp fixtures but require a glow starter lamp in the fixture.



Cool White Colour

How to order : CODE

Fluorescent lamp, circle, cool white, SIZE, WATTAGE

Unit Per Pc.

CODE	Size	Watts	Glass x Circle Diam. O.D.	Starter Type
79 14 65	FCL-20W/18	18	29 x 205	FG-1P or 1E
66	FCL-30W/28	28	29 x 225	FG-1P or 1E
67	FCL-32W/30	30	29 x 299	FG-5P
68	FCL-40W/38	38	29 x 373	FG-4P
79 14 69	European	40	29 x 400	FG-4P
70	U.S.A	40	1-1/8" x 16"	FG-4P

Daylight Colour

How to order: CODE

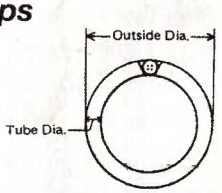
Fluorescent lamp, circle, daylight, SIZE, WATTAGE

Unit Per Pc.

CODE	Size	Watts	Glass x Circle Diam. O.D.	Starter Type
79 14 51	FCL-20D/18	18	29 x 205	FG-1P or 1E
52	FCL-30D/28	28	29 x 225	FG-1P or 1E
53	FCL-32D/30	30	29 x 299	FG-5P
54	FCL-40D/38	38	29 x 373	FG-4P
79 14 55	European	40	29 x 400	FG-4P
56	U.S.A	40	1-1/8" x 16"	FG-4P

Circle Fluorescent Lamps
Rapid Start

Same as the lamps above but these require a rapid start fixture.



Unit Per Pc.

CODE	Size	Watts	Glass Diam. x Circle O.D. mm
79 14 61	FCR-20	18	29 x 205
62	FCR-30	28	29 x 225
60	FCR-32	30	29 x 299
63	FCR-40	38	29 x 373

Energy Saving Lamps

Suitable for when functionality precedes form and high number of lumen is required.

Compact Fluorescent Lamp, 2700°K
Used without ballast

130V AC

Unit Per Pc.

CODE	Watts	Cap	Type	D x l mm
79 14 96	7	E14	T4-2U	40 x 120
97	9			40 x 135
98	11			40 x 140
79 14 99	5	E27	T4-2U	40 x 120
79 15 00	9			40 x 135
09	11			40 x 140
79 15 10	15	E27	T4-3U	48 x 133
11	20			48 x 155
12	23			48 x 160

7TH
79

240V AC

Unit Per Pc.

CODE	Watts	Cap	Type	D x l mm
79 15 13	9	B22	T4-2U	40 x 135
79 15 14	5	E14	T4-2U	40 x 120
15	7			40 x 125
16	9			40 x 135
17	11			40 x 140
79 15 18	5	E27	T4-2U	40 x 120
19	7			40 x 125
20	9			40 x 135
23	11			40 x 140
79 15 24	15	E27	T4-3U	48 x 133
30	20			48 x 155

6200°K Daylight
Used without Ballast

130V AC

Unit Per Pc.

CODE	Watts	Cap	Type	D x l mm
79 15 31	7	E14	T4-2U	40 x 125
34	9			40 x 135
39	11			40 x 140
79 15 40	5	E27	T4-2U	40 x 120
41	7			40 x 125
42	9			40 x 135
43	11			40 x 140
79 15 44	15	E27	T4-3U	48 x 133
45	20			48 x 155
79 15 46	23	B27	T4-2U	48 x 160

230V AC

Unit Per Pc.

CODE	Watts	Cap	Type	D x l mm
79 15 47	9	E14	T4-2U	40 x 135
48	11			40 x 140
79 15 49	5	E27	T4-2U	40 x 120
50	7			40 x 125
59	9			40 x 135
60	11			40 x 140
79	15			40 x 133
79 15 80	20	E27	T4-3U	48 x 155
99	23			48 x 160

Compact Fluorescent Light Bulbs

A compact fluorescent lamp can be replaced an incandescent lamp using less power and having a longer rated life. And can be fitted in the existing lighting fixtures formerly for incandescent if the fixtures have no closed lamp protectors. All bulbs has E-26 screw base.

Pear Shape

Globeless

Unit Per Pc.

CODE 100V	CODE 220V	Equivalent Watt	Colour	Size mm Diam x L
Pear Shape - E-26 Screw Base				
79 15 61	79 15 64	40 watt	Incandescent	60 x 116
62	65		Cool White	
63	66		Daylight	
79 15 67	79 15 70	60 watt	Incandescent	60 x 109
68	71		Cool White	
69	72		Daylight	
79 15 73	79 15 76	100 watt	Incandescent	65 x 133
74	77		Cool White	
75	78		Daylight	
Globeless - E-26 Screw Base				
79 15 81	79 15 84	40 watt	Incandescent	40 x 89
82	85		Cool White	
83	86		Daylight	
79 15 87	79 15 90	60 watt	Incandescent	40 x 112
88	91		Cool White	
89	92		Daylight	
79 15 93	79 15 96	100 watt	Incandescent	48 x 130
94	97		Cool White	
95	98		Daylight	

Single Pin End Fluorescent Lamps

Fluorescent lamps of 20W or 40W for starter less ignition, to be operated by means of special explosion-proof ballasts on A.C. mains; the lamps are designed specifically for application in areas where an explosion hazard exists. "TL"X instant-start lamps, stabilized by special ballasts, are provided with an internal ignition strip connected to one of the electrodes. Since the electrodes are not pre-heated, only one electrical contact is required at each lamp-end. To exclude all possible sparking effects during ignition, the caps and, in particular, the long, thick lamp-pins are constructed so as to ensure maximum contact with the appropriate lamp holders.

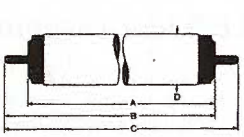
Application

In "flameproof" and "increased safety" luminaries designed in accordance with IEC 79/1, 79/7, EN 50018 and 50019, VDE 170/171 and similar specifications, both for indoor and outdoor applications :

Dimensions

mm

	20W	40W
A	574	1,184
B	593	1,202
C	611	1,221
D	41	41



Type	Nominal		Colour	Luminous	Weight
	Length	Diam.		lm	grm
"TL" X 20W/33	574 mm	41 mm	Cool White	940	150
"TL" X 40W/33	1,184 mm	41 mm		2,300	292

79 14 79	Lamp Fluorescent, single pin end, type "TL" X20W/33, 38 x 574 mm	Pc.
79 14 80	Lamp Fluorescent, single pin end, type "TL" X40W/33, 41 x 1,184 mm	Pc.

Germicidal Lamps

Specially designed low voltage mercury vapour lamps which radiate ultraviolet rays of 250 - 260 mm. This short wave ray is a very effective bactericide for medical and sanitary purposes, such as the germicide of food stuff in the refrigerator, table ware, cooking utensils in the galley, and barber tools, room air, etc.

This lamp comes in the same type and sizes as common fluorescent tube lamps and can be used within the same fixture.

5 sizes are available. Specify when ordering.

Unit Per Pc.

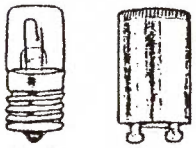
CODE	Model	Wattage	Size mm		Cap	Glow Starter
			ø	L		
79 14 91	GL- 4	4	15.5	134.5	G 5	FG7P(7E)
92	GL- 6	6	15.5	210.5	G 5	FG7P(7E)
93	GL- 8	8	15.5	287.0	G 5	FG7P(7E)
94	GL-10	10	25.5	330.0	G13	FG7P(7E)
95	GL-15	15	25.5	436.0	G13	FG1P(1E)

Caution !

Do not stare directly at the lamp when it is on as GERMICIDAL rays are injurious to the eyes. Wear ordinary safety goggles.

Starters for Fluorescent Lamps

Each fluorescent lamp requires a starter for the purpose of preheating before lighting. When ordering, specify type "E" or "P" as well as the wattage of the lamps.



FG-7E FG-7P

Starter Application Table

Type	Applicable Fluorescent Lamps
FG-7E or FG-7P	FL4, FL-6, FL-8, FL-10 GL-6, GL-10
FG-1E or FG-1P	FL15, FL-20SS/18, FL-20S, FL-20, FL-20SS, FL-20S/EL, FL-20EL FL-30S, FCL-20, FCL-30, GL-15
FG-4P	FL-40S, FL40, FCL-40
FG-5P	FCL-40
FS-2	Single :FL-4, FL-6, FL-8 Series: FL4 – FL22
FS-U	Single :FL4 – FL13, FL15 – FL80

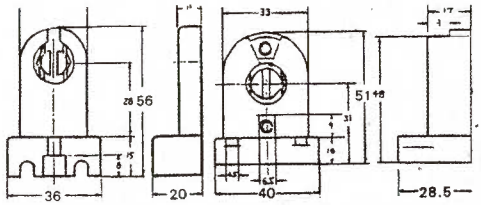
Unit Per Pc.

CODE	Type	Base Type	Size mm Diam. × Length
79 15 01	FG-7E	E-17	17 x 40
02	FG-1E	E-17	17 x 40
03	FG-7P	P-21	21 x 38
04	FG-1P	P-21	21 x 38
05	FG-4P	P-21	21 x 38
79 15 06	FG-5P	P-21	21 x 38
79 15 07	FS-2	P-21	21 x 38
79 15 08	FS-U	P-21	21 x 38

Fluorescent Lamp Holders

There are many types of lamp holders available. The most common types are illustrated and listed below with their respective specifications.

A. Spring Loaded Rotor Type



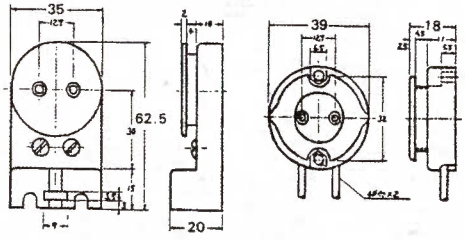
How to order: CODE

FL lamp holder, spring loaded rotor type, ELECTRICITY RATING, SIZE

Unit Per Pc.

CODE	Electricity Rating	Size mm			Material
		W	H	D	
79 15 21	250V × 1 Amp.	36	56	20	Phenol
22	250V × 3 Amp.	40	51	28.5	Resin

B. Spring Loaded Support Type



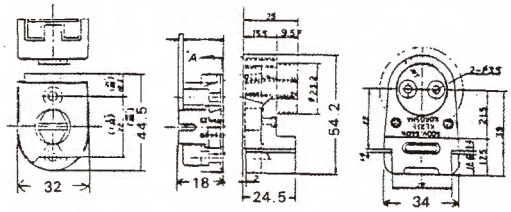
How to order: CODE

FL lamp holder, spring loaded support type, 250 volt, 1 amp, SIZE

Unit Per Pc.

CODE	Electricity Rating	Size mm			Material
		W	H	D	
79 15 25	250V × 1 Amp.	35	62.5	20	Phenol
26		39	39	18	Resin

C. KOKOSHA Spring Loaded Support Type



ZS-22 KL-238

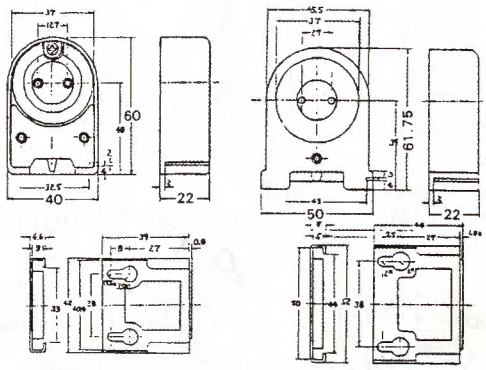
How to order: CODE

FL lamp holder, KOKOSHA spring loaded support type, MODEL

Unit Per Pc.

CODE	Model	Electricity Rating	Size mm			Material
			W	H	D	
79 15 28	ZS-22	300V × 1 Amp.	32	44.5	18	Phenol
29	KL-238	600V × 660W	34	54.2	24.5	Resin

D. Turret Type



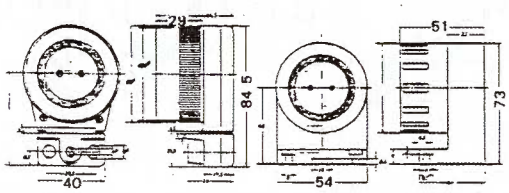
How to order: CODE

FL lamp holder, turret type, 300 volt, 1 amp, SIZE

Unit Per Pc.

CODE	Electricity Rating	Size mm			Material
		W	H	D	
79 15 32	300V × 1 Amp.	40	60	22	Phenol
33	300V × 1 Amp.	50	61.75	22	Resin

E. Waterproof Type



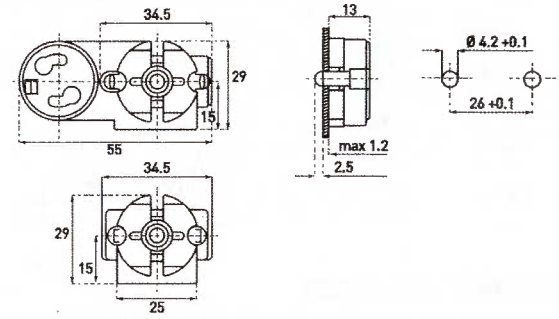
How to order: CODE

FL lamp holder, waterproof type, ELECTRICITY RATING, SIZE

Unit Per Pc.

CODE	Electricity Rating	Applica-tion	Size mm			Material
			W	H	D	
79 15 35	300V × 1 Amp.	20 ~ 40W	40	84.5	29	Phenol
36	300V × 3 Amp.		54	73	51	Resin

F. Side Mounting Rotor Type



How to order: CODE

FL lamp holder, With or Without Starter holder, side mounting complete with spring plate type, 250 volt, 2 amp, SIZE

Unit Per Pc.

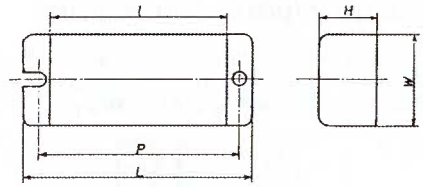
CODE	Type	Electricity Rating	Application	Size mm		
				W	H	D
79 15 37	With Starter Holder	250V × 2A	T8 / T12	55	29	13
38	Without Starter Holder	250V × 2A	T8 / T12	25	29	13

Ballasts for Fluorescent Lamp

for Marine Use

(Ref. JIS F8431-1985)

Low power factor ballasts for marine fluorescent lamps supplied from 100V, 115V or 220V AC 60Hz and used on board at an ambient temperature of 50°C or less.



Principal Dimensions of Ballast

Unit: mm

Class	Watts	P	L	l	H	W
FBM-C	6	55 ± 2	63 or less	48 or less	35 or less	40 or less
	8	85 ± 2	100 or less	75 or less	35 or less	50 or less
	10	85 ± 2	100 or less	80 or less	40 or less	55 or less
	15	110 ± 2	130 or less	95 or less	40 or less	65 or less
	20	110 ± 2	130 or less	95 or less	40 or less	65 or less
	30	115 ± 2	140 or less	105 or less	50 or less	70 or less
	40	115 ± 2	140 or less	110 or less	50 or less	70 or less
FBM-T	40	160 ± 2	215 or less	185 or less	50 or less	70 or less

How to order: CODE

FL lamp ballast, CLASS, WATTAGE

Unit Per Pc.

CODE	Class	Watts	Rated Input Voltage V	Rated frequency Hz	Rated Input Current A	Applicable Fluorescent lamp Type	Applicable Fluorescent lamp Current A
79 15 51	FBM-C	6	100 115	60	0.147	FL 6	0.147
52		8			0.170	FL 8	0.170
53		10			0.230	FL10	0.230
54		15			0.300	FL15S	0.300
55		20			0.360	FL20	0.375
56		30			0.610	FL30	0.620
79 15 57	FBM-T	40			0.970/ 0.840	FL40	0.435
79 15 58	FBM-C	40	220	60	0.420	FL40	0.435

Remarks: Letters FBM of class symbol denote the ballast for marine fluorescent lamp and the last letter C denotes the choke coil type and T, the transformer type.

6. Lighting Fixtures

Lighting Fixtures

For Reflector Lamp

Can be used with a reflector lamp such as RF, RS, as cargo lights. Available in flanged base and screw clamp types. Body and base are made of brass, and shade and guard are made of stainless steel. Class of Protection is IP-56.

Flanged Base

Screw Clamp

How to order: CODE

Lighting fixture, reflector lamp, TYPE of FITTING, LAMP BASE, APPLICABLE LAMP

Unit Per Pc.

CODE	Fitting	Lamp Base	Applicable Lamp	Weight kgs
79 18 01	Flanged -Base	E-26	RF&RS-100,150,200W	3.2
02		E-39	RF&RS-300,500W	4.5
79 18 03	Screw -Clamp	E-26	RF&RS-100,150,200W	3.6
04		E-39	RF&RS-300,500W	4.9

Flood Type

Vibration-proof flood lighting fixture. Can be used with high pressure sodium lamps. Aluminium reflector with steel frame. Ballasts are sold separately.

Mirror Reflector (Narrow Beam)

Diamond Cut Reflector (Wide Beam)

Unit Per Pc.

CODE	Type of Reflector	Beam Angle	Base Size	Applicable Lamp	Weight kgs
79 18 16	Mirror	Narrow 20°	E-39	Incandescent lamp KF 1000W High Pressure Sodium lamp NH700W/1000W	20.0
79 18 17	Diamond Cut	Wide 55°			20.0

LED Flood Lighting Fixtures

Energy saving LED flood lighting fixtures, designed as a replacement of traditional high output floodlights. Made of aluminium base, waterproof (IP65), wide beam angle 120°C, Lifespan for 30,000 hours.

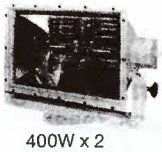
Unit Per Set

CODE	Voltage	Watt	Colour	Dimensions H x W x D (mm)	Weight
79 18 18	AC100 - 240V	50W	Cool White Day Light	233x285x157	2.8 kgs
19					
79 18 20		100W	Cool White Day Light	325x425x200	5.3 kgs
25					
79 18 26		150W	Cool White Day Light	325x425x200	8.5 kgs
27					
79 18 28		200W	Cool White Day Light	360x460x230	10 kgs
29					

High Pressure Sodium Lamp Flood Lighting Fixtures

This floodlight of H.P. sodium light illuminates a larger area than the circular type of incandescent projector. Also used for funnel lighting and very efficient for use in dense fog. Vibration proof, water proof and airtight. Furnished without lamps. Accompanying ballast is another order.

400W x 1



400W x 2

How to order: CODE

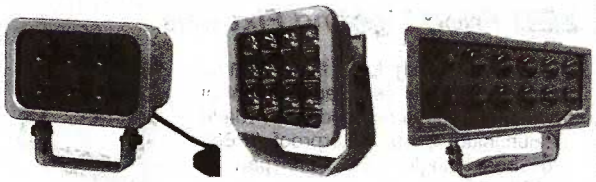
Flood lighting fixture, high pressure sodium lamp, WATTAGE and NUMBER of LAMPS, VOLTAGE

Unit Per Set

CODE		79 18 21	79 18 22	79 18 23	79 18 24
Lamp	Watt x Nos.	400W x 1		400W x 2	
	Luminous-flux. (lm)	47,000		47,000 x 2	
AC Voltage		110 V	220 V	110 V	220 V
Dimensions mm		W x D x H 430 x 285 x 543		W x D x H 740 x 285 x 543	
Height of Light Source		332 mm			
Base Flange	Out Dia.	240 mm			
	Bolt Circle	200 mm			
Material	Body	Stainless Steel			
	Bracket	Mild Steel			
Weight		19 kgs		30 kgs	

High-Brightness LED Flood Lighting Fixtures

A vibration-proof, shock resistance and robust flood lighting with High-brightness LED. 1/6 of power consumption compared with incandescent lamp, and no mercury used as compliance with ROHS.



SLD-120 SLD-150 SLD-240

How to order: CODE

LED Flood lighting fixture, high-brightness, WATTAGE and NUMBER of LAMPS, VOLTAGE

Unit Per Set

CODE		79 18 35	79 18 36	79 18 37
Model		SLD-120	SLD-150	SLD-240
Lamp (Watt × Nos.)		13W × 6	3W × 12	13W × 12
Max. Luminous flux		More than 76,000 cd	More than 400,000 cd	More than 265,000 cd
Protection Class		IP56		
Power Source		AC100V – 220V		
Material	Body	Aluminium		
	Bracket	Aluminium		
Dimensions mm (W × H × D mm)		256×254×41	333×282×141	508×335×133
Weight		4.7 kgs	7.5 kgs	10.5 kgs

Name of Mfr: Shonan Kosakusyo Co, Ltd.

7TH
79

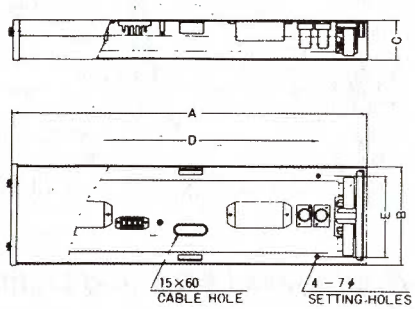
Marine Non-Watertight Fluorescent Ceiling Lights

(Ref. JIS F 8436-1983)

Mainly used for lighting living quarters in ships at an ambient temperature of 40°C or less. Made of a steel plate with melamine resin baked finish and milky white acrylic diffuser. Glow starting with high or low power factor ballast. One, two and three lamp types, as well as surface and recessed types are available.

When ordering, please specify the voltage and frequency required.

Surface Mounting with Diffuser



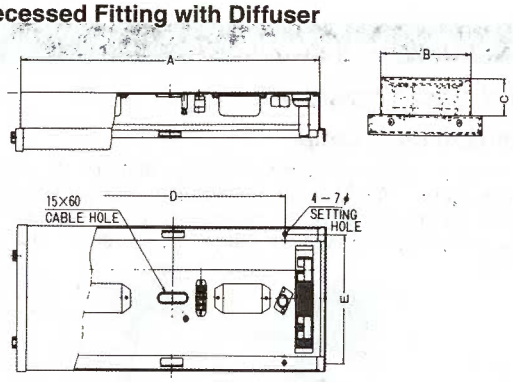
How to order: CODE

FL ceiling light, non-watertight, surface mounting with diffuser, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

Unit Per Pc.

CODE	Type	Lamps	Dimensions mm A	B	C	D	E
Rated Voltage 100, 115							
79 18 41	KQB201	20W x 1	660	180	55	480	140
42	KQB401	40W x 1	1,280	180	55	550	140
79 18 43	KQB202	20W x 2	660	180	55	480	140
44	KQB402	40W x 2	1,280	180	55	550	140
79 19 01	KQB203	20W x 3	660	300	55	480	250
Rated Voltage 220							
79 19 02	KQB201	20W x 1	660	180	55	480	140
03	KQB202	20W x 2	660	180	55	480	140
04	KQB203	20W x 3	660	300	55	480	250
79 18 46	KQB401	40W x 1	1,280	180	55	550	140
47	KQB402	40W x 2	1,280	180	55	550	140

Recessed Fitting with Diffuser



How to order: CODE

FL ceiling light, non-watertight, recessed fitting with diffuser, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

Unit Per Pc.

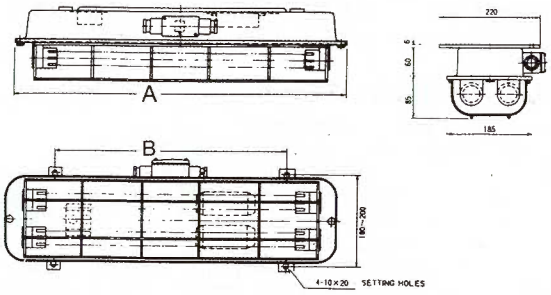
CODE	Type	Lamps	Dimensions mm A	B	C	D	E
Rated Voltage 100, 115							
79 18 51	KQA201	20W x 1	642	140	55	500	160
52	KQA401	40W x 1	1,250	140	70	500	160
79 18 53	KQA202	20W x 2	642	140	55	500	160
54	KQA402	40W x 2	1,250	140	70	500	160
79 18 55	KQA203	20W x 3	642	260	55	500	280
Rated Voltage 220							
79 19 05	KQA201	20W x 1	642	140	55	500	160
06	KQA202	20W x 2	642	140	55	500	160
07	KQA203	20W x 3	642	260	55	500	280
79 18 57	KQA401	40W x 1	1,250	140	70	500	160
58	KQA402	40W x 2	1,250	140	70	500	160

Marine Watertight Fluorescent Ceiling Lights

(Ref. JIS F8437-1983)

Mainly used for the lighting of machinery room, galleys, bath rooms, outdoor passageways, in ships at an ambient temperature of 45°C or less. When ordering, please specify the voltage and frequency required.

Surface Mounting Drip-proof Fitting with Guard



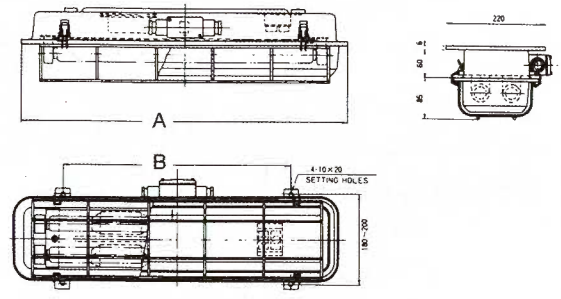
How to order: CODE

FL ceiling light, drip-proof, surface mounting with guard, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

Unit Per Pc.

CODE	Model	Lamps	Dimensions mm	
			A	B
Rated Voltage 100, 115				
79 18 61	KGW201	20W x 1	715	500
62	KGW202	20W x 2	715	500
79 18 63	KGW401	40W x 1	1,335	1,100
64	KGW402	40W x 2	1,335	1,100
Rated Voltage 220				
79 19 08	KGW201	20W x 1	715	500
09	KGW202	20W x 2	715	500
79 18 66	KGW401	40W x 1	1,335	1,100
67	KGW402	40W x 2	1,335	1,100

Watertight Fitting with Diffuser & Guard



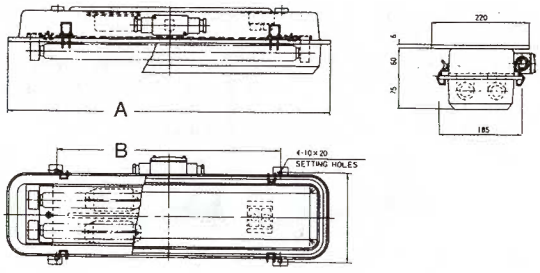
How to order: CODE

FL ceiling light, watertight, surface mounting with diffuser and guard, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

Unit Per Pc.

CODE	Model	Lamps	Dimensions mm	
			A	B
Rated Voltage 100, 115				
79 18 71	KAW201	20W x 1	715	500
72	KAW202	20W x 2	715	500
79 18 73	KAW401	40W x 1	1,335	1,100
74	KAW402	40W x 2	1,335	1,100
Rated Voltage 220				
79 19 10	KAW201	20W x 1	715	500
11	KAW202	20W x 2	715	500
79 18 76	KAW401	40W x 1	1,335	1,100
77	KAW402	40W x 2	1,335	1,100

Watertight Fitting with Diffuser



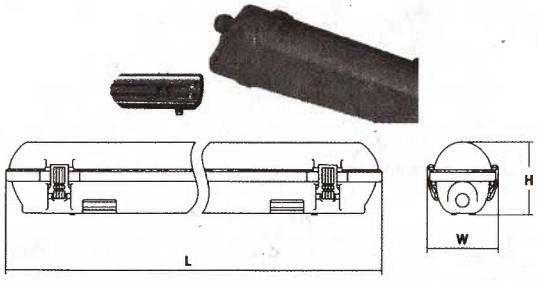
How to order: CODE

FL ceiling light, watertight, surface mounting with diffuser, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

Unit Per Pc.

CODE	Model	Lamps	Dimensions mm	
			A	B
Rated Voltage 100, 115				
79 18 81	KEW201	20W x 1	715	500
82	KEW202	20W x 2	715	500
79 18 83	KEW401	40W x 1	1,335	1,100
84	KEW402	40W x 2	1,335	1,100
Rated Voltage 220				
79 19 12	KEW201	20W x 1	715	500
13	KEW202	20W x 2	715	500
79 18 86	KEW401	40W x 1	1,335	1,100
87	KEW402	40W x 2	1,335	1,100

LED Watertight Fixtures with Diffuser



Innovative LED Watertight Fixture, IP65 Waterproof. High impact resistant polycarbonate body and diffuser.

How to order: CODE

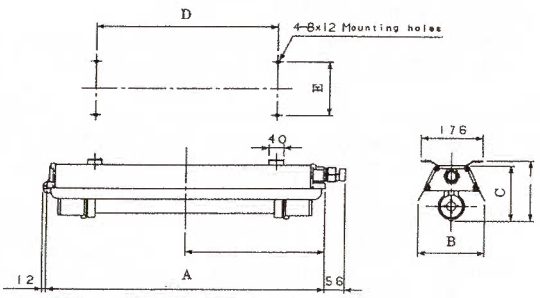
LED ceiling light, watertight, surface mounting with diffuser, TYPE, VOLTAGE, WATTAGE, COLOUR

Unit Per Pc.

CODE	Voltage	Lamps	Colour	Dimensions L x W x H (mm)
79 18 88	100-240V	11.5W x 1	Cool White	655 x 89 x 92
89		11.5W x 1	Daylight	655 x 89 x 92
79 18 90		11.5W x 2	Cool White	655 x 130 x 92
94		11.5W x 2	Daylight	655 x 130 x 92
79 18 95		23W x 1	Cool White	1,265 x 89 x 92
99		23W x 1	Daylight	1,265 x 89 x 92
79 19 00		23W x 2	Cool White	1,265 x 130 x 92
14		23W x 2	Daylight	1,265 x 130 x 92

Flameproof Fluorescent Ceiling Lights

Composed of a flameproof lamp holder unit, an increased safety body and an explosion proof ballast for use in hazardous areas. Meets the requirement of the IEC standards, IP65. The body and socket are made of corrosion-proof aluminium alloy and the bolts are made of stainless steel for corrosion-proof and weather-proof.



How to order: CODE

FL ceiling light, flameproof, VOLTAGE, WATTAGE, NUMBER of LAMPS, No-GUARD TYPE or With GUARD

Specifications

Material	
Body	Corrosion-proof aluminium alloy
Socket Box	Corrosion-proof aluminium alloy
Reflector	Sheet steel
Terminal Box	Die casting
Suspension Pipe	Carbon steel
Colour & Finish	Body : Grey Reflector & socket box : White Finish : Melamin resin coating
Type of Protection	Ex des IIC T5
Degree of Protection	IEC standard 79, IP65

No-guard Type

Unit Per Pc.

CODE	Lamps	Dimensions mm			Fitting Size mm	
		A	B	C	D	E
Rated Voltage, 100						
79 19 21	20W x 1	768	188	156	500	150
22	20W x 2	768	188	156	500	150
79 19 23	40W x 1	1,386	188	156	500	150
24	40W x 2	1,386	188	156	500	150
Rated Voltage, 220						
79 19 26	20W x 1	768	188	156	500	150
27	20W x 2	768	188	156	500	150
79 19 28	40W x 1	1,386	188	156	500	150
29	40W x 2	1,386	188	156	500	150

With Guard Type

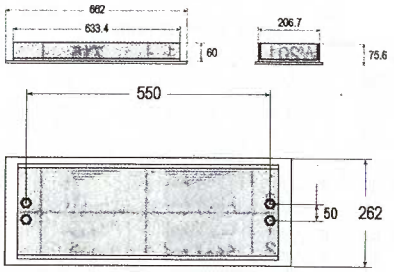
Unit Per Pc.

CODE	Lamps	Dimensions mm			Fitting Size mm	
		A	B	C	D	E
Rated Voltage, 100						
79 19 31	20W x 1	768	188	161	500	150
32	20W x 2	768	188	161	500	150
79 19 33	40W x 1	1,386	188	161	500	150
34	40W x 2	1,386	188	161	500	150
Rated Voltage, 220						
79 19 36	20W x 1	768	188	161	500	150
37	20W x 2	768	188	161	500	150
79 19 38	40W x 1	1,386	188	161	500	150
39	40W x 2	1,386	188	161	500	150

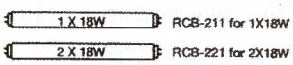
LED Recessed Luminaires

Triac dimming compatible, and integrated with LED linear module(s) to provide high illumination performance. Long service life of >50,000 hours L70 @ 45°C. JIS and IEC safety and EMC compliance. Mounting Method : 4 mounting brackets, Hole cut out: 638 X 211mm (2FT), 1,247 x 211 (4FT). Diffuser material: PMMA (Polymethylmethacrylate) ice crystal, Housing material: Zinc coated steel, Powder coated white. Flexible wiring, Heat resistant up to 105°C. Protection Class : IP44 in conjunction with ceiling. Available equipped type with "Battery backup system or "Emergency lighting", if required.

2FT 12.5W or 25W Type



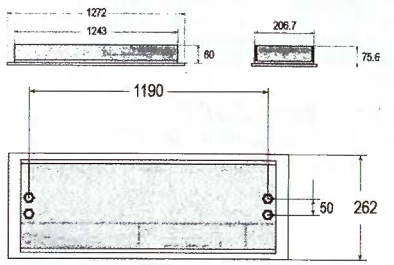
Ideal replacement



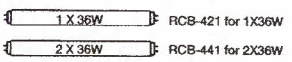
Unit Per Set

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kgs
79 19 40	220–240V	1 x 12.5W	950 lm	662x262x75.6	3.7
41	AC	2 x 12.5W	1,900 lm		4.0

4FT 25W or 50W Type



Ideal replacement



Unit Per Set

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kgs
79 19 42	220–240V	2 x 12.5W	1,900 lm	1,292x262x75.6	6.9
43	AC	4 x 12.5W	3,800 lm		7.5

Replacement LED Tubes for Recessed Luminaire

Unit Per Pc.

CODE	Watt	Length	CODE	Watt	Length
79 19 44	12.5 W	2 FT	**79 19 45**	12.5 W	4 FT

When ordering shades or guards for lighting fixtures ;

Shape and size are different from manufacturers for the lighting fixtures. Please specify following necessary information for your suppliers.

Manufacturer's name .....
Model / Type .....
Part number .....

Ceiling Lights
for LED Fluorescent Lamp

Energy saving LED fluorescent lamp fixture for vessel's engine room. The 24 watt type ceiling light create the illuminance as same as of conventional 40 watt type ceiling light, which save a lot of energy. The replacement work will be extremely reduced due to the long life property of LED. Material : Housing – stainless steel and diffuser – polycarbonate. Please ask your local supplier for more details.

Unit Per Set

CODE	**79 19 51**	**79 19 52**
Lamp	10W x 2	24W x 1
Frequency	50 / 60 Hz	
Phase	Triple	Single
Voltage	110 - 240V	
Protection Degree	IP 67	IP 55 (Cable gland wiring type)
Size	W193×H116×L692mm	W100×H110×L670mm
Weight	3.2 kgs	1.3 kgs
Model as Reference	Aqua Signal No.1445203203	Toka Seiki ML-241

LED Panel Lights

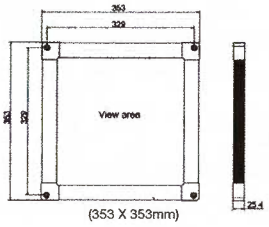
Made of marine grade aluminium, comes with high-efficiency light guide. Easy installation with no external drivers needed, and super slim design for surface mounted application. High-efficiency constant current driver. Long service life of 50,000 hours L70 @ 40°C. Cabin entry: 2 plastic cable glands M20, and cable max. 13mm dia. JIS and IEC safety and EMC compliance.

*Note: Replace whole unit when light not working.

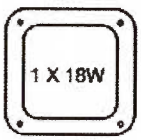
PL 120 Series
353 × 353 mm

70% more energy-efficient compared to 1 × 18W fluorescent lighting system.

Weight: 2.7 kgs



Ideal replacement



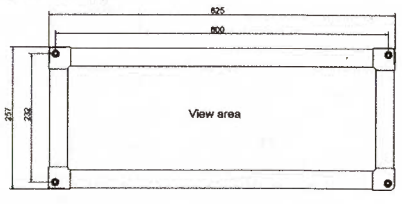
Unit Per Set

CODE	IP	Main Voltage	Power	OCT	Driving Current	System Lumen
79 19 53 54	22 44	100-240V AC	10W	4,000 K	350 mA	850 lm
79 19 55 56	22 44	100-240V AC/24V DC	10W (AC) / 5W (DC)			850 lm (AC) 120 lm (DC)

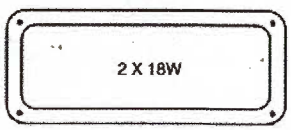
PL 240 Series
625 × 257 mm

70% more energy-efficient compared to 2 × 18W fluorescent lighting system.

Weight: 3.3 kgs



Ideal replacement



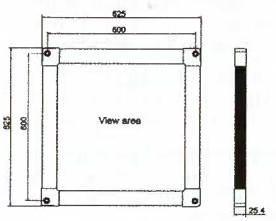
Unit Per Set

CODE	IP	Main Voltage	Power	OCT	Driving Current	System Lumen
79 19 57 58	22 44	100-240V AC	24W	4,000 K	800 mA	1,700 lm
79 19 59 60	22 44	100-240V AC/24V DC	24W (AC) / 5W (DC)			1,700 lm (AC) 120 lm (DC)

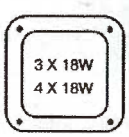
PL 470 Series
625 × 625 mm

70% more energy-efficient compared to 3 × 18W fluorescent lighting system.

Weight: 7.0 kgs



Ideal replacement



Unit Per Set

CODE	IP	Main Voltage	Power	OCT	Driving Current	System Lumen
79 19 61 62	22 44	100-240V AC	47W	4,000 K	800 mA	2,800 lm
79 19 63 64	22 44	100-240V AC/24V DC	47W (AC) / 5W (DC)			2,800 lm (AC) 120 lm (DC)

IP Rating Chart

The IP (International Protection, or Ingress Protection) Code consists of the letters IP followed by two digits, as defined in international standard IEC 60529.

The first digit indicates the level of protection that the enclosure provides against access to hazardous parts (e.g., electrical conductors, moving parts) and the ingress of solid foreign objects.

First Digit: Solid

Level	Object size protected against	Effective against
0	Not protected	No protection against contact and ingress of objects.
1	>50 mm	Any large surface of the body, such as the back of the hand, but no protection against deliberate contact with a body part.
2	>12.5 mm	Fingers or similar objects.
3	>2.5 mm	Tools, thick wires, etc.
4	>1 mm	Most wires, screws, etc.
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact.
6	Dust tight	No ingress of dust; complete protection against contact.

The second digit indicates the protection of the equipment inside the enclosure against harmful ingress of water.

Second Digit: Liquid

Level	Object size protected against	Effective against
0	Not protected	-
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect.
2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.
3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Splashing water	Water splashing against the enclosure from any direction shall have no harmful effect
5	Water jets	Water projected by a nozzle (6.3mm) against enclosure from any direction shall have no harmful effects.
6	Powerful water jets	Water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects.
7	Immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).
8	Immersion beyond 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. Normally, this will mean that the equipment is hermetically sealed. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it produces no harmful effects.

(to be continued)

LED Aisle Lights

A long life, minimize the waste cost for replacement of fluorescent lamp, also respond to Restricting the use of Hazardous Substance (RoHS). Thin-design and a self-powered ceiling, suitable for aisle light. Material: Metal frame – Aluminium, Rest frame: Polycarbonate. Operating temperature: -30 to +50°C.

Unit Per Pc.

CODE	**79 19 65**
Model	CNL-01
Voltage	AC 100-240V
Wattage	19 W x 1
Power Factor	90Min (%)
Colour Temperature	6,000 K
Luminous Flux	1,900 lm
Dimension (L x W x H)	602 x 73 x 34 mm
Weight	1.0 kg

Name of Mfr. : Toka Seiki Co., Ltd.

Cargo Lights

Single Base (Ref. JIS F 8430)

Drip proof single base cargo lights for marine use. Main body is made of painted steel plate.

How to order: CODE

Cargo light, single base, TYPE, WATTAGE

Unit Per Pc.

CODE	Type	Lamp			Guard Diam. mm	Construction
		Watt	Number	Base		
79 20 03 04	No. 2	300 500	1	E39	400	Drip-proof

Quadruple Base, Semi Portable Type (Ref. JIS F8412-1983)

Drip proof, vibration proof, quadruple base cargo light. Main body made of steel sheet and painted for marine use.

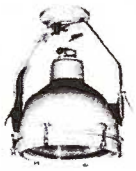
How to order: CODE

Cargo light, quadruple base, semi portable type, No. 1 – 3, 60 watts, LAMP BASE

Unit Per Pc.

CODE	Type	Lamp Watt	Lamp Number	Lamp Base	Guard Diam. mm	Construction
79 20 07	No. 1-3	60	4	E26	410	Drip Proof & Vibration Proof
08				B22		

Projector Type
(Ref. JIS F8412-1983)



Waterproof single base projector type cargo lights for marine use. Main body made of painted steel plate.

How to order: CODE

Cargo light, projector type, TYPE, WATTAGE, LAMP BASE

Unit Per Pc.

CODE	Type	Lamp Watt	Lamp Number	Lamp Base	Guard Diam. mm	Construction
79 20 11	No. 2-1	200	1	E26	350	Water Proof
12				B22		
79 20 13	No. 2-2	300	1	E39	410	
14		500				

Boat Deck Lights
Water & Vibration Proof
(Ref. JIS F8413-1983)

Water and vibration proof single base boat deck lights. Mainly used for illuminating a life boat during and immediately after the launching process. Main body made of painted steel sheet.

How to order: CODE

Boat deck light, water & vibration proof, TYPE, WATTAGE, LAMP BASE

Unit Per Pc.

CODE	Type	Lamp Watt	Lamp Number	Lamp Base	Guard Diam. mm	Construction
79 20 21	No. 1	100	1	E26	350	Water and Vibration Proof
22		200				
79 20 23		100		B-22		
24		200				
79 20 25	No. 2	300	1	E-39	410	
26		500				

Boat Deck Lights
Watertight Sealed Beam Type

Made of casting brass body with casting iron made fixing bed.

Unit Per Pc.

CODE	Type	Lamp		Height mm	Weight kgs
		Volt	Watt		
79 20 28	S1R	24 V	60 W	308	4.7
29	S2R	24 V	75/55 W	320	5.5

Marine Floodlighting Projectors
Water & Vibration Proof
(Ref. JIS F8417-1983)

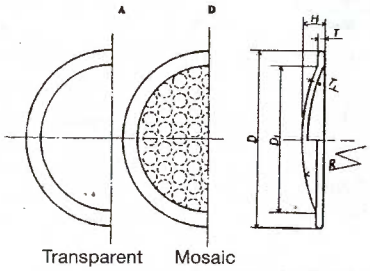
Water and vibration proof single base flood lighting projector. Main body made of painted steel sheet. Mainly used on board ships.

Unit Per Pc.

CODE	Type	Lamp			φD mm
		Watt	Number	Base	
79 20 32	No. 2	500	1	E39	410

Front Glasses
for Marine Electric Light
(Ref. JIS F8403-1981)

Front glasses for cargo lights, flood-lighting projectors boat deck lights and others. Available in two kinds of glass transparent and mosaic.



Unit Per Pc.

CODE	Type	Size mm			
		D	D_1	H	T
79 20 36	A300	300	280	30	8
37	D300	300	280	30	8
38	A350	350	325	35	9
39	D350	350	325	35	9

Denotes A ... Transparent Glass
D ... Mosaic Glass

Marine Pendant Lights
Water & Vibration Proof
(Ref. JIS F8414-1990)

Marine pendant light, mainly used for illuminating a working area such as in engine rooms and stores in ships. Water and vibration proof.

How to order: CODE

Pendant light, water & vibration proof, TYPE, LAMP BASE, WATTAGE

7TH 79

Unit Per Pc.

CODE	Type	Lamp Base	Lamp Voltage	Lamp Watt	Glass Globe
79 20 51	1	E-12	125	20	S 80A
52		B-15			
79 20 53	1M	E-12			
54		B-15			
79 20 55	2	E-26	250	60	S 90A
56		B-22			
79 20 57	2M	E-26			
58		B-22			
79 20 59	3	E-26		100	S120A
60	3M				
79 20 61	4			200	S135A
62	4M				

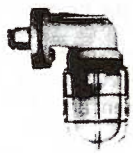
Remark: Main body material is metal casting but the letter "M" suffixed to type number denotes that of synthetic resins.

Marine Watertight Type Wall Lights

Watertight Wall Light Fixture mainly used for the illumination of passageways in exposed areas on board ships.

Type W

Type WB-1



Type WB-2

Unit Per Pc.

CODE	Type	Watt	Applicable Glass Globe	Lamp Base	Main Body Material
79 20 66	W	60	F175A	E-26	Cast Iron
67	WB-1	20	S57A	B-15	Synthetic Resin
68	WB-2	60	S90A	E-26	"

LED Marine Wall Lights

BG Series: Cable wiring connected by side entry

10W/12W/13W

Made of marine grade aluminium alloy with powder coating and PBT fiberglass reinforced body, polycarbonate diffuser and clear or red guard. Alternative to 100W incandescent bulb, and energy savings up to 90% compared to 100W incandescent bulb. Vibration-resistant. Long service life of 50,000 hours L70@45°C. JIS and IEC safety and EMC compliance. Ingress protection: 56. Weight: 1.0 kgs. Triac dimming compatible (220-240VAC & 100V-120VAC only). Please specify which guard is preferable, polycarbonate clear or polycarbonate red, when ordering.

Unit Per Pc.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen	Type
Guard: Polycarbonate Clear						
79 20 40	24V DC	10W	5,000K	160°	950 lm	LMD01050PC
41	100-120V AC	12W			900 lm	LS10A1PC
42	220-240V AC	13W			900 lm	LS10A2PC
Guard: Polycarbonate Red						
79 20 43	24V DC	10W	5,000K	160°	950 lm	LMD01050PR
44	100-120V AC	12W			900 lm	LS10A1PR
45	220-240V AC	13W			900 lm	LS10A2PR

CCT denotes Correlated Colour Temperature.

(to be continued)

FG Series: Cable wiring connected by back entry, through wall

10W/12W/13W

Unit Per Pc.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen	Type
Guard: Polycarbonate Clear						
79 20 46	24V DC	10W	5,000K	160°	950 lm	LMD01050PC
47	100-120V AC	12W			900 lm	LS10A1PC
48	220-240V AC	13W			900 lm	LS10A2PC
Guard: Polycarbonate Red						
79 20 49	24V DC	10W	5,000K	160°	950 lm	LMD01050PR
50	100-120V AC	12W			900 lm	LS10A1PR
63	220-240V AC	13W			900 lm	LS10A2PR

CCT denotes Correlated Colour Temperature.

30W

Alternative to 300W incandescent bulb, and energy savings of up to 90% compared to 300W incandescent bulb. Long service life of 30,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. Ingress protection: 56. Weight: 1.5 kgs.

Unit Per Pc.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen	Type
Guard: Polycarbonate Clear						
79 20 64	100-240V AC	30W	5,000K	180°	2,900 lm	LMU03050PC
Guard: Polycarbonate Red						
79 20 65	100-240V AC/DC	30W	5,000K	180°	2,900 lm	LMU03050PR

CCT denotes Correlated Colour Temperature.

LED Marine Pendant Lights

EG 10W/12W/13W

A complete solution with heat sink, driver and polycarbonate diffuser. Made of marine grade aluminium alloy with powder coating and PBT fiberglass reinforced body, polycarbonate diffuser and clear or red guard. Vibration-resistant. Energy savings of up to 90% compared to 100W incandescent bulb. Long service life of 50,000 hours L70 @ 45°C. JIS and IEC safety and EMC compliance. Triac dimming compatible (220-240VAC & 100V-120VAC only). Weight: 1.0 kgs. IP56.

Unit Per Pc.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen	Type
Guard: Polycarbonate Clear						
79 20 69	24V DC	10W	5,000K	160°	950 lm	LMD01050PC
70	100-120V AC	12W			900 lm	LS10A1PC
92	220-240V AC	13W			900 lm	LS10A2PC
Guard: Polycarbonate Red						
79 20 93	24V DC	10W	5,000K	160°	950 lm	LMD01050PR
94	100-120V AC	12W			900 lm	LS10A1PR
95	220-240V AC	13W			900 lm	LS10A2PR

CCT denotes Correlated Colour Temperature.

EG30W

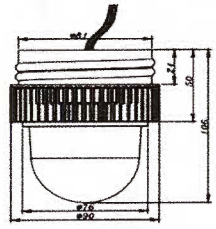
Alternative to 300W incandescent bulb, and energy savings of up to 90% compared to 300W incandescent bulb. Long service life of 30,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. Ingress protection: 56. Weight: 1.5 kgs.

Unit Per Pc.

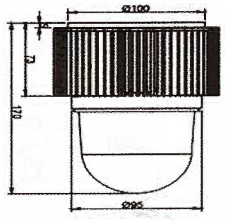
CODE	Voltage	Power	CCT	Beam Angle	System Lumen	Type
Guard: Polycarbonate Clear						
79 20 96	100-240V AC/DC	30W	5,000K	180°	2,900 lm	LMU03050PC
Guard: Polycarbonate Red						
79 20 97	100-240V AC/DC	30W	5,000K	180°	2,900 lm	LMU03050PR

CCT denotes Correlated Colour Temperature.

Replacement LED Modules for LED Wall Light and Pendant Light



Equivalent to 100W Incandescent Bulb (10/12/13W)



Equivalent to 300W Incandescent Bulb (30W)

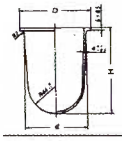
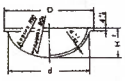
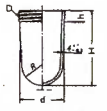
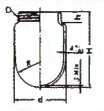
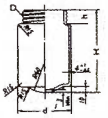
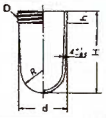
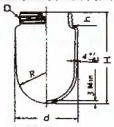
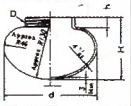
CODE	Power
79 21 87	24V DC 10W
88	100-120V AC 12W
89	220-240V AC 13W
90	100-240 AC/DC 30W

Glass Globes

for Marine Electric Light

(Ref. JIS F8402-1982)

Glass globes used for marine electric lights with incandescent lamps.

Illustration	Type	Dimensions mm D	d	H	T/h	Colour
Flange Type						
	90	105	90	150	6	A,AB, AG,AR, AYR
	175	190	175	60	4	A
	250 300 350	262 312 362	250 300 350	85 90 95	4 4 4	B
Screw in Type						
	57 80	59.9 - 60.3 83.4 - 83.7	57 80	75 90	22 26	A
	90	83.4 - 83.7	90	150	26	A,AB, AG,AR, AYR
	110	83.4 - 83.7	110	160	26	B
	120	123.0 - 123.4	120	175	26	A
	135	123.0 - 123.4	135	220	26	A
	230	123.0 - 123.4	230	157	26	B

1. Symbols of class denote the shape of fitting part of globes as follows:
   F ... Flange type
   S ... Screw in type
2. Type is classified according to the outside diameter of the globe in mm.
3. Symbols of colour denote the following.
   A ..... Colourless Transparency
   B ..... Frosted
   AB..... Transparent blue
   AG ..... Transparent green
   AR ..... Transparent red
   AYR ..... Transparent yellow

How to order: CODE

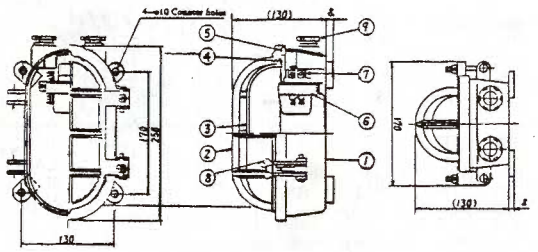
Glass globe, TYPE of FITTING, TYPE

Unit Per Pc.

CODE	Type	CODE	Type
Flange Type		**Screw in Type**	
79 20 71	F90A	**79 20 81**	S57A
72	F90AB	**82**	S80A
73	F90AG	**83**	S90A
74	F90AR	**84**	S90AB
75	F90AYR	**85**	S90AG
79 20 76	F175A	**79 20 86**	S90AR
77	F250B	**87**	S90AYR
78	F300B	**88**	S110B
79	F350B	**89**	S120A
		90	S135A
		79 20 91	S230B

Watertight Type Passage Lights
(Ref. JIS F8441)

Watertight passage lights using incandescent lamps of 40 watts or less at 110V or less as a light source, mainly applied for weather decks aboard in a place of ambient temperature 40°C or less.



Specification

Material	1. Body	Cast Iron
	2. Guard	Cast Iron
	3. Globe	Glass
	4. Gasket	Synthetic Rubber
	5. Gasket	Synthetic Rubber
	6. Screw	Brass
Size mm	Overall	Length 250 mm
	Overall	Width 170 mm
	Overall	Depth 130 mm
Voltage	110 V	
Wattage	40 W	

79 21 01	Passage light, watertight, with guard, E-26 x 40W	Pc.
79 21 02	Passage light, watertight, without guard, E-26 x 40W	"

Chart Table Lights
Wall Mounting

Bellow Type Pantagraph Type

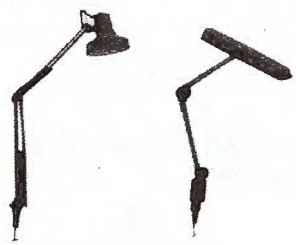
Unit Per Set

CODE		79 21 20	79 21 21
Extension Type		Bellow Type	Pantagraph Type
Extended to		820 mm	880 mm
Unextended		225 mm	180 mm
Setting Hole		75x75x90mmx6	65 x 95 mm x 4
Shade Size		160ø x 155H mm	160ø x 145H mm
Material	Shade	Aluminium Plate	Steel Plate
	Arm	Brass Plate	Steel Plate
	Base	Cast Iron	Cast Iron
Lamp		40W or 60W	
Base		E-26	
Weight		3.9 kgs	3.0 kgs

Universal Table Lights

Designed for lighting study areas. Lighter and easy to handle due to spring suspension. Can be fitted on a desk or wall by simply exchanging bases.

Available in incandescent lamp and fluorescent lamp types. FL type of 220V requires a special ballast.



Incandescent Lamp Type F.L. Lamp Type

Fitting Base

Clamp Bracket Table Base Wall Bracket

How to order: CODE

Universal table light, TYPE of LAMP, WATTAGE, FITTING TYPE

Unit Per Set

CODE	For	Watts	Maximum Height mm	Fitting Parts
79 21 25	Incandescent Lamp	1,000W	865	Clamp Bracket
79 21 26				Table Base
79 21 27				Wall Bracket
79 21 28	F.L. Lamp	20W x 1	840	Clamp Bracket
79 21 29				Table Base
79 21 30				Wall Bracket

LED Downlights

DL Series 7W 220-240VAC

Made of marine grade aluminium alloy with powder coating, comes with 4mm tempered glass. Built-in with integrated driver for ease of installation, and vibration-resistant. Energy savings of up to 90% compared to 50W halogen. Superior heat sink designed to enhance the service life. Long service life of 50,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. Application: Cabins, Passageways, Galleys, Meeting rooms. Protection Class: IP44 in conjunction with ceiling.

Note: Replace whole unit when light is not working.

Unit Per Pc.

CODE	79 21 31
Model	DLA07030
Main Voltage	220 - 240V AC
Power	7W
CCT	3,000K
Beam Angle	60°
System Lumen	420 lm
Dimensions	Dia 103 x H 96.9 mm
Weight	0.5 kgs

DL Series 12W & 15W 220-240VAC 15W 24V DC

Made of marine grade aluminium alloy with powder coating, comes with polycarbonate diffuser. Triac dimming compatible (220-240 VAC only). Designed with reliable AC driver on board to enhance the service life. Vibration-resistant. Energy savings of up to 60% compared to compact fluorescent system. Long service life of 50,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. Application: Cabins, Passageways, Galleys, Meeting rooms. Protection Class: IP44 in conjunction with ceiling.

*Note: Replace whole unit when light is not working.

Ideal Replacement:

DLA12040 (12W) for 18W CFL

DLA15040 (15W) for 26W CFL

Unit Per Pc.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen
79 21 32	24V DC	15W	4,000K	85°	1,050 lm
33	220-240V AC	12W			820 lm
34	220-240V AC	15W			1.050 lm

Bed Lamp Fixtures

Incandescent Lamp Use

Chrome plate finished brass made base and body with frost glass globe.

Unit Per Pc.

CODE	Lamp Base	Watt	Size mm
79 21 36	E-26	20	230 x 115 x 120
79 21 37	B-22		

Fluorescent Lamp Use

Made of synthetic resin foundation covered with milky white polystyrene diffuser. When ordering, please specify power source voltage and applicable wattage of the fluorescent lamp.

How to order: CODE

Bed lamp fixture, FL lamp, VOLTAGE, WATTAGE

Unit Per Set

CODE	Lamp	Size mm Width x Height x Depth
	AC 110 volt	
79 21 41	8 W x 1	393 x 110 x 90
42	10 W x 1	393 x 110 x 90
43	15 W x 1	504 x 110 x 90
	AC 220 volt	
79 21 45	8 W x 1	393 x 110 x 90
46	10 W x 1	393 x 110 x 90
47	15 W x 1	504 x 110 x 90

LED Berth Lights

Special design polycarbonate diffuser to optimize the LED light transmission.

Slim profile design that is easily mounted to provide illumination performance while using significantly less energy, and useful for lighting in Passageways, Cabins, Lounges, Dinning rooms, and Accommodation areas. Long service life of 50,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. 2 mounting holes Φ5.5mm.

Material: Diffuser- Polycarbonate, Housing- Galvanized steel, powder coated white.

Protection Class: IP20 in conjunction with ceiling.

*Note: Replace whole unit when light is not working.

Unit Per Pc.

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kgs
79 21 48	100-120V AC	4W	280 lm	230 x 70 x 31.6	0.25
49	220-240V AC				

7. Hand Lamps

Watertight Hand Lamps

Watertight hand portable lamp with S90A screw globe and cast iron body and guard. Handle grip is made of hard wood or hard rubber and a hanging hook is fixed. Suitable for 60 watt lamp either E-26 or B-22. 350 mm overall length. Lamp excepted.

Unit Per Pc.

CODE	Lamp Base	Lamp Watts	Applicable Glass Globe
79 21 51	E-26	60	SAO-90
79 21 52	B-22		

Non-Watertight Hand Lamps

Plastic handle and iron guard hand lamp with hanging hook. 100 mm guard diameter and 265 mm overall length. Rated voltage 125V.

Unit Per Pc.

CODE	Lamp Base	Watts
79 21 66	E-26	60
67	B-22	

LED Safety Guide Hand Lamp

A handy lamp used for Indicating emergency with red high luminance LED light. Made of red colour polycarbonate resin, and 2 x AA battery operated.

*Continuous Lighting: 160 hours
*Continuous Flashing: 100 hours
*Waterproof type

CODE	Description	Unit
79 21 68	LED Safety Guide Hand Lamp, red color waterproof	Pc.

Explosion Proof Portable Hand Lamps

This explosion proof portable hand lamp is specially designed for use in hazardous atmospheres containing explosive and combustible gases and vapours.

Specifications

Material	Housing Reflector Guard Grip	Cast Alum. Alloy Borosilicate Glass Steel Wire Rubber
Type of Protection	d2G3	
Finish	Melamine Baked	
Lamp	PS-60W, PS-100W	
Cable	3-Core, 2 mm² Cabtyre Cable	
Dimensions	Overall length 360 mm Overall diam. 150 mm	
Weight	2.2 kgs	

How to order: CODE

Portable hand lamp, explosion-proof, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Wattage	Voltage	Lamp Base
79 21 71	60W	110	E-26
79 21 72		220	
79 21 73	100W	110	
79 21 74		220	

LED Marine Portable Work Lights

A complete solution with heat sink, driver and polycarbonate diffuser. Made of marine grade aluminium alloy with powder coating and polycarbonate body, diffuser and clear or red guard. Vibration-resistant, and energy savings of up to 90% compared to 100W incandescent bulb. Long service life of 50,000 hours L70 @ 45°C. JIS and IEC safety and EMC compliance. Beam Angle: 160°, System Lumen: 10W 950lm,12W and 13W 900 lm, IP56, Weight: 1.0 kgs. Triac dimming compatible (220-240VAC & 100V-120VAC only).

10w/12W/13W

Unit Per Pc.

Guard: Polycarbonate Clear		Guard: Polycarbonate Red	
CODE	Power	CODE	Power
79 21 75	24V DC 10W	**79 21 78**	24V DC 10W
76	100-120V AC 12W	**79**	100-120V AC 12W
77	220-240V AC 13W	**80**	220-240V AC 13W

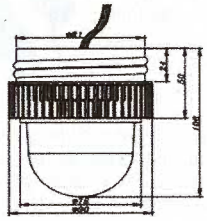
30W (100-240V AC/DC)

Alternative to 300W incandescent bulb, and energy savings of up to 90% compared to 300W incandescent bulb. Long service life of 30,000 hours L70 @ 40°C. Beam Angle: 180°, System Lumen: 2,900 lm, IP 56, Weight: 1.5 kgs.

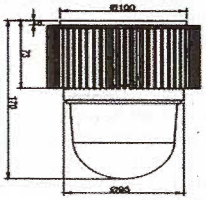
Unit Per Pc.

CODE	Type of Guard	CODE	Type of Guard
79 21 85	Clear	**79 21 86**	Red

Replacement LED Modules for Portable Work Light



Equivalent to 100W Incandescent Bulb (10/12/13W)



Equivalent to 300W Incandescent Bulb (30W)

CODE	Power
79 21 87	24V DC 10W
88	100-120V AC 12W
89	220-240V AC 13W
90	100-240 AC/DC 30W

Watertight Fluorescent Hand Lamps (Line Lights)

This polycarbonate cylindrical type fluorescent hand lamp with built in ballast has the following advantages:

1. This line light will not break easily if it is hit or dropped.
2. It is waterproof.
3. If the fluorescent lamp is broken inside, this line light is not liable to ignite.
4. Since pieces of broken glass will not scatter, it will not cause damage to any apparatus.
5. This line light is cold-proof so that it can be used in any cold place.

Specifications		
Voltage & Hz	100-110V/200V 50 or 60 Hz	
Starter	Glow Start Type	
Lamp	FL 20	FL10
Ampere	0.36A	0.23A
Average Life	7,500h	5,000h
Size	964L x 74ø mm	714L x 74ø mm
Weight	2 kgs	1.8 kgs
Accessories	1. Cabtyre Cabel 2.5 mtrs 2. Watertight Plug	

How to order: CODE

FL hand lamp, watertight, VOLTAGE, WATTAGE

Unit Per Pc.

CODE	Wattage	Voltage	Starter
79 21 81	10W	100/110 V	FG-1E
82	20W	100/110 V	"
79 21 83	10W	200V	"
84	20W	200V	"

8. Warning Lights

Rotary Warning Lights

All-polycarbonate plastic resin construction with single reflector, producing 180 - 215 flashes per minute horizontally 360°. Available globe colours are red and yellow. Size 180 mm (ϕ) x 206 mm (H).

How to order: CODE

Rotary warning light, VOLTAGE, WATTAGE, COLOUR

Unit Per Pc.

CODE	Colour	Rated Voltage	Lamp	Beam Intensity cd.	Flashes Per Minutes	Net Wt. kgs
79 21 91	Red	DC12V	12V 40W	30,000	200	1.3
92	Yellow					
79 21 93	Red	DC24V	24V 40W			
94	Yellow					
79 21 95	Red	AC100V	100V 30W	7,500	180/215 (50/60Hz)	1.2
96	Yellow					
79 21 97	Red	AC200V	200V 30W	3,000		
98	Yellow					

9. Flashlights

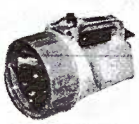
Strong Flashlights

All plastic light with a range of more than 300 meters.

Regular (6 Batteries)

Regular (4 Batteries)

Adjustable Flood & Spot



Watertight & Sparkless

How to order: CODE

Strong flashlight, NUMBER of BATTERIES, REMARK

Unit Per Pc.

CODE	Number of Battery	Remarks
79 22 01	R20P (UM-1) x 6	Regular
02	R20P (UM-1) x 4	Regular
03	R20P (UM-1) x 4	Adjustable Flood & Spot
04	R20P (UM-1) x 6	Water-tight & Sparkless (d2G5)

Industrial Flashlights

Industrial flashlights made of tough plastic.

Unit Per Pc.

CODE	Battery	Remark
79 22 12	R20P (UM-1) x 2	Industrial
13	R20P (UM-1) x 3	"

Industrial Quality LED Flashlights

Extremely durable industrial grade switch with a super tough polycarbonate lens.

Power source : 2 x D cell Alkaline
Light source : LED
Light output : 50 Lumens
Beam distance : 75 meter

79 22 10	Flashlight, LED, industrial 2618 LED	Pc.

Intrinsically Safe LED Flashlights
Razor Model 60102

A LED flashlight exhibits a piercing beam supported by its deep dish reflector, resulting in 1850 lux at 6 feet. A Zone Zero safety classification makes it the safest of its kind. Black or Hi visibility Lime Green coloured body is available if required.

Unit Per Pc.

CODE	**79 22 29**
Max. Output	60 lumens ; 1850 + lux at 6 feet
Runtime	100 + hours
Batteries	3 AA Cells
Safety Rating	Intrinsically safe- Zone Zero rating
Worldwide Safety Standard	IECEx Exia IIC T4 iaD T135C Ga, Da (Equivalent to UL Rating – Class 1 Division 1 Groups A, B, C, D, T4 and Class II Division 1 Groups E, F, G, T4)
European Safety Standard	AEX II 1GD Exia IIC T4 iaD T135C
Length	7.125"
Weight	7 oz

Name of Mfr.: Bright Star

Safety Approved Flashlights

Model No. 2217 and No. 2224

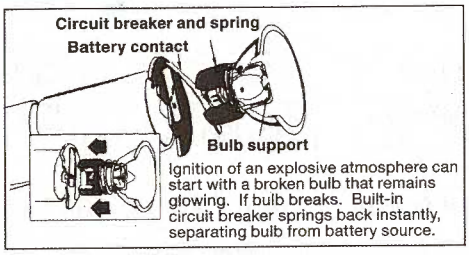
2217

2224

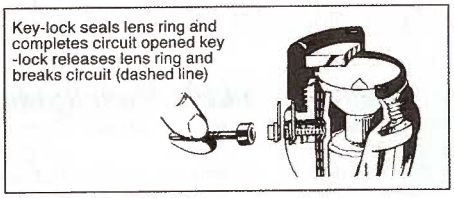
Unit Per Pc.

CODE	79 22 16	79 22 17
Model	2217	2224
Battery	R20P (UM1) x 2	R20P (UM1) x 3
Bulb	PR-6	PR-3
Feature	Waterproofed, 3 way switch, switchguard, spare bulb holder, ring hanger, International Orang for positive identification of safety requirement. Circuit break protection system.	
Safety Approval	MSHA, UL (OSA) approved, meets OSHA requirements also in other countries authorities have approved the design.	

Name of Mfr.: Bright Star



Model No. 2317C



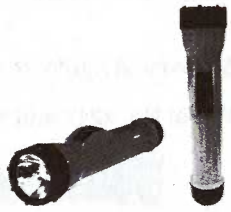
Specifications

Battery	R20P (UM-1) x 2	Bulb	PR-7
Feature	Anti-static and explosion protection. Case : one-piece, waterproof, embossed with official certificate data. Lens : waterproof, unbreakable safety lens. Switch : waterproof, three-way: "off - flash - on" Key-lock : to prevent opening flashlight by unauthorized personnel.		
Safety Approval	Atex II 2 G EEX ib e IIC T6 CAT 2 (Zone 1)		

79 22 19	Flashlight, "Bright Star" safety approved Model 2317C, 2cells with key lock	Pc.

Safety Approved LED Flashlights

For use in hazardous atmospheres and switch guard prevents accidental lighting.



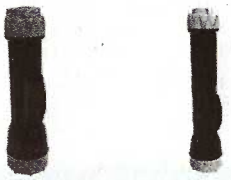
2217 LED 2224 LED

Unit Per Pc.

CODE	79 22 35	79 22 36
Model	2217 LED	2224 LED
Power Source	2 x 'D' cell Alkaline	3 x 'D' cell Alkaline
Beam Distance	88 mtr	
Light Output	50 lumens	
Runtime	200 hrs	250 hrs
Weight	1.3 kgs	1.7 kgs
Safety Approvals	UL protection method, Intrinsically safe, Divisions 1 & 2, Class I, II, III Div 1 Groups A-G, Class I, II, III Div 2 Groups A-G, Operating Temp T5	

Name of Mfr.: Bright Star

ATEX Specification Models



2217 LED ATEX 2224 LED ATEX

Unit Per Pc.

CODE	79 22 37	79 22 38
Model	2217 LED ATEX	2224 LED ATEX
Power Source	2 x 'D' cell Alkaline	3 x 'D' cell Alkaline
Beam Distance	99 mtr	103 mtr
Light Output	50 lumens 2,450 candelas	54 lumens 2,660 candelas
Runtime	200 hrs	250 hrs
Weight	1.3 kgs	1.7 kgs
Safety Approvals	UL protection methods, UL 913 CSA C22.2, Intrinsically safe, Class I, Division 1 & 2, Groups A,B,C,D, Class II, Division 1 & 2 Groups E,F,G, Class III Division 1 & 2, Operating Temp T5 IECEx & ATEX protection methods, Ex ib IIC Ga, Temp Code T5; II 1GD ZONE 1 (Approved for use with Duracell MN1300 or Energizer E95 cells only)	

Name of Mfr.: Bright Star

SF-12 LED

DS-12 LED

Unit Per Pc.

CODE	79 22 30	79 22 60
Model	SF-12	DS-12
Light Source	Cree XP-E LED	
Power Source	3 x 'C' cell Alkaline	
Beam Distance	93 mtr (low) 137 mtr (high)	100 mtr (low) 140 mtr (high)
Light Output	55 lumens (low) 124 lumens (high)	65 lumens (low) 130 lumens (high)
Runtime	80 hrs (low) 42 hrs 30min. (high)	98 hrs (low) 55 hrs (high)

(to be continued)

Unit Per Pc.

CODE	79 22 30	79 22 60
Weight	190 grm	
Safety Approvals	UL - Class I Div 1 Group A,B,C,D, Class II D 1 Group E,F,G, Class III, Operating Temp T4 Atex – Ex II 1 G Ex ia IIC T4 IECEx – Ex II 1 G Ex ia IIC T4 CE & ROHS Approved	

Name of Mfr.: Day Sun Technology Ltd.

Accessory Parts for Flashlight

Snap-in Wand

This removable wand allows you to direct light beam when needed. Fits for all 2 and 3 D-cell flashlights, which snap on and off very easily. 6-1/2" in length, available in color red and yellow. S-Biner Clip is also available when required.

Unit Per Pc.

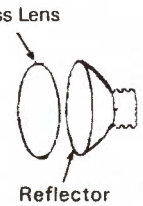
CODE	Description	Model
79 22 43	Snap-in wand for flashlight - Color Red	23853
44	Snap-in wand for flashlight - Color Yellow	23860
49	S-Binder Clip, 2" Stainless Steel	27445

Name of Mfr.: Bright Star

Replacement Parts for Flashlight

How to order: CODE

PART NAME, PART NO., for MODEL

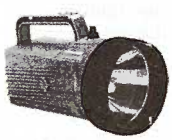


Unit Per Pc.

CODE	Description	PT/No.	For
79 22 22 24 31	Universal facetted reflector Glass lens Universal head assembly w/PR2	SP-008 SP-007 SP-060	2618
79 22 32 34	Head assembly w/PR3 Bottom cap w/spring	- -	- -
79 22 23	Safety head assembly w/PR2	SP-068	2217
79 22 27	Safety head assembly w/PR3	SP-069	2224

Safety Approved Lanterns

Model No. 2206



Carries the safety classification of OSA MSHA, UL listed class 1, group C & D uses 6 volt lantern battery and PR-13 bulb.

79 22 40	Lantern "Bright Star" safety approved, Model 2206, 6V	Pc.

Safety Approved LED Lanterns

2206 LED

For use in hazardous atmospheres, and waterproof IP 67 rating.

Power source : 4 x 'D' cell Alkaline
Runtime : 150 hrs
Light output : 90 lumens

Safety Approvals:
UL protection methods, UL 913 CSA C22.2, intrinsically safe, Divisions 1 & 2, Class I, II, III Div 1 Group A-G, Class I, II, III Div 2 Group A-G, Operating temp T5

79 22 41	Lantern, safety approved, LED, 2206 LED	Pc.

Name of Mfr: Bright Star

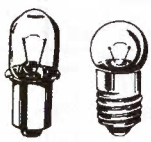
Rechargeable Flashlights

Extra-bright beam with polished reflector. Battery replacement is unnecessary, as Cadnica batteries can be recharged hundreds of times. No danger of over-charging.

Unit Per Pc.

CODE	Volt	Continuous Operation	Charging Time	FlangeBase Bulb Type
79 22 45		70 min.	10 hour	2.5 V 350 mA
47	100 V	60 min.	10 hours	6 V 550 mA
48		130 min.	16 hours	6 V 550 mA
79 22 46	220 V	70 min.	10 hours	2.4 V 600 mA

Flashlight Bulbs



Furnishable flange base and screw base. When ordering, specify the base type and voltage.

How to order: CODE

Flashlight bulb, TYPE of BASE, VOLTAGE, AMPERE

Unit Per Pc.

Flange Base				Screw Base			
CODE	Volts	Amp	Base	CODE	Volts	Amp	Base
79 22 51	2.5	0.5	P-13.5S	79 22 55	2.5	0.3	E-9
52	3.8	0.5		56	2.5	0.5	
53	4.8	0.5		57	3.8	0.3	
50	6.0	0.55		58	3.8	0.5	
54	7.2	0.55		59	6.0	0.5	

Safety Torches

Compliant with ATEX Directive

Compliant with the 2014/34/EU ATEX Explosive Atmospheres Equipment Directive. The range includes straight and right angle torch models. The torch body offers high strength and proven impact resistance even at subzero temperatures, using carefully selected thermoplastic resins with excellent chemical resistance.

The Wolf ATEX torch range is sealed dust tight and protected from water immersion, with a certified IP67 enclosure.

Unit Per Pc.

CODE	79 22 61	79 22 62	79 22 63	79 22 64
Model	TS-26B	TR-26B	TS-24B	TR-24B
Shape	Straight	Angle	Straight	Angle
Type of Protection	Increased safety, intrinsic safety			
Approval Code:	II 2GD Ex eb ib IIB T6 Gb Ex tb IIIC T65°C Db (-10°C ≤ Ta ≤ +40°C)	II 2GD Ex eb ib IIB T6 Gb Ex tb IIIC T65°C Db (-20°C ≤ Ta ≤ +40°C)	II 2GD Ex eb ib IIB T4 Gb Ex tb IIIC T95°C Db (-10°C ≤ Ta ≤ +40/55°C)	II 2GD Ex eb ib IIB T4 Gb Ex tb IIIC T95°C Db (-20°C ≤ Ta ≤ +40/55°C)
Area of Classification (Gas)	Zones 1 & 2 Gas Groups IIA, IIB			
Temperature Class (Gas)	T6		T4	
Ambient Temperature (Gas)	-10°C to +40°C	-20°C to +40°C	-10°C to +40°C / +55°C*	-20°C to +40°C / +55°C*
Area of Classification (Dust)	Zones 21 and 22 Dust Groups IIIA, IIIB, IIIC			
Temperature Class (Dust)	65°C		95°C	
Certificate	BAS02ATEX2220X / IECEx BAS 15.0033X			
Enclosure	Impact Resistant Thermoplastic, Electrostatic Non-hazardous			
Lens	Toughened Glass			
Beam Type	Medium spot			
Light Source: Type	TP-406		TP-404	
Light Source: Rating	2.4V, 0.5A		2.4V, 0.7A	
Light Source: Output	11.4 lm (at nom voltage)		16 lm (at nom voltage)	
Light Source: Life	15 hrs		50 hrs	
Power Supply: Type	R20 primary cells to IEC60086		R20/LR20 primary cells to IEC60086	
Power Supply: Volt	2 x 1.5v		2 x 1.5v	
Light Duration	Up to 5 hrs		Up to 12 hrs	
Ingress Protection	IP 67			
Weight (without cells)	150 g	190 g	150 g	190 g
Weight (with cells)	350 g	390 g	450 g	490 g
Name of Mfr.	The Wolf Safety Lamp Company Ltd.			

* dependent on battery selection

Rechargeable Safety Torches

The high-tech ATEX approved rechargeable torch range uses the latest technology to give excellent performance, robustness and reliability in the most extreme conditions. This rechargeable torches are CE marked to the ATEX Directive and IECEx Certified, allowing use in Zone 1 or Zone 0 potentially explosive atmospheres, where a T4 temperature class permits.

Unit Per Pc.

CODE	79 22 67	79 22 68
Product Reference	R-50	R-55
Product Description	Rechargeable Safety Torch, Right-Angle	
	Zone 1 LED	Zone 0 LED
Approval Code	I M2/II 2GD Ex ib op is I Mb/IIC T4 Gb (-40°C≤Ta≤+40°C) Ex ib op is IIIB T200°C Db IP67	I M1/II 1GD Ex ia op is I Ma/IIC T4 Ga Ex ia op is IIIB T200°C Da IP67 -40°C≤Ta≤40°C
Type of Protection	'ib' intrinsic safety	'ia' intrinsic safety
Area of Class (Gases)	Zones 1 & 2	Zones 0, 1 & 2
	Gas Groups IIA, IIB and IIC	
Temp. Class (Gases)	T4	
Area of Class (Dust)	Zones 21 and 22	Zones 20, 21 & 22
Max Surface Temp. (Dusts)	T200°C	
Ambient Temperature	-40°C to + 40°C	
Certificate	Baseefa05ATEX0069X / IECExBAS06.0001X	
Enclosure	Impact Resistant Thermoplastic, Chemical Resistant, Static Dissipative	
Lens	Toughened Glass 4mm	
Beam Type	High Output Spot Beam	
Light Source: Type	High Power LED	
Light Source: Watts	3 Watts	
Light Source: Output	High Power – Up to 243lm Low Power – Up to 135lm	
Light Source: Capacity /Life	25,000 hrs + (Fitted For Life)	
Power Source: Pt. no.	R-271	
Power Source: Type	Rechargeable Battery, Lithium-Ion	
Power Source: Volts	7.4 V	
Power Source: Capacity /Life	2.4Ah / Up to 500 Recharge Cycles	
Light Duration	High Power – Up to 3.5hrs Low Power – Up to 6.5hrs	
Ingress Protection	IP67	
Weight (Excl. cells)	0.375 kgs	
Compatible Chargers	RC-200L 12-24Vdc / RC-200H 100-254Vac	
Name of Mfr.	The Wolf Safety Lamp Company	

Battery Chargers for ATEX Rechargeable Torche

Unit Per Pc.

CODE	Model	Voltage	For
79 22 71	RC-200H	100-254V AC	R-50 & R-55

Personal Issue Safety Torches

These Midi, Mini and Micro Torches are certified for use in potentially explosive atmospheres. Using high-tech light sources, they give impressive performance whilst remaining compact enough for easy pocket storage. They are the perfect safety torch for any application where a small size is critical.

All five models are compliant with the 2014/34/EU Explosive Atmospheres (ATEX Equipment) Directive and certified to IECEx for use in potentially explosive gas, vapour or mist atmospheres, where a T3, T4, or T5 temperature class permits.

Unit Per Pc.

CODE		79 22 76	79 22 77	79 22 78	79 22 79	79 22 80
Product Reference		M-10	M-20	M-40	M-60	M-85
Product Description		ATEX LED Micro Torch	ATEX Xenon Mini Torch	ATEX LED Mini Torch	ATEX 1W LED Mini Torch	ATEX LED Midi Torch
Approval Code		I M1/II 1GD Ex ia I Ma/IIC T5 Ga (-40°C ≤Ta≤ +50°C) Ex ia IIIB T95°C Da IP67	IM2/II 2G Ex ib I Mb/IIC T4 Gb (-40°C ≤Ta≤ +40°C) IP67	I M1/II 1GD Ex ia I Ma/IIC T4 Ga (-40°C ≤Ta≤ +50°C) Ex ia IIIB T125°C Da IP67	I M1/II 1GD Ex ia I Ma/IIC T4 Ga (-40°C ≤Ta≤ +50°C) Ex ia IIIB T130°C Da IP67	II 1 G Ex ia IIC T3/T4 Ga IP67 II 1D Ex ia IIIB T200°C Da IP67
Type of Protection		"ia/ib" Intrinsic Safety				'ia' Intrinsic Safety
Area of Classification (Gases)		Zones 0, 1 & 2	Zones 1 & 2	Zones 0, 1 & 2		Zones 0,1 & 2, Gas Groups IIC
Temperature class (gas)		T5	-	T4		T3/T4
Area of Classification (Dust)		Zone 20, 21 & 22	N/A	Zone 20, 21 & 22		Zone 20, 21 & 22
Max Surface Temp. (Dust)		95°C	N/A	125°C		200°C
Certification		Baseefa06ATEX0084 IECEx BAS 06.0023				Baseefa 11ATEX 0236X IECEx BAS 11.0116X
Enclosure		Impact resistant thermoplastic, electrostatic non-hazardous				
Lens		Polycarbonate				Poly-carbonate, impact resistant
Beam Type		Medium Spot	Narrow spot	Medium spot		Narrow spot with wide angle fringe light
Light Source:	Type	1x5mm LED White (Nichia)	Xenon filled filament bulb	3 x 5mm LED White (Nichia)	1 x High Power Cree LED	High power LED
	Output	30 cd	15 lm	3 x 30 cd	Up to 90 lm	Up to 210 lm
	Life	25,000 hrs	30 hrs	25,000 hrs		25,000 +hours (fitted for life)
Power Source:	Pt. no.	M-102 (4 pack)	M-202 (2 pack)	M-402 (3 pack)		4 x LR6
	Type	LR44 primary cells to IEC60086	LR03 primary cells to IEC60086	LR1 primary cells to IEC60086		LR6 primary cells to IEC60086
	Volts	4 x 1.5V	2 x 1.5V	3 x 1.5V		4 x 1.5V
Light Duration		up to 2 hrs	up to 2.3 hrs	up to 10 hrs	1.5-3.5 hrs*	up to 7 hrs

(to be continued)

Ingress Protection	IP67 to EN60529: 1992		
Weight (incl. cells)	25g	60g	190g

* M-60 Battery duration/light output is dependent on battery make and type.

Name of Mfr. : Wolf Safety Lamp Company Ltd.

LED Flashlights

An advanced flashlight equipped with LED (Light-emitting Diodes) lightbulb which has better brightness and running time than conventional incandescent lights. Dry batteries are separate order. Casing is made from ABS plastic and drip-proof.

Unit Per Pc.

CODE	Batteries	Weight grm
79 22 81	R6P (UM-3) x 2	80
82	R6P (UM-3) x 3	196
83	R20P (UM-1) x 2	190
84	R20P (UM-1) x 4	455

Safety LED Torches

The ATEX LED safety torch is an ATEX and IECEx certified primary cell LED safety torch using the latest technology to give excellent performance, robustness and reliability for safe use in Zones 1 and 2 potentially explosive gas, and Zones 21 and 22 dust atmospheres (TR-30+). The TR-35+ is certified to Zone 0 and zone 20.

Unit Per Pc.

CODE	79 22 86	79 22 88
Model	TR-30+ Right Angle Primary Cell	TR-35+ Right Angle Primary Cell
Body Colour	Yellow	Yellow
Approval Code	I M2/II 2GD Ex ib op is I Mb/IIC T4 Gb (–30°C ≤ Ta ≤ 40/55°C) Ex ib op is IIIB T130°C Db	I M1/II 1GD Ex ia I Ma/IIC T4 Ga -30°C ≤ Ta ≤ 40/55°C Ex ia IIIB T130°C Da
Type of Protection	'ib' intrinsic safety	'ia' intrinsic safety
Area of Classification (gases)	Zones 1 & 2 Gas Groups IIA, IIB, IIC	Zones 0, 1 & 2 Gas Groups IIA, IIB, IIC
Temp Classification (Gases)	T4	
Area of Classification (Dust)	Zones 21 and 22 Dust Groups IIIA and IIIB	Zones 20, 21 & 22 Dust Groups IIIA and IIIB
Certificate	ATEX Baseefa 07ATEX0091X / IECEx BAS 06.0089X	
Light Output	Up to 130 lumens	
Power Supply	2 x 1.5V, LR20 Primary Cells to IEC60086	
Ingress Protection	IP67	
Weight (incl. cells)	0.500 kgs	

Name of Mfr. : Wolf Safety Lamp Company

LED Safety Lights

PX-2

PX-1

Unit Per Pc.

CODE	79 22 92	79 22 94
Model	PX 2	PX 1
Light Source	1W CREE LED	3W CREE LED
Output	30 lumens	120 lumens
Area of Classification	ATEX Directive Zone 1 approved	
Body Material	PC (Polycarbonate)	
Protection Class	II 2G Ex ib e IIB T4 Gb	II 2G Ex ib IIB T4 Gb II 2D Ex ib IIIC T105°C Db IP68
Battery	2 x AAA / Micro / 1.5 volt each	4 x AA / Mignon / 1.5 volt each
Size mm	22 dia x 142 length	39 dia x 167 length
Weight grm	20	80

Name of Mfr.: Parat GmbH + Co. KG

Unit Per Pc.

CODE	79 22 95
Model	SF-7
Light Source	Cree XP-E LED
Power Source	4 x AA Alkaline
Beam Distance	110 mtr(low) / 231 mtr(high)
Light Output	32 lumens(low) / 133 lumens(high)
Runtime	69 hrs 10 min.(low) / 6 hrs(high)
Size	174 x 47 x 47mm
Weight	115 grm
Safety Approval	UL - Class I Div 1 Group A,B,C,D, Class II D 1 Group E,F,G, Class III T4 Atex – Ex II 1 G Ex ia IIC T4 IECEx – Ex ia IIC T4 Ga / IECEx UL 13.0013X CE & ROHS & REACH Approved

Name of Mfr.: Day Sun Technology Ltd.

10. Batteries

Dry Batteries

Dependable, long lasting and economical. Leak-proof, used for flashlights, transistor radios, transistor clocks, photo flasher, etc.

R20P (UM-1) | R14P (UM-2) | R6P (UM-3) | R03 (UM-4) | R1 (UM-5) | 6F22 (S-006P) | FM-3

Unit Per Pc.

CODE	Type	ANSI	Volt	Size mm Dia x L	Application
79 24 01	R20P(UM-1)	D	1.5	34.2 x 61.5	Flashlight
02	R14P(UM-2)	C	1.5	26.2 x 50.0	Penlight
03	R6P(UM-3)	AA	1.5	14.5 x 50.5	Meter
10	R03(UM-4)	AAA	1.5	10.5 x 44.5	Remote Controller
04	R1(UM-5)	N	1.5	12.0 x 30.2	TR. Radio
79 24 05	6F22(S-006P)	-	9.0	26.5x17.5x48.5	Radio
06	FM-3		1.5	89x47.5x135	Instrument

Coin or Button Type Batteries

Small light weight batteries for wide range of applications; such as flashlights, digital cameras, watches.

Lithium Manganese Dioxide Battery

Silver Oxide Battery

Micro Alkaline Battery

CR Coin Type
Lithium Manganese Dioxide Batteries

Unit Per Pc.

CODE	JIS Type	Size Diam x H mm	Volt	Applications
79 24 15	CR 1216	12.5 x 1.6	3.0	Camera / Keylight
12	CR 1220	12.5 x 2.0		
16	CR 1616	16.0 x 1.6		
17	CR 1620	16.0 x 2.0		
18	CR 2012	20.0 x 1.2		
79 24 19	CR 2016	20.0 x 1.6		
20	CR 2025	20.0 x 2.5		
13	CR 2032	20.0 x 3.2		
27	CR 2320	23.0 x 2.0		

Button Type
Silver Oxide Batteries

Unit Per Pc.

CODE	IEC Type	Size Diam x H mm	Volt	Applications
79 24 28	SR41	7.9 x 3.6	1.55	Watches
29	SR43	11.6 x 4.2		
11	SR44 (G-13)	11.6 x 5.4		
30	SR48	7.9 x 5.4		
31	SR55 (SR1120)	11.6 x 2.05		
79 24 32	SR54 (SR1130)	11.6 x 3.05		
33	SR57	9.5 x 2.7		
79 24 34	4SR44	13.0 x 25.1	6.2	

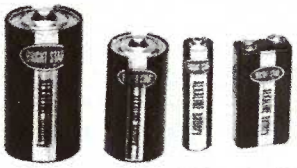
Micro Alkaline Batteries

Unit Per Pc.

CODE	IEC Type	Size Diam x H mm	Volt	Applications
79 24 36	LR41	7.9 x 3.6	1.5	Flashlights/ Cameras/ CD, MD Players
37	LR43	11.6 x 4.2		
14	LR44	11.6 x 5.4		
38	LR54 (LR1130)	11.6 x 3.05		
39	LR55 (LR1120)	11.6 x 2.05		
79 24 40	4LR44	13.0 x 25.1	6.0	

Alkaline Batteries

Designed for applications where high-drainage occurs when using tape recorders, motor-drive appliances and photo flash, etc. Alkaline batteries are not rechargeable.



LR20 (AM-1) LR14 (AM-2) LR6 (AM-3) 6LR61 006P

Unit Per Pc.

CODE	Type	Nominal Voltage	Size mm	
			Diam.	Length
79 24 21	LR20 (AM-1)	1.5	34.2	61.5
22	LR14 (AM-2)		26.2	50.0
23	LR 6 (AM-3)		14.5	50.5
24	LR03 (AM-4)		10.5	44.5
25	LR 1 (AM-5)		12.0	30.2
79 24 26	6LR61 (006P)	9	26.5 x 17.5 x 48.5	

Lantern Batteries

Weatherproof heavy duty 6 volt lantern battery. For use in lanterns, flashers and alarms.

Size: 67 x 67 x 100 mm

79 24 35	Battery lantern 6V	Pc.

Special Dry Batteries

The undermentioned batteries are for use with special instruments such as a Servomex Oxygen Analyser, T.D.S. Meter, and potentio meter, etc.

PP-7 PP-0 HP-1

Unit Per Pc.

CODE	Name	Voltage	Size mm		
			L	W	H
79 24 41	Dry Battery PP-7	9V	46.0	46.0	62.2
42	" PP-9	9V	66.0	52.0	81.0
43	" HP-1	12V	133.5	68.3	136.5

Battery Conversion Table

IEC	Volt	ANSI/NEDA (U.S.A.)	EVEREADY (U.S.A.)	DURACELL (U.S.A.)	VERTA (German)	JIS (Japan)
Manganese Dry Batteries						
R20P	1.5	13C	1050	M13F	2020	R20P (UM-1)
R14P		14C	1035	M14F	2014	R14P (UM-2)
R6P		15C	1015	M15F	2006	R6P (UM-3)
R03		24F	912	M24F	239	R03 (UM-4)
R1		910F	904	M910	245	R1 (UM-5)
6F22	9	1604D	1222	M9VSHD	3022	6F22 (S-006P)
Alkaline Primary Batteries						
LR20	1.5	13A	E95	MN1300	4020	LR20 (AM-1)
LR14		14A	E93	MN1400	4014	LR14 (AM-2)
LR6		15A	E91	MN1500	4006	LR6 (AM-3)
LR03		24A	E92	MN2400	4003	LR03 (AM-4)
LR1		910A	E90	MN9100	4001	LR1 (AM-5)

7TH 79

Rechargeable Batteries

Rechargeable batteries can be brought back to life hundreds of times and are completely sealed and free from leakage. They have good temperature characteristics and superior voltage regulation at either high or low discharge currents. They are the same size as ordinary dry cells but can be employed at a minimum cost and maximum convenience for a wide variety of uses. Necessary recharging time is 14 – 16 hours.

How to order: CODE

Rechargeable battery, IEC SIZE NO., VOLTAGE, UNIT

CODE	IEC Size No.	Nominal Voltage	Size mm		Nominal Capacity at 5 Hrs. rate	Unit
			Diam	L		
79 24 51	R20	1.2V	34.0	61.5	4,000 mAH	Pc.
52	R14		26.0	50.0	1,800	"
53	R 6		14.5	50.5	500	"
79 24 54	R20		34.0	61.5	1,200 mAH	2's/Pkt
55	R14		26.0	50.0	1,200	2's/Pkt
56	R 6		14.5	50.5	500	4's/Pkt
79 24 57	6F22	9 V	49 x 26 x 17.5		75	Pc.

Battery Chargers for Rechargeable Battery

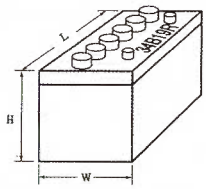
For rechargeable cadnica batteries of IEC size No. R20P (UM-1), R14P (UM-2), R6P (UM-3) and 6F22 (S-006P).

Unit Per Set

CODE	Input Voltage	Size mm	Weight
79 24 71	117	73 x 193.5 x 58	390
79 24 72	220		

Wet Cell Batteries
(Ref. JIS D5301-91)

Wet cell batteries for high or low capacity. Specially designed for marine use. 24 hours required for battery charging prior to delivery because the batteries are kept uncharged in stock.



12-Volt

How to order : CODE

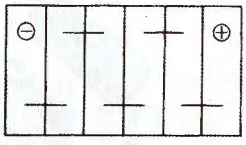
Battery, wet cell, 12 volt, TYPE, SIZE, AMPERE/5 Hours

Unit Per Set

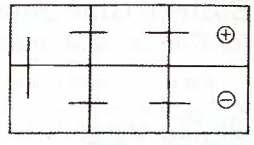
CODE	Type	Size mm L x W x H	Capacity Amp./ 5Hr	Weight kgs	Equivalent Old Type No.
79 25 22	26A 19R	187 x 127 x 162	21	7.5	12N24-3
11	30A 19R	187 x 127 x 162	21	7.0	-
24	34B 19R	187 x 127 x 203	27	9.5	NS 40ZA
25	36B 20R	197 x 129 x 203	28	10.5	NS 40Z
28	32C 24R	238 x 135 x 207	32	11.5	N 40
79 25 12	40B 19R	187 x 127 x 202	28	9.0	-
13	46B 19R	187 x 127 x 227	36	9.5	-
31	46B 24R	238 x 128 x 202	36	11.5	NS 60
32	48D 26R	260 x 173 x 204	40	15.5	N 50
14	55B 24R	238 x 128 x 202	36	12.5	NX100-S6G
79 25 15	55D 23R	232 x 173 x 202	48	15.0	-
35	55D 26R	260 x 173 x 202	48	16.5	N 50Z
37	65D 26R	260 x 173 x 204	52	17.0	NS 70
38	65D 31R	306 x 173 x 204	56	19.5	N 70
16	70B 24R	238 x 128 x 227	46	12.0	-
79 25 17	75D 23R	232 x 173 x 202	52	16.0	-
18	75D 26R	260 x 173 x 201	52	17.0	F100-5
19	80D 26R	260 x 173 x 201	55	18.5	NX110-5
20	85D 23R	232 x 173 x 225	58	15.5	-
85	95D 31R	305 x 173 x 202	64	20.5	NX120-7
79 25 40	95E 41R	410 x 176 x 213	80	25.5	N 100
86	100E 41R	409 x 175 x 211	80	25.0	-
87	110D 26R	260 x 173 x 225	64	18.5	-
88	110E 41R	409 x 175 x 211	83	26.0	-
41	115E 41R	410 x 176 x 213	88	29.0	NS 120
79 25 42	115F 51	505 x 182 x 213	96	32.0	N 120
89	130F 51	504 x 182 x 212	96	29.5	F160-12
44	145F 51	505 x 182 x 213	112	36.0	NS 150
45	145G 51	508 x 222 x 213	120	40.0	N 150
90	155G 51	507 x 222 x 212	120	35.0	-
79 25 50	190H 52	521 x 278 x 220	160	58.0	N 200
91	210H 52	520 x 278 x 218	160	60.0	-

Note: Suffix R denotes the position of the + & - of the battery terminal as shown below.

Suffix R



No Suffix



Maintenance-free Sealed Wet Cell Batteries

Needs no maintenance through its life. Each cell is sealed and filled with gelled electrolyte. 24 hours required for battery charging prior to delivery because the batteries are kept uncharged in stock.

How to order: CODE

Battery, maintenance-free, wet cell, 12 volt, AMPERE/5 hours, SIZE

Unit Per Set

CODE	Capacity Amp./5hr	Size mm L x W x H	Weight kgs	Model (JIS)
79 25 51	28	197 x 127 x 203	10.0	B20
52	30	197 x 129 x 202	9.5	-
53	36	238 x 129 x 203	12.5	B24
54	55	232 x 173 x 202	17.6	D23
55	58	260 x 173 x 202	18.6	D26
79 25 56	72	303 x 173 x 202	23.2	D31
57	80	410 x 176 x 213	28.1	E41
58	112	505 x 182 x 213	35.7	F51
59	140	508 x 222 x 213	43.0	G51
60	176	521 x 278 x 220	56.7	H52

"ALCAD" Nickel Cadmium Batteries

Alcad's robust Ni-Cd pocket plate technology is particularly well suited to the complex requirements of installations in difficult and demanding conditions, and in remote and inaccessible locations.

Versatility for industry

Alcad Single Cell nickel-cadmium (Ni-Cd) batteries offer the versatility to industry where reliable performance is crucial, even under extreme operating conditions, for example in:
• Refineries • Power plants • Onshore and offshore oil & gas applications • Substations • Airports
• Building infrastructure

Reliability for backup power application

If primary power sources fail, Alcad batteries enable your backup system to provide vital systems support to keep operations moving until primary power is restored or a controlled shutdown can be performed, including for :
• UPS (Uninterruptible Power Supply) • Switching and transmission • Emergency and security • Industrial fire monitors and alarms • Process control • Substation switchgear • Signaling

Security for starting applications

For generator starting or switching on heaters, pumps and other essential equipment in an emergency, Alcad batteries meet the specific need for high discharge, instant voltage recovery and reliable operation, even in extreme temperatures.

The LCE range has the thickest plates and is designed for applications where the battery is required to provide a reliable source of energy over relatively long discharge periods. Normally, the current is relatively low in comparison with the total stored energy and the discharges are generally infrequent. Typical uses are power backup, communications and bulk energy storage. Capacity range: 10 Ah – 375 Ah.

Standard layouts

Alcad has developed a series of standard layouts in which a battery may be ordered. Whether the battery is being installed on a rack, in a cabinet or is simply freestanding, the same configuration principles can be applied.

Recommended charging voltage:
For two level charge:
- Float level: 1.42 ± 0.01 V/cell for LCE
- High level: 1.47 - 1.70 V/cell for LCE

A high voltage will increase the speed and efficiency of the recharging.

For single level charge: 1.43 - 1.50 V/cell.

Unit Per Pc.

CODE	Cell Type	Capacity C_5 Ah	H x W x L mm	Approx. Weight per Cell Kgs
79 26 04	LCE10P	10	270 x 121 x 42	1.60
25	LCE15P	15	270 x 121 x 42	1.70
07	LCE22P	22	270 x 121 x 42	1.90
10	LCE30P	30	270 x 121 x 42	2.00
13	LCE40P	40	270 x 121 x 66	3.10
79 26 16	LCE47P	47	270 x 121 x 66	3.00
26	LCE55P	55	270 x 121 x 66	3.30
19	LCE62P	62	270 x 121 x 66	3.30
22	LCE70P	70	357 x 192 x 68	6.10
27	LCE75P	75	357 x 192 x 68	6.10
79 26 28	LCE85P	85	357 x 192 x 68	6.80
29	LCE90P	90	357 x 192 x 68	6.80
30	LCE100P	100	357 x 192 x 68	6.80
37	LCE110P	110	357 x 192 x 68	6.80
38	LCE125P	125	357 x 192 x 68	7.40
79 26 39	LCE145P	145	357 x 192 x 68	7.40
40	LCE165P	165	357 x 192 x 68	9.80
41	LCE185P	185	357 x 192 x 68	9.80
42	LCE200P	200	357 x 192 x 68	10.4
43	LCE220P	220	357 x 192 x 68	10.4
79 26 44	LCE235P	235	413 x 192 x 93	11.6
45	LCE255P	255	413 x 192 x 93	12.3
46	LCE280P	280	413 x 192 x 93	12.3
47	LCE300P	300	413 x 192 x 122	15.9
48	LCE330P	330	413 x 192 x 122	15.9
79 26 49	LCE360P	360	413 x 192 x 122	16.6
50	LCE375P	375	413 x 192 x 122	16.6

Name of Mfr. : ALCAD Limited

Lead-Acid Marine Batteries

Used on board as an electric source for communication, illumination, emergency equipment, automation, etc.

It is constructed so that it will function even when tilted at a 40° incline because the electrolytes will not spill out.

Unit Per Pc.

CODE	Type	Voltage	Capacity Ampere Ah/10 hrs	Max.Size mm L	W	H	Weight kgs
79 26 31	SS400	2	400	285	170	400	30
32	SS300	2	300	195	170	400	25
33	SS200	4	200	270	170	400	30
34	PS9-6S	6	108	472	133	226	28
35	PS7-6S	6	84	472	133	226	25
79 26 36	PS5-6S	6	60	303	132	226	17

Maintenance-Free Lead-Acid Marine Batteries

Maintenance free type Lead-Acid Battery where no topping up is required throughout the battery life. Used on board as an electric source for communication, illumination, emergency equipment, automation, etc.

Require 24 hours for recharging the battery. Recommended operating temperature is 5-30°C

Unit Per Pc.

CODE	Type	Voltage	Capacity Ampere Ah/10hrs	Max. Size mm L	W	H	Weight kgs
79 25 92	MSE-150	2	150	106	170	354	12.5
93	MSE-200	2	200	106	170	354	15
94	MSE-300	2	300	150	170	354	21.5

Battery Chargers

From among various types of battery chargers, the most common type is listed below. Larger or smaller sizes are also available on request.

Unit Per Pc.

CODE		79 26 51	79 26 53	79 26 52	79 26 54
Output AC Power	Voltage	6-75 V	6-35 V	6 - 75 V	6 - 35 V
	Ampere	15 A	20 A	15 A	20 A
Input DC Power	Voltage	100 V		200 V	
	Ampere	15.0 A	12.0 A	7.5 A	6.0 A
Battery	Ah Capacity	10-176 Ah			
	Voltage & Numbers	6V : 1-9 12V : 1-4	6V : 1-6 12V : 1-3	6V : 1-9 12V : 1-4	6V : 1-6 12V : 1-3
Size mm		310 x 400 x 300			
Weight		29 kgs	26 kgs	29 kgs	26 kgs

Battery Hydrometers

Graduated instrument for monitoring the acid content of batteries.

79 26 61	Hydrometer battery length 250 mm	Pc.
62	" 380 mm	"

Battery Syringes

P.V.C. tube with rubber bulb. Used for refilling battery solution.

79 26 66	Rubber battery syringe 380 mm	Pc.

11. Plugs & Receptacles

Watertight Plugs & Receptacles
Conformed to IEC 309-1 and 309-2

Designed to meet IEC (International Electrotechnical Commission) standards and colour coding system. The configurations for plugs and receptacles are single-rated which assures proper mating of devices with the same voltage and amperage. So it is impossible to couple a plug and receptacle of different voltage and/or amperage ratings to avoid causing damage to the equipment or even personal

injury. The receptacles with Interlock device eliminate the possibility of making or breaking the circuit under load or making a haphazard connection.

Rated Voltage : 500V
Rated Current : 16/20A
Protection Degree : IP56

Position of Ground Contact

Type	Frequency	Rated Operating Voltage	Position of Ground Contact	Colour
(2P+Earth)	50 and 60 Hz	100 to 130V 200 to 250V	Clock face position 4 6	Yellow Blue
(3P+Earth)	50 and 60 Hz	200 to 250V 380 to 415V	9 6	Blue Red
	60 Hz	440 to 460V	11	Red

Plug (Offset Angle) 500V 16/20A

PI2-2B
(2P+Earth)

AC 100 - 130V

AC 200 - 250V

PI2-3B
(3P+Earth)

AC 200 - 250V

AC 380 - 415V /
AC 440 -460V

Plug (Right Angle) 500V 16/20A

PI2-2B1
(2P+Earth)

AC 100 - 130V

AC 200 - 250V

Receptacle 500V 16A

RI2-2
(2P+Earth)

AC 100 - 130V

AC 200 - 250V

RI2-2-2
(2P+Earth)

AC 100 - 130V

AC 200 - 250V

RI2-3
(3P+Earth)

AC 200 - 250V

AC 380 - 415V /
AC 440 -460V

Receptacle with Interlock Switch 500V 16/20A

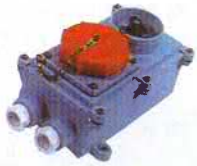
RSIL2-2
(2P+Earth)

AC 100 - 130V

AC 200 - 250V

RSIL2-3
(3P+Earth)

AC 200 - 250V



AC 380 - 415V /
AC 440 -460V

Receptacle with Switch 250V 16A

RSIL2-22
(2P+Earth)

AC 100 - 130V

AC 200 - 250V

Unit Per Pc.

CODE	No of Pole	Input Voltage	Model	Colour	Rated Capacity
Plug – Offset Angle					
79 27 51	2+Earth	AC100 - 130V	PI2-2B	Yellow	AC 500V 16/20A
79 27 52		AC200 - 250V		Blue	
79 27 53	3+Earth	AC200 - 250V	PI2-3B	Blue	
79 27 54		AC380 - 415V/ AC440 - 460V		Red	
Plug – Right Angle					
79 27 55	2+Earth	AC100 - 130V	PI2-2B1	Yellow	AC 500V 16/20A
79 27 56		AC200 - 250V		Blue	
Receptacle					
79 27 61	2+Earth	AC100 - 130V	RI2-2	Yellow	AC 500V 16A
79 27 62		AC200 - 250V		Blue	
79 27 65	2+Earth x 2	AC100 - 130V	RI2-2-2	Yellow	
79 27 66		AC200 - 250V		Blue	
79 27 63	3+Earth	AC200 - 250V	RI2-3	Blue	
79 27 64		AC380 - 415V/ AC440 - 460V		Red	

Unit Per Pc.

CODE	No of Pole	Input Voltage	Model	Colour	Rated Capacity
Receptacle with Interlock Switch					
79 27 71	2+Earth	AC100 - 130V	RSIL2-2	Yellow	AC 500V 16/20A
79 27 72		AC200 - 250V		Blue	
79 27 73	3+Earth	AC200 - 250V	RSIL2-3	Blue	
79 27 74		AC380 - 415V/ AC440 - 460V		Red	
Receptacle with Switch					
79 27 75	2+Earth	AC100 - 130V	RSI2-22	Yellow	AC 250V 16A
79 27 76		AC200 - 250V		Blue	

Watertight CEE-Form Plugs and Receptacles

CEE Male Plugs – AC220V, Blue Colour

Unit Per Pc.

CODE	Pole	Amp	H	IP
79 27 01	3	16	6	44
02		32		
03		16	6	67
04		32		
05		63		
79 27 06	4	16	9	44
07		32		

CEE Male Plugs – AC 380V, Red Colour

Unit Per Pc.

CODE	Pole	Amp	H	IP
79 27 08	4	16	6	44
09		32		
10		16	6	67
11		32		
12		63		
13		125		
79 27 14	5	16	6	44
15		32		
16		16	6	67
17		32		
18		63		
19		125		

CEE Female Plugs – AC380V, Red Colour

Unit Per Pc.

CODE	Pole	Amp	H	IP
79 27 20	4	16	6	44
21		32		
22		16	6	67
23		32		
24		63		
25		125		
79 27 26	5	16	6	44
27		32		
28		16	6	67
29		32		
30		63		
31		125		

CEE Receptacles – AC220V, Blue Colour

Unit Per Pc.

CODE	Pole	Amp	H	IP
79 27 32	3	16	6	44
33		32		
34		16	6	67
35		32		
36		63		
79 27 37	4	16	9	44
38	5	32		

CEE Receptacles – AC 380V, Red Colour

Unit Per Pc.

CODE	Pole	Amp	H	IP
79 27 39	4	16	6	44
40		32		
41		16	6	67
42		32		
43		63		
44		125		
79 27 45	5	16	6	44
46		32		
47		16	6	67
48		32		
49		63		
50		125		

Watertight Plugs & Receptacles

Synthetic Resin

(Ref. JIS F 8832, 8833)

Watertight type plug and receptacle with earthing contact for use on the circuits of lights and small electric appliances rated 250V or less. Synthetic resin made body will be furnished unless otherwise specified for materials such as cast iron or brass.

F8832-Plugs

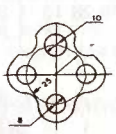
1MA (79 28 01)

1MB (79 28 02)

Size

2MA (79 28 03)

2MB (79 28 04)



Size

How to order: CODE

Plug, watertight, JIS F-8832, TYPES, STRAIGHT or ANGLE, NUMBER of PINS

Unit Per Pc.

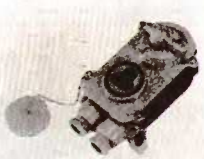
CODE	Type		Body Material	No. of Pin	Rated Capacity
79 28 01	1MA	Straight	Synthetic Resin	3	250V 20Amp.
02	1MB	Angle			
79 28 03	2MA	Straight	Synthetic Resin	4	250V 20Amp.
04	2MB	Angle			

Note: M denotes that the body is made of synthetic resin.
A denotes straight plug.
B denotes angle plug.

F 8833 Receptacles

1M
(79 28 06)

2M
(79 28 07)



S1MR
(79 28 08)

How to order: CODE

Receptacle, watertight, JIS F 8833, TYPE, NUMBER of PINS, WITHOUT or WITH SWITCH

Unit Per Pc.

CODE	Type	Body Material	Switch	No.of Pin	Rated Capacity
79 28 06	1M	Synthetic Resin	Without	3	250V 15 Amp.
79 28 07	2M		"	4	
79 28 08	S1MR		With	3	125V-DC 5Amp. 125V-AC 10Amp. 250V-DC 2Amp. 250V-AC 5Amp.

Note: M denotes that the body is made of synthetic resin.
S denotes the receptacle with a switch.
R denotes with the internal switch of rotary type.

Plug & Receptacle Sets

Regarding aforementioned plug & receptacle, the following combinations are most commonly available.

How to order: CODE

Plug & receptacle set, watertight, TYPE of PLUG & RECEPTACLE, NUMBER of PINS

Unit Per Set

CODE	Combination of		No. of Pin
	F8832 Plug Type No.	F8833 Receptacle Type No.	
79 28 11	1MA (Straight)	1M (w/o Switch)	3
12	1MA (")	S1MR (w Switch)	3
13	1MB (Angle)	1M (w/o Switch)	3
14	1MB (")	S1MR (w Switch)	3
79 28 15	2MA (Straight)	2M (w/o Switch)	4
16	2MB (Angle)	2M (w/o Switch)	4

Spare Interiors for Plug & Receptacle

Unit Per Pc.

CODE	Interior	For	Pin No.	Applicable Type No.
79 28 21		Plug F8832	3	1MA Straight (79 28 01) 1MB Angle (79 28 02)
79 28 22		"	4	2MA Straight (79 28 03) 2MB Angle (79 28 04)
79 28 23		Receptacle F8833	3	1M without Switch (79 28 06) S1MR with Switch (79 28 08)

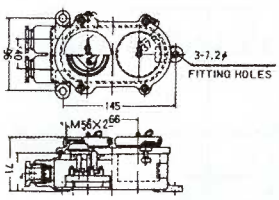
Unit Per Pc.

CODE	Interior	For	Pin No.	Applicable Type No.
79 28 24		Receptacle F8833	4	2M without Switch (79 28 07)
79 28 25		Switch F8833	3	S1MR with Switch (79 28 08)

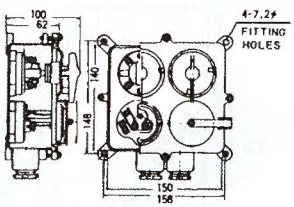
Watertight 3-pin Twin Receptacles

Synthetic Resin

Double receptacles to be used with watertight JIS 3 pin plugs. Main bodies are synthetic resin.



Without Switch
(79 28 31)



With Switch
(79 28 32)

Unit Per Pc.

CODE	Type	Pins	Rated Capacity
79 28 31	Without Switch	3	250V 15A
79 28 32	With Switch	3	250V AC5A DC2A or 125V AC10A DC5A

Note: Spare interiors of the above are exactly the same as formerly coded items of F8832, F8833.

Watertight Plug & Twin Receptacle Sets

Synthetic Resin

Combination of above twin receptacle with aforementioned F8832 plugs are as follows.

How to order: CODE

Plug & twin receptacle set, watertight, TYPE of PLUG & RECEPTACLE, NUMBER of PINS

Unit Per Set

CODE	Combination of		No.of Pin
	Plug	Receptacle	
79 28 36	Straight Plug F8832-1MA (79 28 01)	Twin Receptacle without Switch (79 28 31)	3
79 28 37	"	Twin Receptacle with Switch (79 28 32)	3
79 28 38	Angle Plug F8832-1MB (79 28 02)	Twin Receptacle without Switch (79 28 31)	3
79 28 39	"	Twin Receptacle with Switch (79 28 32)	3

Watertight 3-pin Plugs & Receptacles
Cast Iron

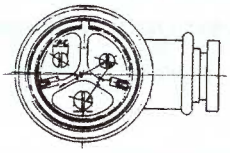
U.S.C.G. R & S Type

Cast iron receptacle box sealed with synthetic rubber packing and brass plug. Rated capacity is 250V, 10 amp. One 6.8 mm and two 5.3 mm diameter pins on the plug.

Plugs

Straight

Angle



How to order: CODE

Plug, watertight, U.S.C.G. 3-pin, STRAIGHT or ANGLE

Unit Per Pc.

CODE	**79 28 51**	CODE	**79 28 52**
Type	Straight	Type	Angle

Receptacles

Without Switch

With Switch

How to order: CODE

Receptacle, watertight, U.S.C.G. 3-pin, WITHOUT or WITH SWITCH

Unit Per Pc.

CODE	**79 28 56**	CODE	**79 28 57**
Type	Without Switch	Type	With Swich

Plug & Receptacle Sets

Above plug & receptacle combination.

How to order: CODE

Plug & receptacle, watertight, 3-pin, U,S,C,G, R & S type, TYPE of PLUG and RECEPTACLE

Unit Per Set

CODE	Combination of	
	Plug	Receptacle
79 28 61	Straight (79 28 51)	W/o Switch (79 28 56)
79 28 62	Angle (79 28 52)	"
79 28 63	Straight (79 28 51)	W/Switch (79 28 57)
79 28 64	Angle (79 28 52)	"

Spare Interiors for 3-pin Plug & Receptacle U.S.C.G. R & S Type

Unit Per Pc.

CODE	Interior	For	Pin	Remark
79 28 66		Plug	3	U.S.C.G. Straight or Angle Type (79 28 51 or 79 28 52)
79 28 67		Receptacle	3	U.S.C.G. with or without Switch (79 28 56 or 79 28 57)
79 28 68		Switch	3	U.S.C.G. Type (79 28 57)

Watertight 3-pin Plugs & Receptacles
with Switch, Type HNA

Watertight marine use plug & receptacle with switch, Rated capacity is 250V, 10 amp. Available in cast brass or synthetic resin main body.

Plug

Receptacle with Switch

CODE	Type	Description	Unit
		Synthetic Resin	
79 28 81	HNA	Plug 3 Pin	Pc.
82	"	Receptacle with Switch 3 Pin	"
83	"	Plug & Receptacle with Switch 3 Pin	Set
		Cast Brass	
79 28 86	HNA	Plug 3 Pin	Pc.
87	"	Receptacle with Switch 3 Pin	"
88	"	Plug & Receptacle with Switch 3 Pin	Set

Spare Interiors for 3-pin Plug & Receptacle HNA Type

Unit Per Pc.

CODE	Interior	For	Pin	Remark
79 28 91		Plug	3	HNA Type (79 28 81 or 79 28 86)

(to be continued)

Unit Per Pc.

CODE	Interior	For	Pin	Remark
79 28 92		Receptacle	3	HNA Type with Switch (79 28 82 or 79 28 87)
79 28 93		Switch	3	HNA Type (79 28 82 or 79 28 87)

Non-Watertight Type Plugs & Receptacles

(Ref. JIS F 8831, 8835)

Non-watertight double pole plug & receptacle with a grounding contact for marine use. Used for lighting fittings and small electric apparatus. Made of phenol resin.

UB (79 29 01)

U (79 29 02)

Size U

IB (79 29 04)

I (79 29 05)

Size I

Specifications

Class	Type	No. of Pin	Rated Capacity	Applicable Plug Receptacle
Plug (Ref. JIS F8831)				
U	B	3	250 V 15 Amp.	Class U
I				Class I
Plug (Ref. JIS F8835)				
U	-	3	250 V 15 Amp.	Class U
I				Class I

Remark: 1. Class U indicates that grounding blades are U shape and class I, I shape.
2. Type B indicates that the directions of the cord entry and plugging are at a right angle.

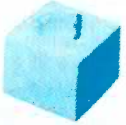
CODE	Description	Unit
79 29 01	Plug, Phenol Resin, 3 Pin, Type UB	Pc.
02	Receptacle " 3 Pin, Type U	"
03	Plug-B & Receptacle, Phenol Resin, 3pin-U	Set
79 29 04	Plug, Phenol Resin, 3 Pin, Type IB	Pc.
05	Receptacle " 3 Pin, Type I	"
06	Plug-B & Receptacle, Phenol Resin, 3pin-I	Set
07		

Non-Watertight "Siemens" Cable Plugs & Receptacles

with Earthing Contact

Phenol resin round 2 pin plug with grounding and side entry for cabling. The pin diameter is 4.8 mm and the distance between pin center is 19.5 mm. Able to connect 250V, 10 amp. DC and 250V, 16 amp. AC.

Plug (79 29 21)



Single Receptacle (79 29 22)

Double Receptacle (79 29 23)

CODE	Description	Unit
79 29 21	Plug, 2 round pin "Siemens"	Pc.
79 29 22	Receptacle single, 2 round pin "Siemens"	Pc.
23	" double, " " "	"
79 29 24	Plug & single receptacle, 2 round pin "	Set
25	" double " " "	"

Non-Watertight "Siemens" Distribution Plugs

Combination of 2 round pin plugs with 3 way receptacles. Rated capacity 250V, 10 amp. Made of phenol resin.

79 29 30	Distribution plug "Siemens" phenol resin, 2 round pin	Pc.

Non-Watertight "Siemens" Cable Connectors

Rubber coated phenol resin 2 round pin plug and receptacle. Rated capacity 250V, 10 amp.

79 29 35	Cable connector "Siemens" phenol resin, 2 round pin	Pr.

Non-Watertight 2-Flat Pin Cabin Plugs & Receptacles

Phenol Resin

Phenol resin 2-flat pin for cabin use plug & receptacle.

Plug Receptacle

CODE	Item	Rating	Unit
79 29 51	Plug, 2 flat pin	125V 15A	Pc
52	Receptacle	250V 15A	"
53	Plug & receptacle	-	Pr

Plug & Receptacle Adaptors

Non-watertight plug & receptacle adapters for cabin use. Available various types of adaptors to convert power outlet to other countries when traveling, as shown below.

Unit Per Pc.

CODE	External Appearance	Conversion	Rating
79 29 61	A Type	B/C/SE → A	10A, 250V
79 29 62	C Type	A/B/SE → C	10A, 250V
79 29 54	B Type	A/C/SE → B	10A, 250V
79 29 55	O Type	A/B/C/SE → O	10A, 250V
79 29 56	SE Type	A/B/C → SE	10A, 250V
79 29 57	BF Type	A/B/C/ O/SE/ B3/O2 → BF	13A, 250V
79 29 58	B3 Type	A/B/C/ O/SE/ BF/O2 → B3	10A, 250V
79 29 59	O2 Type	A/B/C/ O/SE/ BF/B3 → O2	10A, 250V
79 29 60	A Type	B/C/O/ SE/BF B3/O2 → A	10A, 250V

Multiway Receptacles with Cord and Plug

Electric receptacles with extension cord for all portable equipments to help you place them in the best indoor locations. Please specify the type of plugs and length of extension cable when ordering.

2 Round Pins | 3 Flat Pins | 2 Flat Pin | Multi Plug

Unit Per Pc.

CODE	Number of Receptacles	Length of Cord	CODE	Number of Receptacles	Length of Cord
European Plug (2 Round Pins)					
79 29 63 64	2 ways	3 mtr / 5 "	79 29 67 68 69 70	4 ways	3 mtr / 5 " / 7 " / 10 "
79 29 65 66	3 ways	3 mtr / 5 "			
British Plug (3 Flat Pins)					
79 29 82 83	2 ways	3 mtr / 5 "	79 29 88 89 90 91	4 ways	3 mtr / 5 " / 7 " / 10 "
79 29 84 85	3 ways	3 mtr / 5 "			
U.S.A./ Japanese (2 Flat Pins)					
79 29 92 93	2 ways	3 mtr / 5 "	79 29 96 97 98 99	4 ways	3 mtr / 5 " / 7 " / 10 "
79 29 94 95	3 ways	3 mtr / 5 "			
Multi Plug (2 Round/3 Flat/2 Flat Pins)					
79 29 45 46	3 ways	3 mtr / 5 "	79 29 49 50	5 ways	3 mtr / 5 "
79 29 47 48	4 ways	3 mtr / 5 "			

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Cabin Receptacles

Flush Type

Cabin flush receptacles for 2-flat pin plugs with U type grounding outlet. Can be furnished with a stainless steel plate or a plastic ivory coloured plate. Able to connect up to 125V, 15 amp.

How to order: CODE

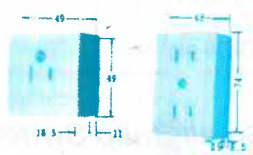
Receptacle, cabin flush, MATERIAL, OUTLET NO.

Unir Per Pc.

Stainless Steel Plate			Plastic Ivory Color Plate		
CODE	Outlet No.	Size mm	CODE	Outlet No.	Size mm
79 29 71 72	Single Double	82x115 115x144	79 29 73 74	Single Double	82x115 115x144

Surface Type

Plastic & bakelite surface receptacle for 2-flat pin plug. Can be used as a temporary extension receptacle from the flush receptacle by connecting a cord. Rated capacity 125V, 15 amp.



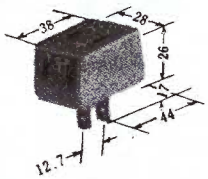
Single | Double

Unir Per Pc.

CODE	Outlet No.	Capacity	CODE	Outlet No.	Capacity
79 29 76 77	Single Double	125V-15A	79 29 78 79	Triple Q'dple	125V-15A

2-Flat Pin 3 Way Receptacles

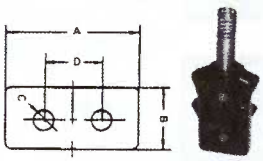
2 flat pin 3 way receptacle with a one way plug. Rated capacity is 125V, 10 amp.



79 29 81	2 flat pin 3 way receptacle with one way plug	Pc.

Iron Plugs

Heat resistant synthetic resin plugs. Furnished in a round pin type.



How to order: CODE

Iron plug, VOLTAGE, AMPERE

Unit Per Pc.

CODE	Rating		Size mm			
	Voltage	Ampere	A	B	C	D
79 29 86	250	6	30	15	6	15
87	250	15	40	20	7	20

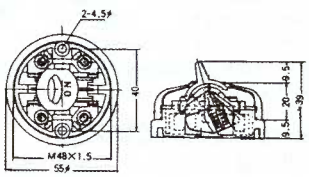
7TH
79

12. Switches

Non-Watertight Snap Switches

(Ref. JIS F 8840)

Non-watertight type snap switches with toggle type knob used for circuits, light fittings and small electric fittings. The rated voltage is 250V or less, DC10A and AC20A or less. Made of phenol resin. T denotes Toggle Knob type.



How to order: CODE

Snap switch, non-watertight ,TYPE, NUMBER of POLES, SIZE, RATED CAPACITY

Unit Per Pc.

CODE	Type	No. of Pole	Size mm		Rate Capacity		
					V	Ampere	
			D	H		DC	AC
79 30 01	1T	2	56	30	125	5	10
					250	2	5
79 30 02	2T	2	64	40	125	10	20
					250	5	10

Small Snap Switches

Mainly for use on radio or wireless operations.

How to order: CODE

Snap switch, TYPE of CIRCUIT, RATED CAPACITY

Unit Per Pc.

CODE	Circuit		Rated Capacity	Action	Case Size mm		
	Pole	Throw			L	W	D
79 30 06	2	1	AC125V, 5A	On-Off	27.8	17.6	22.9
07	2	2	AC125V, 5A	"	27.8	17.6	22.9
08	1	1	AC125V, 3A	"	25.5	13.2	15
09	2	1	AC125V,25A	"	33.2	19	25.1

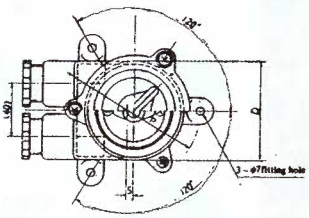
Marine Watertight Type Small Rotary Switches

(Ref. JIS F 8841)

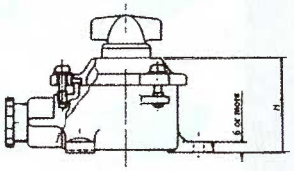
Watertight small switch used on board for lighting and small electric fittings of a rated voltage 250V or less.

Made of synthetic resin and cast iron. Single switch with one inlet and outlet gland.

1R or 2R



1MR or 2MR



How to order: CODE

Rotary switch, watertight, TYPE, NUMBER of POLES, SIZE, RATED CAPACITY

Unit Per Pc.

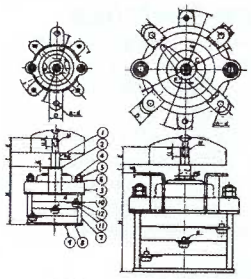
CODE	Type	No. of Pole	Size mm			Rated Capacity		
						V	Ampere	
			D	P	H		DC	AC
79 30 14	1R	2	74	110	68	125	5	10
						250	2	5
79 30 15	1MR					125	5	10
						250	2	5
79 30 16	2R		84	120	78	125	10	20
						250	5	10
79 30 17	2MR					125	10	20
						250	5	10

Remark: Symbol R indicates Cast Iron Rotary Switch.
Symbol M indicates that the body cover and handle are synthetic resin.

Rotary Switches

(Ref. JIS F8845-1996)

Marine rotary switches used to change over the resistance circuit, lamp circuit and indication circuit (excluding electric motors) in electric apparatus.



R1, R2 R3, R4

How to order: CODE

Rotary switch, TYPE, NUMBER of POLES, SIZE, RATED CAPACITY

Unit Per Pc.

CODE	Type	Switch Rotating Angle	Circuit	No. of Pole	Rated	
					Voltage	Amp
79 30 28	R1	90° 60°	Off On	1 - 8	AC, DC 250 " " 125	6 12
79 30 38	R2			1 - 8	AC, DC 250 " " 125	10 20
79 30 46	R3			1 - 6	AC, DC 250 " " 125	30 45
79 30 54	R4			1 - 4	AC, DC 250	60

Remarks: The symbol of Type R denotes the rotary switch, and classified into R1, R2, R3, and R4 according to the rated capacity of the switch.

Cabin Flush Toggle Switches

Available in single and double type with phenol resin plate.

Single

Double

Unit Per Pc.

CODE	Switch No.	Size mm			Rated Capacity
		H	W	D	
79 30 61	Single	115	82	48	125V DC5A AC 10A or 250V DC2A AC 5A
62	Double	115	144	48	

Push Button Switches

Non-Watertight

(Ref. JIS F 8503)

Used for intercommunication and alarm systems on board. Made of phenol resin.

Rating capacity: 125V, 1 amp.
250V, 0.5 amp.

1S

1FA·1FB

2S

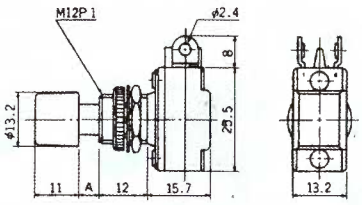
Unit Per Pc.

CODE	Type	Size mm				Remark
		Flush Depth	ø	L	W	
79 30 66	1S		56			Non Watertight
67	1FA	36		115	72	
68	1FB	43				
79 30 69	2S		70			Watertight

Remark: Type 1 denotes non-watertight type.
Type 2 denotes watertight type.
S denotes surface type, Type FA flush type of 36 mm in depth, Type FB flush type of 43 mm in depth.

Small Push Button Switches

Push button switches for cabin use. Non-watertight. Rating capacity AC 125V 3 amp. or AC 250V 1.5 amp.



79 30 74	Switch, push button, non watertight on-off, case size 13.2x25.5x15.7 mm	Pc.

Push Button Switches

ABS resin outer casing surface switch for use as an on-off switch for motors, etc.

How to order: CODE

Push button switch, TYPE of FITTING, RATING

Unit Per Pc.

CODE	Rating	Applicable Motor Capacity			Outer Size mm L x W x D
		Phase	V	KW	
Surface Type					
79 30 76	2P 15A	1ø	110	0.4	80 x 38 x 40
79 30 77	3P 15A	3ø	220	2.2	80 x 38 x 40
79 30 78	2P 30A	1ø	110	0.75	90 x 45 x 44
79 30 79	3P 30A	3ø	220	3.7	90 x 45 x 44
Weather Proof Type					
79 30 81	2P 15A	1ø	110	0.4	162 x 66 x 74
79 30 82	3P 15A	3ø	220	2.2	162 x 66 x 74
79 30 83	3P 30A	3ø	220	3.7	186 x 80 x 74

Push Button Switches for Hoist

Weather proofed suspension type switch made of ABS resin. Motor direct control and indirect control with AC starter types are available.

How to order: CODE

Push button switch for hoist, TYPE of CONTROL, BUTTON NUMBERS

Unit Per Pc.

Type	Direct Control		Indirect Control	
CODE	79 30 85	79 30 86	79 30 87	79 30 88
Button Nos.	2	6	2	6
Operation	Up Down	Up Down 4 Quarters	Up Down	Up Down 4 Quarters
Rating	3ø200/220V 400/440V 2.2KW		250V 5A 500V 2A	
Applicable Cable Size mm	15.4-16.6	14.3-15.5	11.4-12.6	17.2-18.4

Non-Watertight Seesaw Switches

Synthetic resin cabin seesaw switches. Non-watertight. Available in surface and flush mounted types.

Surface Flush

Unit Per Pc.

CODE	Type	Rating	Size mm
79 30 91	Single Surface	250V 10A	65 x 52 x 39
92	Single Flush		89 x 82 x 53
93	Double "		132 x 39 x 51

Dimmer Switches

For adjusting the lights of the incandescent lamp from bright to candle glow without flickering or steps.

When ordering, please specify the power source voltage and wattage of the applicable lamp.

How to order: 79-30-96

Dimmer switch, power source voltage, wattage of the lamp (Pc.)

Knife Switches

Porcelain and synthetic resin rating 30 to 100 amperes, AC 250 volts. Used for switchboards, testing equipment, battery insulation, welders, etc., where no heavy duty service is required.

On-Off On-Off-On

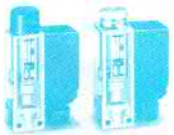
How to order: CODE

Knife switch, NUMBER of POLES, TYPE, AMPERE

Unit Per Pc.

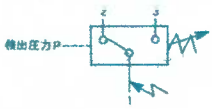
2-Pole				3-Pole			
CODE	Type	Amp	Fuse	CODE	Type	Amp	Fuse
79 31 01	On-Off-On	30	No Fuse	79 31 06	On-Off-On	30	No Fuse
02	"	60	"	07	"	60	"
03	On-Off	30	Fusible	08	On-Off	30	Fusible
04	"	60	"	09	"	60	"
05	"	100	"	10	"	100	"

Pressure Switches



For opening or closing circuit at a set point within the adjusting range, operated by increasing or decreasing pressure. There are models actuated by diaphragm, piston, etc. The most common models are described below for your reference. Please ask for further information and brochures of various manufacturers and models available from local suppliers when required.

Diaphragm Actuated



Switching function:
Microswitch SPDT
Terminals 1-3: Contacts close on rising pressure
Terminals 1-2: Contacts open on rising pressure

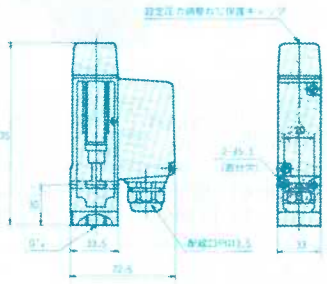
For neutral gaseous and liquid fluids. Switching pressure range 0.02 ... 30 bar.

- Pressure switches for air, gas, water, hydraulic oil, lubricating oil, light fuel oil.
- Working viscosity up to 1,000 mm^2/s.

Small size and preferred for pressure monitoring. Sealed design permits setting of differential switching points during operation without tools. Approved by shipping authorities, including German Lloyd (GL), Bureau Veritas (BV), Det Norske Veritas (DNV), Lloyd's Register of Shipping (LR), Polski Rejestr Statkow (PRS), USSR Register of Shipping (USSR), etc..

Repeatability	±2%
Switch Element	Microswitch
Protection Class	IP64
Ambient Temperature	-10 to + 80°C
Fluid Temperature	0 to +80°C
Max. Temperature at Switching Element	+80°C
Mounting Position	Optional

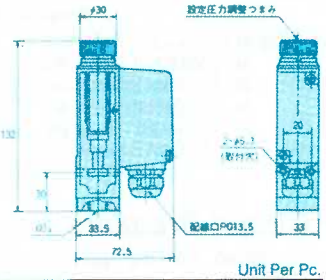
Setting of switching point by allen head screw protected by plastic cover



Unit Per Pc.

CODE		79 31 51	79 31 52
Type No.		0820150	0820750
Adjustable Range (bar)		0.2 to 12	0.5 to 30
Switching Pressure Difference (bar)	Lower Range	0.9	1
	Upper Range	1.4	2
Max. Allowable Pressure (bar)		50	
Switching Cycles/Minutes		Max. 60	
Pressure Sensor Materials	Housing	Aluminium	
	Seal	NBR (Per-bunan)	
Type of Connection		Internal thread	
Connection		G 1/4	
Total Weight (kgs)		0.4	
Name of Mfr.		Herion-Werke KG	

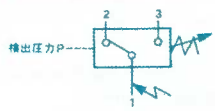
Setting of switching point by scaled rotary button



Unit Per Pc.

CODE		79 31 53	79 31 54
Type No.		0820160	0820760
Adjustable Range (bar)		0.2 to 12	0.5 to 30
Switching Pressure Difference (bar)	Lower Range	0.9	1
	Upper Range	1.4	2
Max. Allowable Pressure (bar)		50	
Switching Cycles/Minutes		Max. 60	
Pressure Sensor Materials	Housing	Aluminium	
	Seal	NBR (Perbunan)	
Type of Connection		Internal thread	
Connection		G 1/4	
Total Weight (kgs)		0.45	
Name of Mfr.		Herion-Werke KG	

Piston Actuated



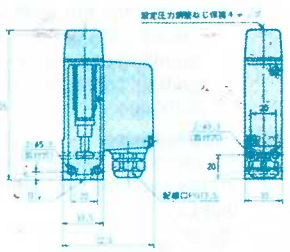
Switching function:
Microswitch SPDT
Terminals 1-3: Contacts close on rising pressure
Terminals 1-2: Contacts open on rising pressure

For neutral gaseous and liquid fluids. Switching pressure range 0.02 ... 30 bar. With soft seal, no leakage.
- For oil-treated compressed air, hydraulic oil and other fluids with good antifriction properties (state kind of fluid).
- Working viscosity up to 1,000 mm²/s.

Small design and provided with scale for easy adjustment of switching points even during operation. Design with glydring seal for application in temperatures below 0 °C. Approved by shipping authorities, including Germanischer Lloyd (GL), Bureau Veritas (BV), Det Norske Veritas (DNV), Lloyd's Register of Shipping (LR), Polski Rejestr Statkow (PRS), USSR Register of Shipping (USSR), etc..

Repeatability	±2%
Switching Element	Microswitch
Protection Class	IP 54
Ambient Temperature	0 to +80°C (Grooved ring seal) -20 to 80°C (Glydring seal)
Fluid Temperature	0 to 80°C
Max. Temperature at Switching Element	+80°C
Mounting Position	Urgent

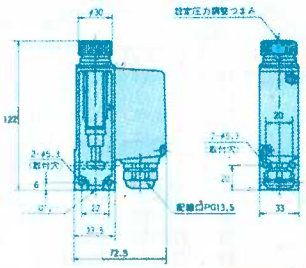
Switching pressure difference not adjustable. Setting of switching point by screw with hex. recessed hole protected by plastic cover



Unit Per Pc.

CODE		79 31 56	79 31 57
Type No.		0821051	0821050
Adjustable Range (bar)		5 to 70	10 to 160
Switching Pressure Difference (bar)	Lower Range	7	9
	Upper Range	12	18
Max. Allowable Pressure (bar)		250	
Switching Cycles/Minutes		Max. 20	
Pressure Sensor Materials	Housing	Aluminium	
	Seal	NBR (Perbunan)	
	Piston	Stainless Steel	
Type of Connection		Internal thread	
Connection		G 1/4	
Total Weight (kgs)		0.4	
Name of Mfr.		Herion-Werke KG	

Setting of switching point by scaled rotary button



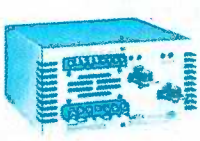
Unit Per Pc.

CODE		79 31 58	79 31 59
Type No.		0821061	0821060
Adjustable Range (bar)		5 to 70	10 to 160
Switching Pressure Difference (bar)	Lower Range	7	9
	Upper Range	12	18
Max. Allowable Pressure (bar)		250	
Switching Cycles/Minutes		Max. 20	
Pressure Sensor Materials	Housing	Aluminium	
	Seal	NBR (Perbunan)	
	Piston	Stainless Steel	
Type of Connection		Internal thread	
Connection		G 1/4	
Total Weight (kgs)		0.45	
Name of Mfr.		Herion-Werke KG	

13. Circuit Breakers & Transformers

Switching Power Supplies

For supplying a stabilized power source converting from AC100 volt or AC200 volt to weak DC voltage, and suitable for use as power sources in the control panel for valve operation, etc. Available output power ranges from 10 watt to 600 watt.



Unit Per Pc.

CODE	Model	Output Volt & Amp	Input Voltage	Size mm W x L x H	Weight grm
Power 10 watt					
79 32 01	VTS05SA	DC 5V, 2A	AC 100V	75 x 98 x 24	180
02	VTS12SA	DC 12V, 1A			
03	VTS15SA	DC 15V, 0.8A			
04	VTS24SA	DC 24V, 0.5A			
79 32 05	VTS05SB	DC 5V, 2A	AC 200V	75 x 98 x 24	180
06	VTS12SB	DC 12V, 1A			
07	VTS15SB	DC 15V, 0.8A			
08	VTS24SB	DC 24V, 0.5A			
Power 15 Watt					
79 32 11	VTM05SA	DC 5V, 3A	AC 100V	80 x 118 x 25	250
12	VTM12SA	DC 12V, 1.2A			
13	VTM15SA	DC 15V, 1A			
14	VTM24SA	DC 24V, 0.62A			
79 32 15	VTM05SB	DC 5V, 3A	AC 200V	80 x 118 x 25	250
16	VTM12SB	DC 12V, 1.2A			
17	VTM15SB	DC 15V, 1A			
18	VTM24SB	DC 24V, 0.62A			
Power 25 Watt					
79 32 21	VTA05SZ	DC 5V, 5A	AC 100/200V	85 x 135 x 31	350
22	VTA12SZ	DC 12V, 2.1A			
23	VTA15SZ	DC 15V, 1.7A			
24	VTA24SZ	DC 24V, 1.1A			
25	VTA48SZ	DC 48V, 0.5A			
Power 50 Watt					
79 32 31	VTB05SZ	DC 5V, 10A	AC 100/200V	96 x 160 x 33	410
32	VTB12SZ	DC 12V, 4.3A			
33	VTB15SZ	DC 15V, 3.4A			
34	VTB24SZ	DC 24V, 2.5A			
35	VTB48SZ	DC 48V, 1A			
Power 75 Watt					
79 32 41	VTC05SZ	DC 5V, 15A	AC 100/200V	38 x 182.5 x 98	540
42	VTC12SZ	DC 12V, 6.3A			
43	VTC15SZ	DC 15V, 5A			
44	VTC24SZ	DC 24V, 3.2A			
45	VTC48SZ	DC 48V, 1.5A			
Power 100 Watt					
79 32 51	VTD05SZ	DC 5V, 20A	AC 100/200V	48 x 190 x 97	750
52	VTD12SZ	DC 12V, 9A			
53	VTD15SZ	DC 15V, 7A			
54	VTD24SZ	DC 24V, 5A			
55	VTD48SZ	DC 48V, 2.2A			
Power 150 Watt					
79 32 61	VTE02SA	DC 2V, 30A	AC 100V	70 x 200 x 97	1,400
62	VTE05SA	DC 5V, 30A			
63	VTE12SA	DC 12V, 14A			
64	VTE15SA	DC 15V, 11A			
65	VTE24SA	DC 24V, 7A			
79 32 66	VTE02SB	DC 2V, 30A	AC 200V	70 x 200 x 97	1,400
67	VTE05SB	DC 5V, 30A			
68	VTE12SB	DC 12V, 14A			
69	VTE15SB	DC 15V, 11A			
70	VTE24SB	DC 24V, 7A			
Power 200 Watt					
79 32 71	VTE05SZ	DC 5V, 40A	AC 100/200V	70 x 200 x 97	1,500
72	VTE12SZ	DC 12V, 18A			
73	VTE15SZ	DC 15V, 15A			
74	VTE24SZ	DC 24V, 10A			
75	VTE48SZ	DC 48V, 5A			
Power 300 Watt					
79 32 81	VTF02SZ	DC 2V, 60A	AC 100/200V	130 x 193 x 97	2,000
82	VTF05SZ	DC 5V, 60A			
83	VTF12SZ	DC 12V, 30A			
84	VTF15SZ	DC 15V, 24A			
85	VTF24SZ	DC 24V, 15A			
86	VTF48SZ	DC 48V, 7.5A			

(to be continued)

Power 600 Watt					
79 32 91	VTG02SZ	DC 2V, 120A	AC 100/200V	195 x 216 x 97	3,500
92	VTG05SZ	DC 5V, 120A			
93	VTG12SZ	DC 12V, 53A			
94	VTG15SZ	DC 15V, 42A			
95	VTG24SZ	DC 24V, 28A			
96	VTG48SZ	DC 48V, 14A			

Circuit Breakers

Used for the protection of circuits and electrical equipment. Capable of starting or halting current automatically to avoid damage to equipment due to circuit overload or short circuits.

Circuit breakers are mainly classified and selected according to rated current and rated breaking capacity of the circuit and where it is used.

The following matters should be specified when ordering circuit breakers.

1. **Manufacturer name and model number.**
   With this information the rated breaking capacity of the circuit can be found.
2. **No. of poles:**
   a) 2 pole (Usually used with branched circuits)
   b) 3 pole (Usually used for marine circuits)
   c) 4 pole (Usually used in industrial plants).
3. **Frame size:**
   ex. 30A, 50A, 100A, 225A, 400A, 600A.
   If the type or model number is understood, this information will not be necessary.
4. **Rated current (Trip current)**
   This current value is usually smaller than the frame size.

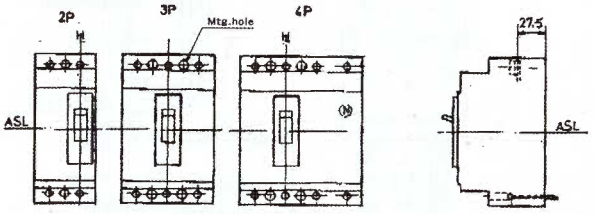
ex. Frame size	Rated current
30A	10A, 15A, 20A, 30A
50A	10A ~ 50A
60A	10A ~ 60A
100A	10A ~ 100A

   If the breaker is only instantaneous trip type, the value of the instantaneous trip current should be specified.
5. **Method of mounting**
   a) Front connected type (FC)
      - Cable or busbars are connected directly to the terminal or breaker from the front side and the breaker is fitted directly to the rear iron frame.
      - This type is seldom used for marine use. This type may only be used with a branch circuit and is not usually used in Main Switchboards.
      - Normally used for industrial purposes.

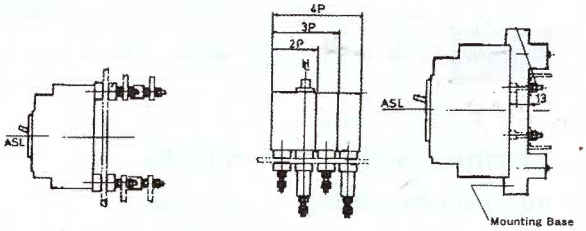
   b) Rear-connected type (RC)
      - Cable or busbars are connected directly to the rear terminal or the breaker on the rear side. This type cannot be fitted directly to the front side because the breaker is fitted directly to the rear iron frame.
      - This type is seldom used for marine use but is still used more often than the Front - connected type.

   c) Plug in type (PM)
      Cable or busbars are connected to the mounting base of the breaker, not directly to the breaker. In this way, the breaker itself can be removed from the mounting base without disconnecting the cable or busbars. This type is therefore most used for marine purposes.
6. **Accessories**
   Accessories are sometime fitted to the breaker depending on the systems and functions of the equipment they are used in.

1. Auxiliary switch (Ax. Sw.)
   Auxiliary switch opens or closes corresponding to the opening or closing of the circuit breaker. If the auxiliary switch is fitted in the breaker, the following information is required when ordering.
   a. One normal open contact
   b. One normal closed contact
   c. One normal and closed common contact
   d. Two normal open contacts
   e. Two normal closed contacts
   f. Two normal and closed common contacts
2. Alarm switch (Al, Sw.)
   Alarm switch opens or closes when the breaker trips.
   If the alarm switch is fitted to the breaker, the following-information is required when ordering.
   a. one normal open contact
   b. one normal closed contact
   c. others (Please specify how many open or closed contacts there are)
3. Under voltage trip coil
   When the circuit voltage to the breaker is insufficient, the breaker trips automatically.
   If the under voltage trip coil is fitted to the breaker, information about the voltage and frequency to the coil itself is needed:
   AC or DC_____V, _____ Hz.
4. Shunt trip coil
   The breaker trips by means of energizing the voltage to the shunt coil.
   If the shunt coil is fitted to the breaker, information about the voltage and frequency to the coil itself is needed:
   AC or DC_____V, _____ Hz.
5. Other accessories
   Accessories other than those listed above in lines 1~4 are sometimes fitted to the breaker. In such cases information about the name and type/model no. of the accessories is required when ordering.



Front-connected



Rear-connected

Plug-in

How to order: 79-31-61

Circuit Breaker with the following information:

1) Type of model number TO-100BA
2) No. of poles ..... 3 pole
3) Frame size 100A
4) Rated current 75A
5) Method of mounting ..... plug in type
   Please specify whether the mounting base is necessary, or not.
6) Accessories
   1. Auxiliary switch ..... one normal open
   2. Alarm switch ..... NIL
   3. Under voltage trip coil ... necessary AC440V, 60Hz
   4. Shunt trip coil ..... NIL
   5. Other accessories ..... NIL

Transformers

Two Way

A compact, high efficiency 2-way volt converter. Appropriate for use with electrical house appliances.

How to order: CODE

Transformer, PRIMARY VOLTAGE and SECONDARY VOLTAGE, AMPERE

Unit Per Pc.

CODE	Input-Output	Capacity	Ampere	
			Up	Down
79 33 01	110V-220V or 220V-100V	100VA	0.5	1
02		200VA	1.0	2
03		300VA	1.5	3
04		500VA	2.5	5
05		1KVA	5.0	10

Step Down for Travel use

A voltage converter designed for use of 100 volt appliances in countries with 220-240 volt current. The converter has A type 2-flat pins for inlet plug and outlet receptacle. Please mention if other types of plug or receptacle are necessary depends on your plug type of the apparatus and your receptacle type where it is used.

Unit Per Pc.

CODE	Model	Max. Output Wattage for Primary AC Voltage		Size mm W x H x D	Weight grm
		110V-130V	220V-240V		
79 33 21	WT-71M	75W	30W	54 × 82 × 55	380
22	WT-72M	120W	75W	65 × 110 × 62	700
23	WT-73M	240W	100W	65 × 110 × 62	770
24	WT-74M	300W	200W	80 × 120 × 68	1,250
79 33 25	WT-75M	50W	35W	58 × 92 × 30	285
26	WT-77M	140W	110W	95 × 142 × 30	750

Name of Mfr. : Kashimura Co., Ltd.

Step Up / Down Transformers

for Home Appliances

A voltage converter designed for use of 100 volt appliances in countries with 220-240 volt current, or 220-240 volt appliances in countries with 100 volt. The converter has A type 2-flat

pins single inlet plug and 2 pairs of multi type (for A type 2-flat pins and C type round pins) outlet receptacles. Please mention if other types of plug or receptacle are necessary depends on your plug type of the apparatus and your receptacle type where it is used.

Unit Per Pc.

CODE	Model	Max. Output Wattage for Primary AC Voltage		Size mm W × H × D	Weight kgs
		110V	220V-240V		
79 33 31	WT-11EJ	550W	550W	125 × 100 × 165	3.6
32	WT-12EJ	1,000W	1,000W	125 × 100 × 165	4.5
33	WT-13EJ	1,500W	1,500W	134 × 110 × 175	6.0
34	WT-14EJ	1,500W	2,000W	145 × 110 × 200	7.1
35	WT-15EJ	1,500W	3,000W	182 × 134 × 240	11.0

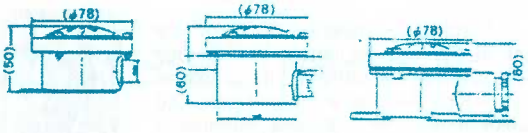
Name of Mfr. : Kashimura Co., Ltd.

14. Buzzers & Bells

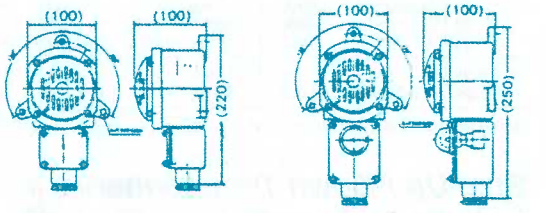
Marine Electric Alarm Buzzers

(Ref. JIS F 8502)

For emergency or engineer alarm signalling. Used where noise levels or acoustic properties can not be covered with ordinary signals. The mechanism is enclosed inside the housing. Available for DC or AC.



1S 1F 1SW



2SW 2SLW

How to order: CODE

Alarm buzzer, CURRENT, TYPE, RATED VOLTAGE, REMARK

Unit Per Pc.

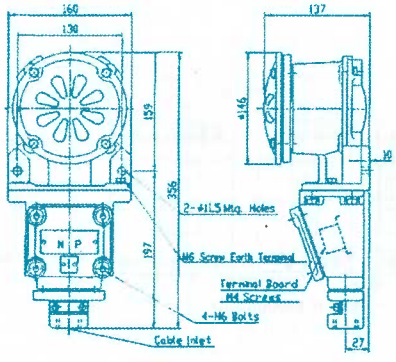
CODE	Type	Rated Voltage	Sound level dB	Remark
For DC Current				
79 34 01	1S	22	80	Surface Mounting
79 34 02	1F			Flush "
79 34 03	1SW			Surface Mounting and Waterproof
79 34 04	2SW		90	
79 34 05	2SLW			- " - w Pilot Lamp
Fro AC Current				
79 34 11	1S	110	80	Surface Mounting
12		220		
79 34 13	1F	110		Flush Mounting
14		220		
79 34 15	1SW	110		Surface Mounting Waterproof
16		220		
79 34 17	2SW	110	90	
18		220		
79 34 19	2SLW	110		- " - with Pilot Lamp
20		220		

Remark: 1. The type is classified in to 1 and 2 in accordance with sound level.
2. Type symbol S denotes surface mounting type, F, flush mounting type, L, buzzers with lamp, W, waterproof construction.

Alarm Buzzers

Explosion-proof Type

Alarm buzzers suitable for use in hazardous areas, such as confined spaces and where explosive gas is a potential danger. Type of explosion-proof enclosure conforms to JIS C-0903 d2G4.



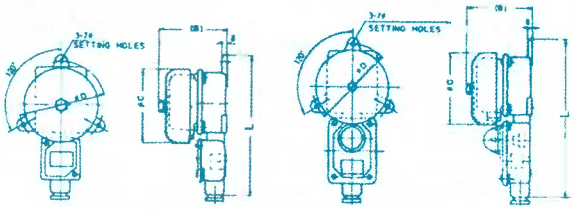
Unit Per Pc.

CODE	Model	Voltage	Capacity	Loudness	Weight
79 34 27	BXS-50-C	AC 100V	50 VA	95 dB	11.5 kgs
28		AC 200V			

Marine Electric Alarm Bells

(Ref. JIS F8501-1983)

Watertight type electric bells used for signalling and warning aboard ships.



120, 200 L120, L200 w/Pilot Lamp

How to order: CODE

Alarm bell, TYPE, RATED VOLTAGE, WITHOUT or WITH PILOT LAMP

Unit Per Pc.

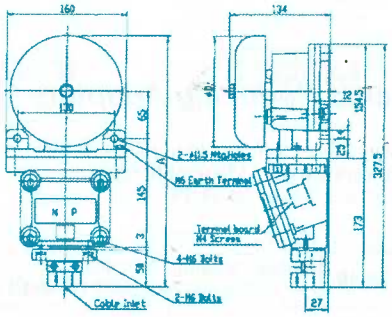
CODE	Type	Rated Voltage	Sound Level dB	Size mm	
				Bell ø	Overall L
Without Pilot Lamp					
79 34 31	120	DC-22	85	120	230
79 34 32	200		95	200	
79 34 33	120	AC-110	85	120	
34		AC-220			
79 34 35	200	AC-110	95	200	
36		AC-220			
With Pilot Lamp					
79 34 41	L120	DC-22	85	120	265
42	L200		95	200	
79 34 43	L120	AC-110	85	120	
44		AC-220			
79 34 45	L200	AC-110	95	200	
46		AC-220			

Remark: Type symbol L denotes with pilot lamp.

Alarm Bells

Explosion-proof Type

Alarm bells suitable for use in hazardous areas, such as confined spaces and where explosive gas is a potential danger. Type of explosion-proof enclosure conforms to JIS C-0903 d2G4.

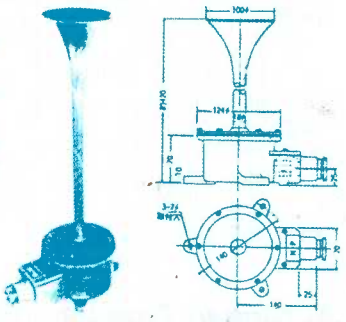


Unit Per Pc.

CODE	Model	Voltage	Capacity	Loudness	Weight
79 34 51	BX-10C	AC 100V	22 VA	80 dB	5 kgs
52		AC 200V			
79 34 53		DC 24V	8 VA		
79 34 54	BX-15C	AC 100V	22 VA	85 dB	5.5 kgs
55		AC 200V			
79 34 56		DC 24V	8 VA		
79 34 57	BX-20C	AC 100V	22 VA	87 dB	6 kgs
58		AC 200V			
79 34 59		DC 24V	8 VA		

Watertight Electric Horns

For fast coding or general alarms. High intensity tone and volume. Made of cast aluminium.



Unit Per Pc.

CODE	Voltage	Size mm		Weight kgs
		Trumpet ϕ	Overall L	
79 34 61	DC-22V	100	420	1.6
79 34 62	AC-110V			
79 34 63	AC-220V			

15. Lamp Holders

Lamp Holders

(Ref. JIS F 8401)

Marine lamp holders of the rated voltage 250 V or less mainly used for light fittings on board.

Flanged Type

FE-12 (79 35 01)

FB-15 (79 35 02)

FE-14 (79 35 03)

FE-26 (79 35 04)

FB-22 (79 35 05)

FE-39 (79 35 06)

Tubular Type

TE-26 (79 35 07)

TE-22 (79 35 08)

TE-39 (79 35 09)

With Brim

GE-26 (79 35 10)

Unit Per Pc.

CODE	Type	Shape	Rating		Main Body Material
			Volt	Amp.	
79 35 01	FE-12	Flanged	125	1	Synthetic Resin
02	FB-15			1	"
03	FE-14			1	"
04	FE-26		250	6	Porcelain
05	FB-22			3	"
06	FE-39			5	Brass
79 35 07	TE-26	Tubular		6	Porcelain
08	TB-22			3	"
09	TE-39			15	"
79 35 10	GE-26	With Brim		6	Synthetic Resin

European Type Lamp Holders

Various types of brass made lamp holders such as with threaded bushing, back plate or mounting lug and they are all easily connected to the lighting fixture.

Lamp Base	BA-15D	B-22
Thread	M10	3/8", 1/2", 5/8"
Bayonet Type with Threaded Bushing		
Lamp Base	E-27	E-40
Thread	M10	3/8"
Screw Type with Threaded Bushing		
Lamp Base	BA-15D	B-22
Bayonet Type with Back Plate		
Lamp Base	BA-15D, B-22 E-14, E-27	B-22, E-27
Nos. of Lug	2	3
Screw of Bayonet Type with Mounting Lug		

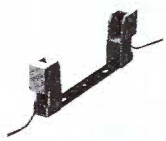
How to oder : CODE

Lamp holder, European type, BASE TYPE, THREAD or LUG NUMBER

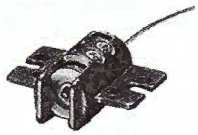
Unit Per Pc.

CODE	Base Type	Remark	Thread or Lug Number
79 35 16	BA-15D	Bayonet Type with Threaded Bushing	M10
79 35 17	B-22		3/8
18			1/2
19			5/8
79 35 20	E-27	Screw Type with Threaded Bushing	M10
79 35 21	E-40		3/8
79 35 22	BA-15D	Bayonet Type with Back Plate	–
79 35 23	B-22		
79 35 24	BA-15D	Screw or Bayonet Type with Mounting Lug	2
79 35 25	B-22		
79 35 26	E-14		
79 35 27	E-27		
79 35 28	B-22		3
79 35 29	E-27		

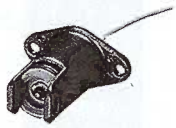
Lamp Holders
for Cap Base Halogen Lamp R7S



for Max. 500W



for Max. 1,000W



for Max. 2,000W

CODE	Descriptions	Unit
79 35 30	For max. 500W R7S halogen lamp	Pc.
79 35 31	For max. 1,000W R7S halogen lamp, with side connection with heat resistant cable	Pc.
79 35 32	For max. 2,000W R7S halogen lamp, with back connection and heat resistant cable	Pc.

Socket Reducing Adapters

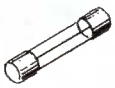
Available for mogul to medium (E-39 to E-26) screw base. Made of porcelain.

79 35 40	Socket adapter, porcelain mogul to medium base (E-39 to E-26)	Pc.

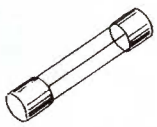
16. Fuses & Carbon Brushes

Glass Tube Fuses

Designed mainly for use with electronic communication apparatus.



Size: ϕ5.2xL20mm



Size: ϕ6.35xL30mm

How to order: CODE

Glass tube fuse, SIZE, RATED VOLTAGE, AMPERE

Unit Per Pc.

CODE	Amp.	CODE	Amp.	CODE	Amp.
Φ 5.2 x L20 mm Rated Voltage 125V					
79 36 01	0.1	**79 36 07**	0.8	**79 36 13**	5
02	0.2	**08**	1	**14**	6
03	0.3	**09**	1.5	**15**	8
04	0.4	**10**	2	**16**	10
05	0.5	**11**	3		
06	0.6	**12**	4		
Φ 6.35 x L30 mm Rated Voltage 125V					
79 36 21	0.1	**79 36 27**	0.8	**79 36 33**	5
22	0.2	**28**	1	**34**	6
23	0.3	**29**	1.5	**35**	8
24	0.4	**30**	2	**36**	10
25	0.5	**31**	3	**37**	15
26	0.6	**32**	4	**38**	20
Φ 6.35 x L30 mm Rated voltage 250V					
79 36 41	0.1	**79 36 47**	0.8	**79 36 53**	5
42	0.2	**48**	1	**54**	6
43	0.3	**49**	1.5	**55**	8
44	0.4	**50**	2	**56**	10
45	0.5	**51**	3	**57**	15
46	0.6	**52**	4	**58**	20

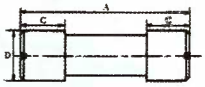
Cello-Lite Cartridge Fuses

Type NC & Type NB

Totally enclosed cartridge type fuse with a large breaking capacity. Excellent current limiting characteristics with no danger of explosion or flaming at breaking. Economical because the fusing element unit is replaceable. These types are approved by N.K., Lloyd, BV, ABS, and G. Lloyd.

NC

NB



Cylindrical Contact

Knife Blade Contact

Spare Fuse Element Unit

Spare Fuse Element Unit

Specifications

Feature	Totally enclosed Cartridge Type Fuse
Rated Capacity	AC 500/DC 250V, 1A-200A
" Breaking Capacity	20,000A
Fusing Factor	135

Dimensions mm

Type	A	B	C	D	E	Contact
NC-1	50		13.2	15		Cylindrical
NC-2	75		16.2	20		"
NB-3	150	100		29	20	Knife Blade
NB-4	180	110		40	30	- " -

How to order: CODE

Cello-lite fuse, TYPE, AMPERE

How to order : CODE

Fuse element for TYPE, AMPERE

Unit Per Set — Unit Per Pc.

Case & Element Complete CODE	Type	Ampere	Rated Voltage	Element Only CODE
79 36 61	NC-1	1	AC500V DC250V	**79 36 91**
62		3		**92**
63		5		**93**
64		10		**94**
65		15		**95**
66		20		**96**
67		25		**97**
68		30		**98**
79 36 71	NC-2	40		**79 37 01**
72		50		**02**
73		60		**03**
79 36 76	NB-3	75		**79 37 06**
77		100		**07**
79 36 81	NB-4	125		**79 37 11**
82		150		**12**
83		175		**13**
84		200		**14**

Fuse Wire

Unit Per Spl.

CODE	Ampere	Weight Grm./ Spool	CODE	Ampere	Weight Grm./ Spool
79 37 21	1	225	**79 37 26**	20	450
22	3	225	**27**	30	450
23	5	450	**28**	40	450
24	10	450	**29**	50	450
25	15	450	**30**	60	450

Fuse Pullers

Eliminates the danger of shock when removing cartridge fuses by hand and the problem of bending fuse clips due to the wrong removal.

Unit Per Pr.

CODE	79 37 36	79 37 37
Type	Scissor Type	Butterfly Type
Size mm	W40 x L180	W80 x L110
Capacity	30 - 60A	30 - 60A
Material	Nylon Resin	Phenol Resin

Cello-Lite Cartridge Fuses

Type UC & Type UB

Cartridge type non-renewable fuse with high breaking capacity and current-limiting.

Complies with the specification of JIS C 8314 for particular requirements for low-voltage cartridge fuses, and duly approved by Nippon Kaiji Kyokai (NK), The Lloyd's Register (LR), American Bureau of Shipping (ABS), Germanischer Lloyd (GL) and Bureau Veritas (BV). Due to totally enclosed non-renewable construction, it insures safe operation, not allowing any flame or gas to burst at the moment of interruption.

Diagram A

Diagram B

Standard Rating

Type	Rated Voltage	Rated Current amp.	Fusing Factor	Rated Breaking Capacity kA
UC-1	AC 500 DC 250	1, 3, 5, 10, 15, 20, 25, 30	1.35	AC 50 (ACL 50)
UC-2		40, 50, 60		
UB-3		75, 100		DC 20 (DCL 20)
UB-4		125, 150, 175, 200		

Dimensions

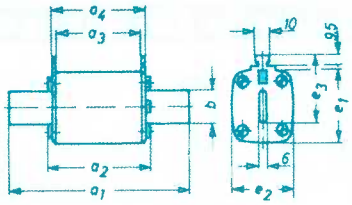
Type Number	Rated Current Amp	Dimensions mm							Dia-gram	Weight
		A	B	C	D	E	F	L		
UC-1	1,3,5,10, 15,20,25,30	50	13.0	15	-	-	-	38	A	20
UC-2	40,50,60	75	16.0	20	-	-	-	60	A	51
UB-3	75,100	95	17.5	30	25	20	3.2	120	B	160
UB-4	125,150, 175,200	110	20.5	42	35	30	4.5	145	B	395

Unit Per Pc.

CODE	Type	Ampere	CODE	Type	Ampere
79 37 41	UC-1	1	79 37 52	UB-3	75
42		3	53		100
43		5	79 37 54	UB-4	125
44		10	55		150
45		15	56		175
46		20	57		200
47		25			
48		30			
79 37 49	UC-2	40			
50		50			
51		60			

NH (HRC) Cartridge Fuses

Low voltage high breaking capacity fuses. LV, HRC fuse links 500V AC for line protection, low-loss. Size 00 - 3 in accordance with DIN 57636 Part 2/VDE 0636 Part 2, class of operation gL IEC 269-2, class of operation gI. Knife contacts, ceramic insulating body, and indicator on the front plate.



General Size Table

Type	Rating Amp.	Size mm							
		a_1	a_2	a_3	a_4	b	e_1	e_2	e_3
00	6-100	79	54	46	49	15	35	20.5	44.5
	125-160	79	54	46	49	15	44	30	44.5
0	6-160	125	68	63	66	15	44	30	44.5
1	35-160	135	70	63	67	20	44	30	50
	200-250	135	70	63	67	20	47	39	50
2	35-160	150	72	63	67	26	44	30	57.5
	200-250	150	72	63	67	26	47	39	57.5
	315-400	150	72	63	67	26	52	44	57.5
3	315-400	150	72	63	67	33	58	52	69
	500-630	150	72	63	67	33	70	64	69

NH (HRC) Cartridge Fuse Links

500V AC/6 – 160A Size "00"

Unit Per Pc.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 01	6A	79 38 05	25A	79 38 09	80A
02	10A	06	35A	10	100A
03	16A	07	50A	11	125A
04	20A	08	63A	12	160A

500V AC/6 – 160A Size "0"

Unit Per Pc.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 16	6A	79 38 20	25A	79 38 24	80A
17	10A	21	35A	25	100A
18	16A	22	50A	26	125A
19	20A	23	63A	27	160A

500V AC/35 – 250A Size "1"

Unit Per Pc.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 31	35A	79 38 34	80A	79 38 37	160A
32	50A	35	100A	38	200A
33	63A	36	125A	39	250A

500V AC/35 – 400A Size "2"

Unit Per Pc.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 41	35A	79 38 45	100A	79 38 49	250A
42	50A	46	125A	50	315A
43	63A	47	160A	51	400A
44	80A	48	200A		

500V AC/315-630A Size "3"

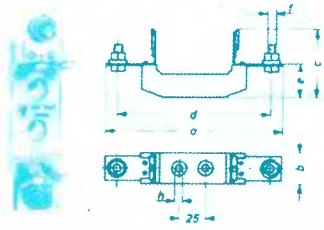
Unit per Pc.

CODE	Rating Amp.	CODE	Rating Amp.
79 38 55	315A	79 38 57	500A
56	400A	58	630A

NH (HRC) Single Pole Fuse Bases

500/660V AC Size – "00" – "3"

All ceramic base plate with surface contact formed from one piece, galvanic surface protection.



Type	Rating Amp.	Size mm							
		a	b	c	d	e	f	g	h
00	100A	120	33	58	100	24	M 6	-	7.5
	160A	120	33	58	100	24	M 8	-	7.5
0	160A	170	30	65	148	31	M 8	-	7.5
1	250A	196	45	79	173	35	M10	30	10.5
2	400A	225	52	88	200	35	M10	30	10.5
3	630A	250	52	90	210	38	M12	30	10.5

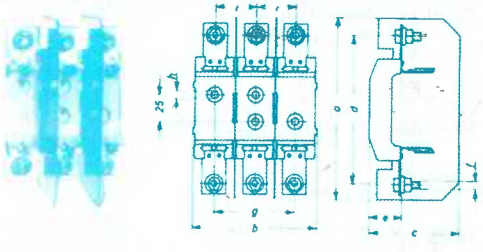
Unit Per Pc.

CODE	Type	Amp.	CODE	Type	Amp.
79 38 61	00	100A	79 38 64	1	250A
62	00	160A	65	2	400A
63	0	160A	66	3	630A

NH (HRC) Triple Pole Fuse Bases

500/660V AC Size – "00" – "2"

Sheet steel base plate steatite insulators with surface contact formed from one piece, galvanic surface protection.



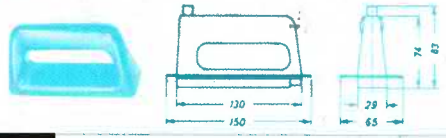
Type	Rating Amp	Size mm								
		a	b	c	d	e	f	g	h	i
00	100A	138	96	85	100	24	M 6	66	7.5	33
	160A	138	96	85	100	24	M 8	66	7.5	33
0	160A	180	131	88	148	31	M 8	87	7.5	44
1	250A	214	168	108	173	35	M10	108	10.5	54
2	400A	260	188	115	200	35	M10	125	10.5	62

Unit Per Pc.

CODE	Type	Amp.	CODE	Type	Amp.
79 38 71	00	100A	79 38 74	1	250A
72	00	160A	75	2	400A
73	0	160A			

NH (HRC) Fuse Link Universal Handles

For H.R.C. or European standard fuse links. Made from bakelite with solid metal parts, zinc plated for all size knife fuses "00" to "4".



79 38 80	Handle, universal for NH (HRC) fuse link	Pc.

DIN Style Diazed Fuses

Fuse links are made from ceramic material of high compression strength to withstand high mechanical and thermal stresses. Copper alloy made top and bottom contact discs. A coloured indicator disc is fixed to the front contact plate, giving a clear indication of the state of the fuses in use. Please specify the required type of action "Time Lag" (Delayed action) or "Quick Acting" (Quick response) when ordering.

"D" Screw Cap

"D" Cartridge Fuse

"D" Gauge Piece

Contact Protecting Cover

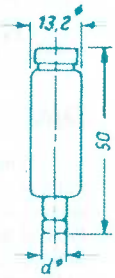
"D" Fuse Base

Diazed Fuses

500V/2 – 25A Type E-16

Unit Per Pc.

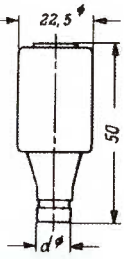
Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam. "d" mm	CODE	Rating Amp.	Diam. "d" mm
79 39 01	2A	6	79 39 51	2A	6
02	4A	6	52	4A	6
03	6A	6	53	6A	6
04	10A	8	54	10A	8
05	16A	10	55	16A	10
79 39 06	20A	12	79 39 56	20A	12
07	25A	14	57	25A	14



500V/2 – 25A Type E-27

Unit Per Pc.

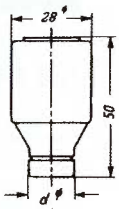
Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam. "d" mm	CODE	Rating Amp.	Diam. "d" mm
79 39 11	2A	6	**79 39 61**	2A	6
12	4A	6	**62**	4A	6
13	6A	6	**63**	6A	6
14	10A	8	**64**	10A	8
15	16A	10	**65**	16A	10
79 39 16	20A	12	**79 39 66**	20A	12
17	25A	14	**67**	25A	14



500V/35 – 63A Type E-33

Unit Per Pc.

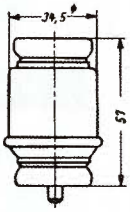
Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam. "d" mm	CODE	Rating Amp.	Diam. "d" mm
79 39 21	35A	16	**79 39 71**	35A	16
22	50A	18	**72**	50A	18
23	63A	20	**73**	63A	20



500V/80 – 100A Type R-1-1/4"

Unit Per Pc.

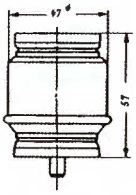
Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	kgs per pc.	CODE	Rating Amp.	kgs per pc.
79 39 26	80A	0.107	**79 39 76**	80A	0.107
27	100A	0.11	**77**	100A	0.11



500V/125 – 200A Type R-2"

Unit Per Pc.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	kgs per pc.	CODE	Rating Amp.	kgs per pc.
79 39 31	125A	0.207	**79 39 81**	125A	0.207
32	160A	0.21	**82**	160A	0.21
33	200A	0.22	**83**	200A	0.22



"D" Fuse Caps

For D-type cartridge fuses up to 200 amperes and 500 volts. Porcelain made body with a nickel-plated brass screw.

Unit Per Pc.

CODE	Type	Amp up to	Size mm a	Size mm b	CODE	Type	Amp up to	Size mm a	Size mm b
79 39 41	E-16	25	34	27	**79 39 44**	R-1-1/4"	100	52	60
42	E-27	25	42	38	**45**	R-2"	200	52	80
43	E-33	63	43	48					

DIN Style D0 (Neozed) Fuses

Do fuse links are manufactured in three sizes in rating from 2 to 100 amps. Please specify the required type of action "Time Lag" (Delayed action) or "Quick Acting" (Quick response) when ordering.

500V/2-16A Type E-14

Unit Per Pc.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam x L mm	CODE	Rating Amp.	Diam x L mm
79 40 01	2A		**79 40 06**	2A	
02	4A		**07**	4A	
03	6A	11 x 36	**08**	6A	11 x 36
04	10A		**09**	10A	
05	16A		**10**	16A	

500V/20-63A Type E-18

Unit Per Pc.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam x L mm	CODE	Rating Amp.	Diam x L mm
79 40 11	20A		**79 40 16**	20A	
12	25A		**17**	25A	
13	35A	15 x 36	**18**	35A	15 x 36
14	50A		**19**	50A	
15	63A		**20**	63A	

500V/80-100A Type M30X2

Unit Per Pc.

Time Lag (Delayed Action)					
CODE	Rating Amp.	Diam x L mm	CODE	Rating Amp.	Diam x L mm
79 40 21	80A	22.5 x 43	**79 40 22**	100A	22.5 x 43

IEC Industrial Cylindrical Fuses

Made from Ceramic bodies and silver plated copper end caps. gG/gL indicates Full range breaking capacity for General Industrial applications, and aM indicates Partial range breaking capability for Motor protection.

Class gG/gL (Quick Acting) 8 x 32mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 31	0.5A	400V	20kA
32	1A		
33	2A		
34	4A		
35	6A		
79 40 36	8A		
37	10A		
38	12A		
39	16A		
40	20A		
79 40 41	25A		

10 × 38mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 46	0.5A	500V	120kA
47	1A		
48	2A		
49	4A		
50	6A		
79 40 51	8A		
52	10A		
53	12A		
54	16A		
55	20A		
79 40 56	25A		
79 40 57	32A	400V	

14 × 51mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 61	1A	690V	80kA
62	2A		
63	4A		
64	6A		
65	8A		
79 40 66	10A		
67	12A		
68	16A		
69	20A		
70	25A		
79 40 71	32A	500V	120kA
79 40 72	40A		
79 40 73	50A	400V	

22 × 58mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 76	2A	690V	80kA
77	4A		
78	6A		
79	8A		
80	10A		
79 40 81	12A		
82	16A		
83	20A		
84	25A		
85	32A		
79 40 86	40A		
87	50A		
88	63A		
89	80A		
79 40 90	100A	500V	120kA
79 40 91	125A	400V	

Class aM (Slow Acting)
8 B 32mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 01	1A	400V	20kA
02	2A		
03	4A		
04	6A		
05	8A		
79 61 06	10A		
07	12A		
08	16A		
09	20A		
10	25A		

10 × 38mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 11	0.16A	500V	120kA
12	0.25A		
13	0.5A		
14	1A		
15	2A		
79 61 16	4A		
17	6A		
18	8A		
19	10A		
20	12A		
79 61 21	16A		
22	20A		
79 61 23	25A	400V	
24	32A		

14 × 51mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 26	0.25A	690V	80kA
27	0.5A		
28	1A		
29	2A		
30	4A		
79 61 31	6A		
32	8A		
33	10A		
34	12A		
35	16A		
79 61 36	20A		
37	25A		
79 61 38	32A	500V	120kA
39	40A		
79 61 40	50A	400V	

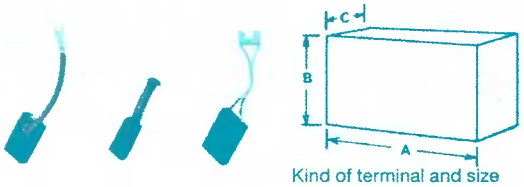
22 × 58mm

Unit Per Pc.

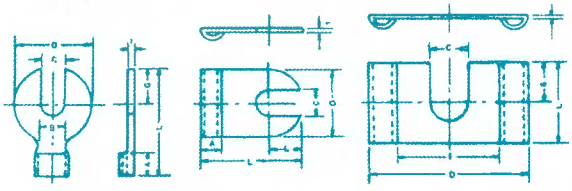
CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 41	2A	690V	80kA
42	4A		
43	6A		
44	8A		
45	10A		
79 61 46	12A		
47	16A		
48	20A		
49	25A		
50	32A		
79 61 51	40A		
52	50A		
53	63A		
54	80A		
79 61 55	100A	500V	120kA
79 61 56	125A	400V	

Carbon Brushes

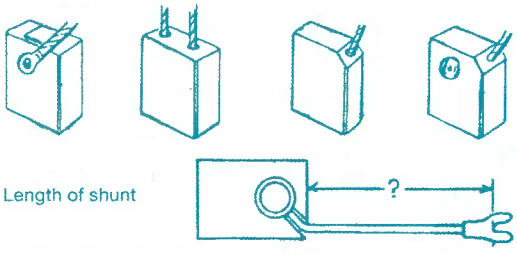
When ordering, Carbon Brushes be sure to give the style as shown with the following information. Length, width, and thickness are shown as A, B, C in the illustration.



Kind of terminal and size



Kind of wire material and how it is fixed.



Length of shunt

How to order: 79-40-96

Carbon brush, size, kind of terminal, wire material, how it is fixed, shunt length (pc.)

17. Cables

Welding Cables

Butyle Rubber Sheathed

1,000V or less – single conductor

Welding cable for general use. Cloth or paper wrapped wire sealed in rubber sheath. Furnished 200 mtrs per coil.

Unit Per Mtr

CODE	mm²	Strand O.D. mm	Cable O.D. mm	Cable Construction mm	Kgs Per mtr
79 41 01	22	7.0	11.8	0.45 x 20 x 7	0.31
02	38	9.1	14.5	0.45 x 34 x 7	0.50
03	60	11.7	17.5	0.45 x 20 x 19	0.75
04	100	15.2	21.8	0.45 x 34 x 19	1.23
05	150	18.7	25.9	0.45 x 34 x 27	1.71
79 41 06	200	21.2	29.0	0.45 x 34 x 37	2.30

Rubber Cabtyre Cables

Natural Rubber Sheathed

600V or less – 1 to 4 conductors

Designed for electric tools and lighting fixtures. Natural rubber sheath encloses each conductor. Conductors completed with natural rubber sheath as a final seal. Fixed length is 200 mtrs/coil.

How to order: CODE

Cable, rubber cabtyre, rubber sheathed, NUMBER of CONDUCTORS, NOMINAL mm²

Unit Per Mtr

CODE	Nominal mm²	Conductor Construction mm	Conductor O.D. mm	Cable Out Diam. mm	Kgs Per Mtr
1-Conductor					
79 41 11	0.75	0.18 x 30	1.1	6.4	0.06
12	1.25	0.18 x 50	1.5	7.0	0.08
13	2.0	0.26 x 37	1.8	7.3	0.09
14	3.5	0.32 x 45	2.5	8.0	0.11
15	5.5	0.32 x 70	3.1	8.8	0.15
16	8.0	0.45 x 50	3.7	9.4	0.18
17	14.0	0.45 x 88	4.9	11.5	0.27
2-Conductor					
79 41 21	0.75	0.18 x 30	1.1	10.5	0.16
22	1.25	0.18 x 50	1.5	11.5	0.19
23	2.0	0.26 x 37	1.8	12.0	0.22
24	3.5	0.32 x 45	2.5	13.5	0.30
25	5.5	0.32 x 70	3.1	15.0	0.38
26	8.0	0.45 x 50	3.7	16.5	0.47
27	14.0	0.45 x 88	4.9	21.0	0.73
3-Conductor					
79 41 31	0.75	0.18 x 30	1.1	11.0	0.18
32	1.25	0.18 x 50	1.5	12.0	0.23
33	2.0	0.26 x 37	1.8	13.0	0.27
34	3.5	0.32 x 45	2.5	14.5	0.35
35	5.5	0.32 x 70	3.1	16.0	0.46
36	8.0	0.45 x 50	3.7	17.5	0.57
37	14.0	0.45 x 88	4.9	22.0	0.91
4-Conductor					
79 41 41	0.75	0.18 x 30	1.1	12.0	0.21
42	1.25	0.18 x 50	1.5	13.0	0.27
43	2.0	0.26 x 37	1.8	14.0	0.32
44	3.5	0.32 x 45	2.5	16.0	0.44
45	5.5	0.32 x 70	3.1	17.5	0.57
46	8.0	0.45 x 50	3.7	19.5	0.72
47	14.0	0.45 x 88	4.9	24.0	1.16

P.V.C. Cabtyre Cables

Portable Power Polyvinylchloride Sheathed

600V or less – 1 to 4 conductors

For portable electric tools or wiring work. Each wire is covered with vinyl and an exterior vinyl sheath. Fixed length is 200 mtrs/coil.

How to order: CODE

Cable, P.V.C. cabtyre, NUMBER of CONDUCTORS, NOMINAL mm²

Unit Per Mtr

CODE	Nominal mm²	Conductor Construction mm	Conductor O.D. mm	Cable Out Diam. mm	Kgs Per Mtr
1-Conductor					
79 41 51	0.75	0.18 x 30	1.1	5.7	0.04
52	1.25	0.18 x 50	1.5	6.1	0.05
53	2.0	0.26 x 37	1.8	6.4	0.06
54	3.5	0.32 x 45	2.5	7.3	0.09
55	5.5	0.32 x 70	3.1	8.3	0.12
56	8.0	0.45 x 50	3.7	9.5	0.16
57	14.0	0.45 x 88	4.9	11.5	0.24
58	22.0	0.45x20x 7	7.0	14.5	0.38
59	38.0	0.45x34x 7	9.1	17.0	0.58
60	60.0	0.45x20x19	11.6	20.0	0.85
61	100.0	0.45x34x19	15.2	25.0	1.37

(to be continued)

Unit Per Mtr

CODE	Nominal mm²	Conductor Construction mm	Conductor O.D. mm	Cable Out Diam. mm	Kgs Per Mtr
2-Conductor					
79 41 66	0.75	0.18 x 30	1.1	8.8	0 1
67	1.25	0.18 x 50	1.5	9.6	0.12
68	2.0	0.26 x 37	1.8	10.5	0.15
69	3.5	0.32 x 45	2.5	12.0	0.2
70	5 5	0 32 x 70	3 1	14 5	0.3
71	8.0	0.45 x 50	3.7	16.5	0.41
72	14.0	0.45 x 88	4.9	20.0	0.64
3-Conductor					
79 41 76	0.75	0.18 x 30	1.1	9.2	0.11
77	1.25	0.18 x 50	1.5	10 5	0.14
78	2.0	0.26 x 37	1.8	11.0	0.18
79	3 5	0.32 x 45	2.5	13.0	0.26
80	5.5	0.32 x 70	3.1	15.0	0.37
81	8.0	0 45 x 50	3.7	17.5	0.51
82	14 0	0.45 x 88	4.9	22.0	0.81
4-Conductor					
79 41 86	0.75	0.18 x 30	1.1	9.9	0.14
87	1.25	0.18 x 50	1.5	11.5	0.18
88	2 0	0.26 x 37	1.8	12.0	0.21
89	3.5	0.32 x 45	2 5	14.0	0.32
90	5.5	0 32 x 70	3.1	16.5	0.46
91	8.0	0 45 x 50	3.7	19.5	0.64
92	14 0	0 45 x 88	4.9	24.0	1 02

Parallel P.V.C. Cables

Polyvinylchloride Sheathed

300V or less

Designed as lighting cord and for indoor wiring. Fixed length is 100 mtrs/coil.

Unit Per Mtr

CODE	mm²	Cable Contruction mm	CODE	mm²	Cable Contruction mm
79 42 01	0 5	0 18 x 20	79 42 03	1.25	0.18 x 50
02	0.75	0.18 x 30	04	2.00	0.26 x 37

Cotton Covered Lamp Cables

Rubber and Cotton Sheathed

660V or less – 2 conductors

For percolators or pressing irons. Rubber covered wire, cloth taped and cotton sheathed. Fixed length is 100 or 200 mtrs/coil.

Unit Per Mtr

CODE	mm²	Cable Contruction mm	CODE	mm²	Cable Contruction mm
79 42 06	0.75	0.18 x 30	79 42 08	2.0	0.26 x 37
07	1.25	0.18 x 50			

Flexible Single Cables

P.V.C. Sheathed

300V or less – single conductor

Single cable with P.V.C. sheath for lighting or wiring indoor or outdoor appliances. Fixed length is 100 mtrs/coil.

Unit Per Mtr

CODE	mm²	Cable Contruction mm	CODE	mm²	Cable Contruction mm
79 42 11	0.5	0 18 x 20	79 42 13	1.25	0.18 x 50
12	0.75	0.18 x 30	14	2.0	0.26 x 37

Silicon Rubber and Glass Cloth Sheathed Cables

600V or less, Temperature 180°C or less

Tin coated annealed copper wire enclosed by silicon rubber and exterior glass cloth sheathing. For generators, electrical tools and various electrical equipment.

Unit Per Mtr

CODE	mm²	O.D mm	Construction mm	CODE	mm²	O.D mm	Construction mm
79 42 26	1.25	1.5	0.18 x 30	79 42 28	3 5	2.5	0.32 x 45
27	2.0	1.8	0.26 x 37	29	5 5	3 1	0.45 x 35

Microphone Cables

Vinyl covered single wire entirely wrapped by a polyester tape-braided copper armour and an exterior vinyl sheath. Specially used for communication wiring. Fixed length is 100 mtrs/coil.

How to order: CODE

Microphone cable, NUMBER of CONDUCTORS, mm²

Unit Per Mtr

CODE	mm²	Out Diam. mm	Cable Construction mm
1-Conductor			
79 42 31	0.3	3.7	0.18 x 12
32	0.5	4.6	0.18 x 20
33	0.75	5.0	0.18 x 30
34	1.25	5.3	0.18 x 50
2-Conductor			
79 42 36	0 3	5.2	0 18 x 12
37	0.5	6.6	0.18 x 20
38	0.75	7.4	0.18 x 30
39	1.25	8.0	0 18 x 50
3-Conductor			
79 42 41	0.3	5.5	0.18 x 12
42	0.5	7.0	0.18 x 20
43	0.75	7.8	0.18 x 30
44	1.25	8.4	0.18 x 50
79 42 46	0.3	5.9	0.18 x 12
47	0.5	7.4	0.18 x 20
48	0.75	8.4	0 18 x 30
49	1.25	9.1	0.18 x 50

Radio-Frequency Coaxial Cables

For cabling jobs of high frequency equipment. Polyethylene covered wire enclosed by braided copper armour and exterior plastic sheathing. When ordering, specify the code, size of cable and the number of ohms required.

How to order: CODE

Coaxial cable, radio frequency, Ohms, SIZE of CABLE

Unit Per Mtr

CODE	Size	Cable mm		O.D. mm	Test Voltage
		Construction	Diam.		
		75 ohm (Ω)			
79 42 61	1.5C-2V	0.26 x 1	0.26	2.9	1,000
62	2.5C-2V	0.4 x 1	0.4	4.0	1,000
63	3C-2V	0.5 x 1	0.5	5.4	1,000
64	5C-2V	0.8 x 1	0.8	7.4	1,000
65	7C-2V	0.4 x 7	1.2	10.4	1,000
66	10C-2V	0.5 x 7	1.5	13.0	1,000
		50 ohm (Ω)			
79 42 71	1.5D-2V	0.18 x 7	0.54	2.9	300
72	2.5D-2V	0.8 x 1	0.8	4.3	1,000
73	3 D-2V	0.32 x 7	0.96	5.3	1,000
74	5 D-2V	1.4 x 1	1.4	7.3	1,000

Armoured Cables EP Rubber Insulated, P.V.C. Sheathed & Steel Wire Braided

600 V or less – 1 to 12 conductors

For heavy duty wiring on board. Rubber covered wires are entirely wrapped with hemp tape and then enclosed by plastic sheathing and braided metal armour.

7TH 79

How to order: CODE

Armoured cable, EP rubber insulated, P.V.C. sheathed & steel wire braided, NUMBER of CONDUCTORS, mm²

Unit Per Mtr

CODE	mm²	Cable Strand mm		O.D. mm	Kgs Per Mtr
		Construction	Diam.		
		1-Conductor			
79 43 01	1.5	0.52 × 7	1.56	7.2	0.1
02	2.5	0.67 × 7	2.01	7.6	0.12
03	4.0	0.85 × 7	2.55	8.2	0.14
04	6.0	1.04 × 7	3.12	8.7	0.17
05	10.0	1.35 × 7	4.05	9.9	0.225
		2-Conductor			
79 43 08	1.5	0.52 × 7	1.56	11.7	0.205
09	2.5	0.67 × 7	2.01	12.8	0.250
10	4.0	0.85 × 7	2.55	13.9	0.3
11	6.0	1.04 × 7	3.12	15.2	0.37
12	10.0	1.35 × 7	4.05	17.1	0.49
		3-Conductor			
79 43 15	1.5	0.52 × 7	1.56	12.5	0.245
16	2.5	0.67 × 7	2.01	13.5	0.295
17	4.0	0.85 × 7	2.55	14.7	0,365
18	6.0	1.04 × 7	3.12	16.1	0.455
19	10.0	1.35 × 7	4.05	18.3	0.625
		4-Conductor			
79 43 26	1.0	0.43 × 7	1.29	11.2	0.205
		7-Conductor			
79 43 27	1.0	0.43 × 7	1.29	13.2	0.29
		12-Conductor			
79 43 28	1.0	0.43 × 7	1.29	19.0	0.445
		19-Conductor			
79 43 29	1.0	0.43 × 7	1.29	22.0	0.615

Enamelled Copper Wire

For rewinding electric motors, instrument wiring, etc.

Unit Per Kgs

CODE	Diam. mm	Max. Ω/Km at 20°C	App. Kgs Spool	CODE	Diam. mm	Max. Ω/Km at 20°C	App. Kgs Spool
79 43 51	0.29	266.4		**79 43 60**	0.70	44.81	
52	0.32	215.9	10	**61**	0.80	34.30	10
53	0.35	180.5	≀	**62**	0.90	27.10	≀
54	0.40	138.1	15	**63**	1.0	21.95	15
55	0.45	109.2		**64**	1.2	15.24	
79 43 56	0.50	87.79	10	**79 43 65**	1.4	11.20	30
57	0.55	72.56	≀	**66**	1.6	8.574	30
58	0.60	60.99	15	**67**	1.8	6.775	30
59	0.65	51.96		**68**	2.0	5.487	30

Antenna Copper Wire

Specially designed for antenna systems on board vessels.

Unit Per Mtr

CODE	Construction Wire Diam x Strand	O.D. mm	CODE	Construction Wire Diam x Strand	O.D. mm
79 43 76	1.6 × 19	8.0	**79 43 78**	1.6 × 7	4.0
77	1.2 × 19	6.0			

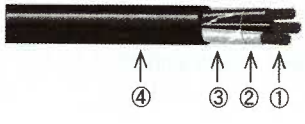
Halogen-free Covered Cables

The remarkably improved fire safety and environmental friendly cables for the ship, not emitting toxic burning fumes or thick smoke owing to Halogen-free insulation cover. Halogen-free refrers to the absence of Halogens, such as Chlorine and Fluorine, and they don't emit any harmful Hydraulic Chloride gas while existing PVC (Polyvinyl Chlorine) dose. In addition to above attractive features, the Halogen-free covered cable reduces cable weight and size to a minimum and still maintain quality, enabling easy installation. The Halogen-free range of cables are frame-retardant (IEC 60332-3).

The following designations are used for insulation materials and sheathing materials, and all materials are halogen-free; Insulation : XLPE stands for Cross-linked Polyethylene compound, and it has excellent mechanical and electrical characteristics. Sheathing : The designation SHF1 stands for Thermoplastic compound, and this material is Halogen-free, highly flame-retardant and has low smoke emission.

The listed cables are for fixed installation on all areas and on open deck in ships. However, if the cable is exposed to direct sun light protective covering or cable with black outer sheath is recommended.

Unarmoured Power and Control Cable 0.6/1 kV LKM-HF



Design	IEC 60092-353, design
1. Conductor - Standard copper conductor	IEC 60228. class 2
2.Insulation - XLPE plastic	IEC 60092-351
3.Bedding - Separator tape	-
4.Sheath - Polyolefine plastic, SHF1 - Standard colour Black	IEC 60092-359

Main Characteristics

Rated Voltage	0.6/1 kV (1.2 kV)
Max. Conductor Temperature	+90°C
Flame-retardant	IEC 60332-1-2 / IEC 60332-3-22
Halogen-free	IEC 60754 series
Smoke Emission	IEC 61034 series
Min. Recommended Installation Temperature	-15°C
Lowest Operation Temperature	-40°C
Approvals	ABS / BV / CCS / DNV / GL / KRS / LRS / RMRS / NK / RINA / TC

Unit Per Mtr

CODE	mm²	Current Rating Amp	Nom. Outer Diam. mm	Approx. Weight grm/mtr
		1 - Conductor		
79 42 75	6.0	52	6.5	90
76	10.0	72	7.5	135
77	16.0	96	8.5	195
		2 - Conductor		
79 42 78	1.5	20	8.0	75
79	2.5	26	10.0	110
80	4.0	34	11.0	145
81	6.0	44	11.5	195
82	10.0	61	14.5	315
		3 - Conductor		
79 42 83	1.5	16	8.5	95
84	2.5	21	10.5	140
85	4.0	28	11.0	190
86	6.0	36	12.5	265
87	10.0	50	15.5	400
88	16.0	67	18.0	595
		4 - Conductor		
79 42 89	1.5	16	9.5	125
90	2.5	21	11.5	170
91	4.0	28	13.0	245
92	6.0	36	14.5	335
93	10.0	50	17.0	515
94	16.0	67	20.0	770

Name of Mfr. : Helkama Bica Oy

Armoured Power and Control Cable
0.6/1 kV LKSM-HF

Design	IEC 60092-353, design
1. Conductor - Standard copper conductor	IEC 60228. class 2
2. Insulation - XLPE plastic	IEC 60092-351
3. Bedding - Separator tape	-
4. Armour - Copper wire braid, - coverage > 90%	IEC 60092-350
5. Sheath - Polyolefine plastic, SHF1 - Standard colour Black	IEC 60092-359

Main Characteristics

Rated Voltage	0.6/1 kV (1.2 kV)
Max. Conductor Temperature	+90°C
Flame-retardant	IEC 60332-1-2 / IEC 60332-3-22
Halogen-free	IEC 60754 series
Smoke Emission	IEC 61034 series
Min. Recommended Installation Temperature	-15°C
Lowest Operation Temperature	-40°C
Approvals	ABS / BV / CCS / DNV / GL / KRS / LRS / RMRS / NK / RINA / TC

Unit Per Mtr

CODE	mm²	Cross-section of Armour mm²	Current Rating Amp	Nom. Outer Diam. mm	Approx. Weight grm/mtr
		1 - Conductor			
79 43 31	6.0	3.1	52	7.5	130
32	10.0	3.2	71	8.5	175
33	16.0	4.1	96	10.0	255
		2 - Conductor			
79 43 34	1.5	3.5	20	10.0	135
35	2.5	4.1	26	11.0	170
36	4.0	4.5	34	12.0	200
37	6.0	5.1	44	13.5	260
38	10.0	8.6	61	16.0	400
		3 - Conductor			
79 43 39	1.5	3.8	16	10.5	160
40	2.5	4.3	21	11.5	200
41	4.0	4.9	28	13.0	260
42	6.0	5.5	36	13.5	335
43	10.0	8.8	50	17.0	510
44	16.0	10.3	67	19.5	720
		4 - Conductor			
79 43 45	1.5	4.2	16	11.5	185
46	2.5	4.7	21	12.0	245
47	4.0	5.4	28	14.0	315
48	6.0	8.6	36	16.0	435
49	10.0	9.8	50	18.5	635
50	16.0	11.8	67	20.5	920

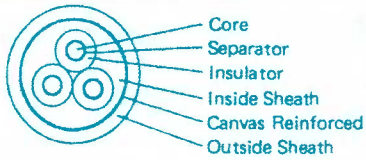
Name of Mfr. : Helkama Bica Oy

Heavy Electric Cables
for Crane/Hoist Use

A wide range of models are available. The most common models of standard sizes are described below.

1. **Name and Capacity**
   600V (Test V 3,000V/M)
   EP Rubber Insulated and Polychloroprene Sheathed Flexible Power Cable Class – 3

2. Construction



3. Type

1.	600V 3PNCT	General Type
2.	600V 3PNCT-B	Bendable Type
3.	600V 3PNCT-T	Twist Cable Type

4. Specifications

Size mm

Nominal Sectional Area mm²		80	100	125	150	200	250
Conductor	Number & Dia of Wire	19/27/0.45	19/34/0.45	19/42/0.45	27/34/0.45	37/34/0.45	37/42/0.45
	O.D.	13.5	15.2	16.8	18.7	21.2	23.6
Insulation Thick		2.1	2.1	2.7	2.7	3.3	3.3
Canvas Tape Thick		0.5	0.5	1.0	1.0	1.0	1.0
Single Core	Sheath Thick	3.4	3.5	3.7	3.8	4.1	4.2
	Cable O.D.	25.7	27.6	31.8	33.9	38.2	40.8
Double Core	Sheath Thick	4.6	4.8	5.2	5.4	5.9	6.3
	Cable O.D.	47.0	50.8	57.2	61.4	69.8	75.4
Triple Core	Sheath Thick	4.8	5.0	5.4	5.7	6.2	6.6
	Cable O.D.	50.3	54.3	61.2	65.9	74.9	80.9
Q'dple Core	Sheath Thick	5.1	5.4	5.8	6.1	6.7	7.1
	Cable O.D.	55.7	60.4	68.0	73.2	83.4	90.0
Approx. Weight	Single Core	1,270	1,520	1,940	2,200	2,910	3,480
	Double Core	3,490	4,190	5,280	6,030	7,980	9,590
	Triple Core	4,520	5,440	6,810	7,570	10,500	12,500
	Quadruple Core	5,660	6,840	8,560	9,840	13,200	15,700

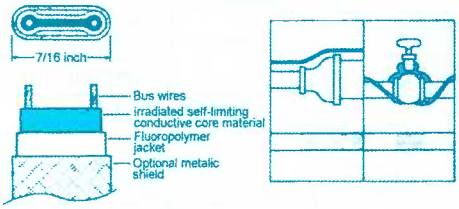
When ordering, please specify the name, capacity, type, number of the core and size of the nominal sectional area.

How to order: 79-43-80

Polychloroprene sheathed EP rubber insulated flexible power cable, type x core x sectional area

Self Limiting Parallel Circuit Heaters Auto-Trace

Auto-Trace is the electrical parallel circuit heat-tracing system. This unique technology enables the heater to vary its power output in response to sensed temperature at every point along its entire circuit. As the temperature increases, Auto-Trace automatically decreases its heat output, and vice versa. In this way, the heater continually compensates for temperature fluctuations that can lead to system failure with conventional heat tracing methods.



Has the following system features:

1. Full range of heaters for a variety of applications.
2. Complete selection of component and control system.
3. Parallel circuitry for cut-to-length convenience at the jobsite.
4. Flexibility for easy field installation.
5. Self-regulation protects against over-heating at any wattage, even when the heater is overlapped.

From among various types, the most common circuit heaters are listed below.

BTV	Electrical heat-tracing for frost protection without steam cleaning. Used for frost protection of pipes and vessels. Also, used for process temperature maintenance up to 65°C.
QTVR	Electrical heat-tracing for process temperature maintenance applications up to 110°C which are not subject to steam cleaning. Used for process temperature maintenance of pipes and vessels. Also, used for frost protection of large pipes and for applications requiring medium temperature exposure capability.
KTV	Electrical heat-tracing for process temperature maintenance applications up to 150°C which may be subject to steam cleaning. Used for process temperature maintenance of pipes and vessels. Also, used for frost protection of large pipes and for applications requiring high temperature exposure capability.

These circuit heaters are sold by meter, various spare parts are available as extra accessories. For further information, please write for or ask your supplier for catalogues.

How to order: CODE

Parallel circuit heater, self limiting, VOLTAGE, TYPE

Unit Per Mtr

110V			220V		
CODE	Type	Watt/Feet	CODE	Type	W/m at 10°C
BTV Series					
79 43 85	3BTV1-CR	3	79 43 98	3BTV2-CR	9
81	3BTV1-CT	3	86	3BTV2-CT	9
90	5BTV1-CR	3	99	5BTV2-CR	16
82	5BTV1-CT	3	87	5BTV2-CT	16
79 44 01	8BTV1-CR	8	79 44 05	8BTV2-CR	25
02	8BTV1-CT	8	06	8BTV2-CT	25
03	10BTV1-CR	10	07	10BTV2-CR	29
04	10BTV1-CT	10	08	10BTV2-CT	29
QTVR Series					
79 44 09	10QTVR1-CT	10	79 44 12	10QTVR2-CT	38
10	15QTVR1-CT	15	13	15QTVR2-CT	51
11	20QTVR1-CT	20	14	20QTVR2-CT	64
KTV Series					
79 44 15	5KTV1-CT	5	79 44 19	5KTV2-CT	16
16	8KTV1-CT	8	20	8KTV2-CT	25
17	15KTV1-CT	15	21	15KTV2-CT	47
18	20KTV1-CT	20	22	20KTV2-CT	65

Remark: "Watt/Ft" and "W/m at 10°C" is nominal power output.
CT denotes Fluoropolymer outer jacket.
CR denotes Modified polyolefin outer jacket.

Extension Cord Reels

Portable reels which are suitable for use in a work place which is separated from an electrical power source. Available for use with cord lengths from 20 mtrs to 50 mtrs. Contains built in outlets that provide power connections for tools and equipment.

When ordering, please specify the required cord length, voltage, ampere, type of plug and receptacle currently in use so that reel can be used properly with your equipment.

How to order: CODE

Extension cord reel, VOLTAGE, AMPERE, CORD LENGTH, TYPE of PLUG & RECEPTACLE

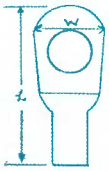
Unit Per Set

CODE	Cord Length	CODE	Cord Length
AC 110 Volt		AC 220 Volt	
79 43 91	20 mtr	79 43 95	20 mtr
92	30	96	30
93	50	97	50

18. Cable Accessories

Cable Terminal Lugs

Made of tin-plated copper for conductivity and corrosion resistance. For connecting and terminating wire and easy to install with a crimping tool. Please specify type no. of terminal lugs with cable size to be applied.



Non-Insulated Round Head

Equivalent to Type "R" (See 79 46 51 to 79 46 66).

Unit Per Pc.

CODE	Cable Size mm²	Hole Dia mm	Overall Size mm Width	Overall Size mm Length
79 45 01	5.5	8	16	28
79 45 02	8	6	12	24
03		8	15	30
04		10	15	30
79 45 05	10	6	12	29
79 45 06	14	8	16	33
07		10	16	36
79 45 08	16	10	18	46
79 45 09	22	6	11.5	35
10		7	16	35
11		8	17	35
12		10	17	37
79 45 13	25	6	14	31
79 45 14	38	8	16	38

Insulated Eyelet

Equivalent to Type "R-TG" (See 79 47 01 to 79 47 12).

Unit Per Pc.

CODE	Cable Size mm²	Hole Dia mm	Overall Size mm Width	Overall Size mm Length	Colour of PVC Sleeve
79 45 21	1.25	4	8	20	Red
79 45 22	2	3	6	17	Blue
23		4	8	21	"
24		5	9	21	"
25		6	12	26	"
26		8	12	26	"
79 45 27	5.5	4	9	28	Yellow
28		6	12	32	"
29		10	15	35	"

Insulated Spade

Equivalent to Type "Y-TG" (See 79 47 16 to 79 47 23).

Unit Per Pc.

CODE	Cable Size mm²	Hole Dia mm	Overall Size mm Width	Overall Size mm Length	Colour of PVC Sleeve
79 45 31	1.25	3	7	20	Red
32		3.5	7	20	"
79 45 33	2	4	8	20	Blue
34		4	9	22	Yellow
35		5	9	21	Bllue
79 45 36	5.5	4.5	8	20	Blue

Insulated Spanner Head

Equivalent to Type "Y-TG"
(See 79 47 16 to 79 47 23).

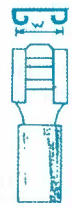
Unit Per Pc.

CODE	Cable Size mm²	Hole Dia mm	Overall Size mm Width	Overall Size mm Length	Colour of PVC Sleeve
79 45 41	1.25	4	8	20	Red

Insulated Receptacles

Unit Per Pc.

CODE	Cable Size mm²	Lug Width mm	Overall Length mm	Colour of PVC Sleeve
79 45 45	1.25	3	23	Red
46		4	23	"
47		6	23	"
79 45 48	2	4	23	Blue
49		6	23	"
79 45 50	5.5	6	25	Yellow
51		6	25	"



Insulated Flat Pins

Unit Per Pc.

CODE	Cable Size mm²	Pin Width mm	Overall Length mm	Colour of PVC Sleeve
79 45 61	1.25	2	20	Red
62	1.25	3	20	"
63	2	4	23	Blue
64	5.5	4	25	Yellow

Insulated Extension Connectors, Transparent

Unit Per Pc.

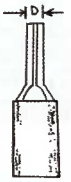
CODE	Cable Size mm²	Overall Length mm	Colour of PVC Sleeve
79 45 71	1.25	25	Transparent

Insulated Butt

Unit Per Pc.

CODE	Cable Size mm²	Overall Length mm	Colour of PVC Sleeve
79 45 75	1.25	23	Red
76	5.5	27	Yellow

Insulated Cable Tip



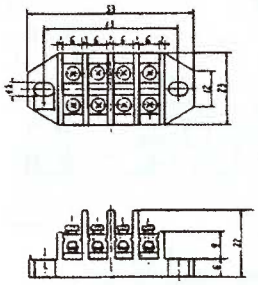
Unit Per Pc.

CODE	Cable Size mm²	Top Dia mm	Overall Length mm	Colour of PVC Sleeve
79 45 81	1.25	2	21	Red
82	2	2	21	Blue
83	5.5	2.5	28	Yellow

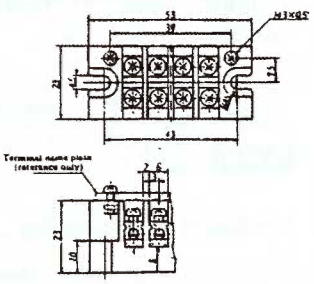
Terminal Boards for Marine Use

Electric Solderless Connecting Terminals (Ref. JIS F 8812)

For connecting cables of electric appliances of a rated voltage of 250 V or less. Made of phenol resin. Available in O and S type boards. The O type denotes terminal boards without name plates and the S type denotes terminals with name plates.



Type O



Type S

How to order : CODE

Terminal board, TYPE, AMPERE, NUMBERS of TERMINAL

"O" Type Terminals

Unit Per Pc.

10 Ampere			20 Ampere		
CODE	Number of Termial	Size mm	CODE	Number of Terminal	Size mm
79 46 01	2	23 × 37	**79 46 06**	2	26 × 42
02	3	23 × 45	**07**	3	26 × 52
03	4	23 × 53	**08**	4	26 × 62

"S" Type Terminals

Unit Per Pc.

10 Ampere			20 Ampere		
CODE	Number of Termial	Size mm	CODE	Number of Terminal	Size mm
79 46 11	2	23 × 37	**79 46 21**	2	26 × 40
12	3	23 × 45	**22**	3	26 × 50
13	4	23 × 53	**23**	4	26 × 60
14	5	23 × 61	**24**	5	26 × 74
15	7	23 × 77	**25**	7	26 × 94
16	10	23 ×101	**26**	10	26 ×137
17	12	23 ×107	**27**	12	26 ×157

Separable Terminal Strips

Solderless, easy handling 12 pole terminals, length can be cut as desired.

Molded

P.V.C. Flexible

How to order: CODE

Terminal strip, separated, TYPE, NOMINAL AMPERE

Molded Strip

Unit Per Pc.

CODE	Nominal Ampere	Nominal Area mm²	Capacity Voltage
79 46 31	10	2.5	380
32	25	10	380
33	35	16	380

P.V.C. Flexible Strip

Unit Per Pc.

CODE	Nominal Ampere	Nominal Area mm²	Capacity Voltage
79 46 36	10	2.5	380
37	20	6	380
38	25	10	380
39	35	16	380
40	50	25	380

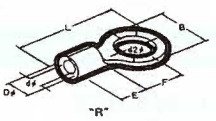
Cable Shoes

Galvanized copper made shoes for connecting cable wires with clamping tools.

How to order: CODE

Cable shoe, TYPE, NOMINAL SIZE

Type "R"

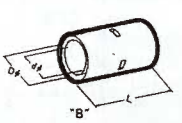


Unit Per Pc.

CODE	Nominal Size	Size mm d2φ	B	L	Dφ	dφ	Applicable Twisted Wire mm²
79 46 51	1.25- 3	3.2	5.5	12.0	3.4	1.7	0.25～ 1.65
52	1.25- 4	4.3	8.0	15.6			
53	1.25- 5	5.3					
79 46 54	2.0- 4	4.3	8.5	16.5	4.2	2.3	1.04～ 2.63
55	2.0- 5	5.3	9.5	17.0			
56	2.0- 6	6.4	12.0	21.5			
57	2.0- 8	8.4					
79 46 58	5.5- 4	4.3	9.5	19.5	5.6	3.4	2.63～ 6.64
59	5.5- 5	5.3					
60	5.5- 6	6.4	12.0	23.0			
61	5.5- 8	8.4	15.0	28.0			
62	5.5-10	10.5					
79 46 63	8.0- 5	5.3	12.0	23.5	7.1	4.5	6.64～ 10.52
64	8.0- 6	6.4					
65	8.0- 8	8.4	15.0	29.5			
66	8.0-10	10.5					

Equivalent to Type "Non-Insulated Round Head".
(See 79 45 01 to 79 45 14)

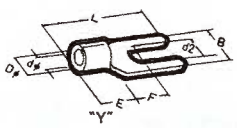
Type "B"



Unit Per Pc.

CODE	Nominal Size	Size mm L	Size mm Dø	Size mm dø	Applicable Twisted Wire mm²
79 46 71	1.25	15.0	3.3	1.7	0.25 ~ 1.65
79 46 72	2.0		4.1	2.3	1.04 ~ 2.63
79 46 73	5.5		5.4	3.4	2.63 ~ 6.64
79 46 74	8.0	21.0	7.0	4.5	6.64 ~ 10.52

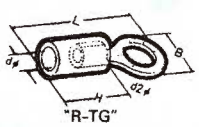
Type "Y"



Unit Per Pc.

CODE	Nominal Size	Size mm d2ø	Size mm B	Size mm L	Size mm Dø	Size mm dø	Applicable Twisted Wire mm²
79 46 81	1.25-3L	3.7	6.2	16.0	3.4	1.7	0.25 ≀ 1.65
82	1.25-4M	4.3	8.1	16.4			
83	1.25-5	5.3	9.6	17.5			
79 46 84	2.0 - 4	4.3	8.0	16.0	4.2	2.3	1.04 ≀ 2.63
85	2.0 - 5	5.3					
79 46 86	5.5 - 4	4.3	9.0	18.2	5.6	3.4	2.63 ≀ 6.64
87	5.5 - 5	5.3					
88	5.5 - 6	6.4	12.5	25.2			
79 46 89	8.0 - 5	5.3	12.0	24.0	7.1	4.5	6.64 ≀ 10.52
90	8.0 - 6	6.7					

Type "R-TG"

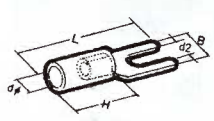


Unit Per Pc.

CODE	Nominal Size	Size mm d2ø	Size mm B	Size mm L	Size mm dø	Applicable Twisted Wire mm²
79 47 01	1.25- 3	3.2	5.5	17.4	3.2	0.5 ~1.65
02	1.25- 4	4.3	8.0	21.0		
03	1.25- 5	5.3				
79 47 04	2.0 - 4	4.3	8.5	21.9	3.9	1.04 ~ 2.63
05	2.0 - 5	5.3	9.5	22.4		
06	2.0 - 6	6.4	12.0	26.9		
07	2.0 - 8	8.4				
79 47 08	5.5 - 4	4.3	9.5	27.0	5.4	2.63 ~ 6.64
09	5.5 - 5	5.3				
10	5.5 - 6	6.4	12.0	30.5		
11	5.5 - 8	8.4	15.0	35.5		
12	5.5 -10	10.5				

Equivalent to Type "Insulated Eyelet" (See 79 45 21 to 79 45 29).

Type "Y-TG"



Unit Per Pc.

CODE	Nominal Size	Size mm d2ø	Size mm B	Size mm L	Size mm dø	Applicable Twisted Wire mm²
79 47 16	1.25 - 3L	3.7	7.7	19.4	3.2	0.5 ~ 1.65
17	1.25 - 4M	4.3	8.1	21.9		
18	1.25 - 5	5.3	9.6	23.0		
79 47 19	2.0 - 4	4.3	8.0	21.5	3.9	1.04 ~ 2.63
20	2.0 - 5	5.3		21.4		
79 47 21	5.5 - 4	4.3	9.0	25.7	5.4	2.63 ~ 6.64
22	5.5 - 5	5.3				
23	5.5 - 6	6.4	12.5	32.7		

Equivalent to Type "Insulated Spade" (See 79 45 31 to 79 45 36), and "Insulated Spanner Head" (See 79 45 41).

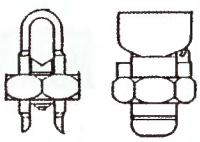
Cable Shoe Pliers

A tool for pressing cable shoes on electric cables for sizes of 1.25, 2.0, 5.5 and 8 mm/sq. in working capacity. A must tool for radio repairers and electricians. Length: 250 mm.

61 17 30	Plier, cable shoe 1.25 mm ~ 8 mm sq.	Pr.

Antenna Connectors

Brass made antenna connector for ships use.



Unit Per Pc.

CODE	mm²	Applicable Antenna Wire
79 47 41	8	O.D. 2.0 ~ 3.2 mm
42	14	" 2.0 ~ 5.0 mm
43	22	" 2.0 ~ 6.0 mm
44	38	" 2.0 ~ 8.0 mm

Watertight Cable Connectors

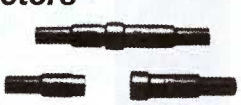
For connecting cables on deck or any other places where rain, seawater or humidity exists. Interior fixtures are brass sealed inside of a rubber cover.

Unit Per Pr.

CODE	Pole	Ampere	CODE	Pole	Ampere
79 47 51	2	15	**79 47 53**	3	15
52	2	20	**54**	3	20

Welding Cable Connectors

Brass bar with interior and exterior covered in watertight rubber. Specially designed for welding cable connections.



Unit Per Pc.

CODE	Ampere	Applicable Cable Size mm	Overall Length mm	Weight grm
79 47 61	300A	38 ~ 50	200	300
62	500A	60 ~ 80	295	510
63	750A	100 ~ 125	275	750
64	1,000A	150 ~ 200	300	950

Cable and Pipe Straps
(Saddle)

Iron made saddle used for electric cable or conduit pipes. Also available in plastic upon request.

Unit Per Box

CODE	Applicable Cable O.D. mm	Pcs Per Box	CODE	Applicable Cable O.D. mm	Pcs Per Box
79 47 71	9.8 ~ 12	100	79 47 76	30 ~ 33	50
72	12.5 ~ 14	100	77	38 ~ 41	50
73	14.5 ~ 17	100	78	50 ~ 53	20
74	18 ~ 20	100	79	63.5~ 67	20
75	25 ~ 26.5	50	80	76 ~ 79	10

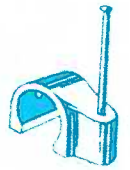
Cable Staples

Plastic insulated WEB cable staples for temporarily stapling indoor cables. Supplied 100 pcs per box.

Unit Per Box

CODE	No.	Applicable Cable	CODE	No.	Applicable Cable
79 47 85	1	1.6mm² x 2C	79 47 87	3	2.6mm² x 2C
86	2	2.0mm² x 2C	88	4	2.6mm² x 3C

Cable Clips



Made of plastic complete with hard plated steel pin, assembled ready for use.

Unit Per Pc

CODE	Cable O.D.	CODE	Cable O.D.
79 47 91	4 - 7 mm	79 47 94	16 mm
92	7 - 11 mm	95	18 mm
93	10 - 14 mm	96	21 mm

Cable Markers

Temporary or permanent marking for identification of cable after termination. Cloth made with glue on the back for easy application. Specify required number marked 0–9 or alphabet marked A–Z for each sheet or in full set.

79 48 01	Marking number, 0-9 each respective sheet	Pc.
79 48 02	Marking number, 0-9 in full set of 10 sheets	Set
79 48 03	Marking alphabet, A-Z each respective sheet	Pc.
79 48 04	Marking alphabet, A-Z in full set of 26 sheets	Set

Marine Watertight Cable Glands
for Electric Appliance

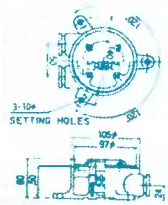
Brass, screw type cable glands for watertight electric appliances to be fixed on an enclosure by nut.

Unit Per Pc.

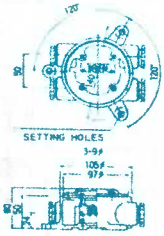
CODE	Nominal Size mm	Inner Gasket Inside Diam. mm	Pipe Thread PF
79 48 11	10	7	3/8
12	15	9	1/2
13	20	12	3/4
14	25	16	1
15	30	22	1-1/4
79 48 16	35	28	1-1/2
17	40	32	1-1/2
18	45	36	2
19	50	42	2
20	55	46	2-1/2
79 48 21	60	52	2-1/2

Marine Watertight Joint Boxes

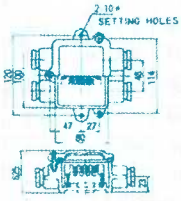
Marine watertight type joint boxes mainly used for wiring in engine rooms, stores and on decks, etc.



Model 1 (79 48 31)



Model 2 (79 48 32)



Model 2M (79 48 33)

Specifications

Type	No. of Terminal	Rated V	Rated Amp.	No. of Cable Gland	Material	Weight Kgs.
1	3	250	20	2	Cast Iron	1.5 kgs
2	3	250	20	4	"	1.8 "
2M	3	250	20	4	Phenol Resin	0.45 "

Unit Per Pc.

CODE	79 48 31	79 48 32	79 48 33
Type	1	2	2M

Electric Cable Enclosures

Fiberglass Reinforced Plastic

FRP (Fiberglass Reinforced Plastic) box for treament of cable end for use indoor and outdoor.

Waterproof and dustproof construction with inner packing.

Unit Per Pc

CODE	Size mm W x L x D	CODE	Size mm W x L x D
79 48 35	100 x 100 x 100	79 48 38	200 x 200 x 100
36	150 x 150 x 100	39	200 x 200 x 125
37	150 x 150 x 150		

Cable Guard Channels

(Cable Trays)

Galvanized iron channeling for cable guard. Standard sizes are listed below.

Unit Per Pc

CODE	Width mm	Length mm	CODE	Width mm	Length mm
79 48 41	50	1,800	79 48 43	100	1,800
42	75	1,800	44	150	1,800

Self Locking Cable Ties

Plastic

A plastic band designed for bundling wires, hoses, tubing, etc. A stainless steel barb mounted in the head locks the band at any desired diameter.

Unit: Per Piece

Unit Per Pc.

CODE	Length mm	CODE	Length mm
79 48 51	100	79 48 56	350
52	150	45	450
53	200	46	760
54	250	47	810
55	300	48	920

Unit: 100's/Packet

Unit Per Pkt

CODE	Length mm	CODE	Length mm
79 48 49	100	79 48 60	350
50	150	69	450
57	200	70	760
58	250	71	810
59	300	72	920

U-V Resistant Type (Per Piece)

Excellent UV (Ultra-Violet) resistant nylon suitable for outdoor use. Temperature range –40° to 180°F.

Unit Per Pc.

CODE	Length mm	CODE	Length mm
79 48 73	100	79 48 76	250
74	150	77	300
75	200	78	350

U-V Resistant Type (100'S/Packet)

Unit Per Pkt

CODE	Length mm	CODE	Length mm
79 48 79	100	79 48 86	250
80	150	87	300
85	200	88	350

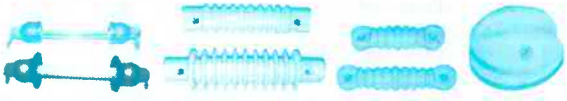
Stainless Steel

Unit Per Pc.

CODE	Length mm	CODE	Length mm
79 48 89	200	79 48 97	450
90	300		

Antenna Cable Insulators

Duralex glass or porcelain insulators specially designed for ship antennas.



Type A Type B Type C Type D

How to order: CODE

Antenna cable insulator, TYPE, MATERIAL, SIZE

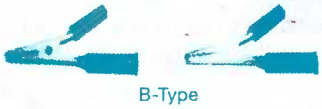
Unit Per Pc

CODE	Type	Material	Size mm L	Size mm ϕ
79 48 61	A	Porcelain with Galv. Iron	350	30
62		Duralex Glass with Brass		
79 48 63	B	Porcelain	270	60
64			350	90
79 48 65	C		190	50
66			250	55
79 48 67	D			75
68				100

Alligator Clips

Plastic covered strong spring clips for wires, etc. Specify the overall length and the colour of the plastic cover, black or red.

A-Type



B-Type

How to order: CODE

Alligator clip, TYPE, OVERALL LENGTH mm, COLOUR

Unit Per Pc.

A-Type		B-Type	
CODE	Overall Length mm	CODE	Overall Length mm
79 48 81	34	**79 48 84**	62
82	50		
83	73		

Banana Pin Plugs

Coloured plastic with a chromed brass pin. The pin diameter is 4.5 mm. Available in red, black, green, white, yellow and blue, specify when ordering.

Unit Per Pc.

CODE	Colour	CODE	Colour
79 48 91	Red	**79 48 94**	White
92	Black	**95**	Yellow
93	Green	**96**	Blue

19. Solders

Quick Rechargeable Soldering Irons

A cordless portable soldering iron heated by a nickel cadmium 2.5V rechargeable battery. About 200 soldering jobs can be performed at one time in one hour of quick charging. Separate battery charger operates charging automatically when the iron is placed on it. The pilot lamp of the iron helps when working in dark places. A set includes a charger and two fine tips. For further information, please write or ask for a catalogue.

(30W) No. 7535-Regular Tip

(30W) No. 7545-Fine Tip

(60W) No. 7546-Heavy Tip

(20W) No.7566-Micro Tip

CODE	Description	Unit
79 50 01	Cordless soldering iron Model No. 7800 with charger AC 110V and 2 spare tips	Set
79 50 02	Spare Tip No. 7535 Regular	Pc
03	" " " 7545 Fine	"
04	" " " 7546 Heavy	"
05	" " " 7566 Micro	"
79 50 06	Charger Ac 110V	"

Electric Soldering Irons

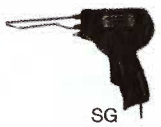
Nickel chromed replaceable elements, insulated with mica and protected by a rugged outer housing. Replaceable tips.

I-Round

J-Round

I-Flat

L-Flat



SG

AC 110V

How to order: CODE

Soldering iron, electric, 110 volt, TYPE, WATTAGE

Unit Per Pc.

CODE	Watts	Tip Size mm	Overall Length mm
		110V I-Round	
79 50 11	15	4 x 76	230
12	30	5 x 81	230
13	60	7 x 110	410
14	80	7 x 110	430
15	100	9 x 110	345
16	150	13 x 115	350
17	200	16 x 125	365
18	300	19 x 135	375
		110V I-Flat	
79 50 21	150	8 x 33 x 110	330
22	200	8 x 33 x 110	330
23	300	15 x 35 x 115	350
24	500	18 x 40 x 150	430
		110V J-Round	
79 50 26	100	9 x 125	340
27	150	13 x 130	340
28	200	16 x 145	340
29	300	19 x 150	360
		110V L-Flat	
79 50 31	150	7 x 31 x 70	320
32	200	7 x 31 x 70	320
33	300	15 x 35 x 75	335
34	500	19 x 41 x 90	420
		110V SG	
79 50 36	30	1.0 x 25	200
37	51	1.8 x 37	245

AC 220V

How to order: CODE

Soldering iron, electric, 220 volt, TYPE, WATTAGE

Unit Per Pc.

CODE	Watts	Tip Size mm	Overall Length mm
		220V I-Round	
79 50 51	30	5 x 81	230
52	60	7 x 110	308
53	80	7 x 110	308
54	100	9 x 110	345
55	150	13 x 115	350
56	200	16 x 125	365
57	300	19 x 135	375
		220V I-Flat	
79 50 61	150	8 x 33 x 110	330
62	200	8 x 33 x 110	330
63	300	15 x 35 x 115	350
64	500	18 x 40 x 150	430
		220V J-Round	
79 50 66	100	9 x 125	340
67	150	13 x 130	340
68	200	16 x 145	340
69	300	19 x 150	360

(to be continued)

Unit Per Pc.

CODE	Watts	Tip Size mm	Overall Length mm
		220V L-Flat	
79 50 71	150	7 x 31 x 70	320
72	200	7 x 31 x 70	320
73	300	15 x 35 x 75	335
74	500	19 x 41 x 90	420
		220V SG	
79 50 76	30	1.0 x 25	200
77	51	1.8 x 37	245

Electric Soldering Iron Elements

Replacement spare heaters for the aforementioned electric soldering irons.

How to order: CODE

Element for electric soldering iron, VOLTAGE, TYPE, WATTAGE

Unit Per Pc.

CODE 110V	Watts	Size mm	CODE 220V
		I-Round	
79 51 01	15	12 x 77	**79 51 31**
02	30	12 x 83	**32**
03	60	16.5 x 70	**33**
04	80	16.5 x 70	**34**
05	100	25.5 x 80	**35**
06	150	25.5 x 80	**36**
07	200	32 x 90	**37**
08	300	30 x 80	**38**
		I-Flat	
79 51 11	150	68 x 29 x 2	**79 51 41**
12	200	68 x 29 x 2	**42**
13	300	75 x 33 x 2.5	**43**
14	500	95 x 38 x 3	**44**
		J-Round	
79 51 16	100	25.5 x 80	**79 51 46**
17	150	25.5 x 80	**47**
18	200	32 x 90	**48**
19	300	35 x 90	**49**
		L-Flat	
79 51 21	150	68 x 29 x 2	**79 51 51**
22	200	68 x 29 x 2	**52**
23	300	75 x 33 x 2.5	**53**
24	500	95 x 38 x 3	**54**

Resin Cored Soldering Wire

Ready for use soldering wire with resin core. 450 grm spooled.

79 51 70	Soldering wire resin cored, 450 grm	Spl

Soldering Bars

For general soldering work. Contains 50 percent tin and lead.

79 51 72	Soldering bar	kgs

Soldering Paste

Paste flux for all metals except aluminium. Takes the place of acid in all soldering jobs. Supplied in 50 grm tins.

79 51 74	Soldering paste 50 grm	Tin

Soldering Iron Tip Cleaners

For removing oxide and cleaning soldering iron tips. Size : 110 x 75 x 25 mm.

79 51 76	Tip cleaner for soldering iron	Pc

Desoldering Guns
(Solder Suckers)

Hand operated high power suction cleaner ideal for electronic printed circuit board repairing. Overall length 215 mm. Inside diameter of the nozzle is 3 mm.

Desoldering Gun Spare Nozzle

79 51 78	Desoldering gun vacuum suction type	Pc
79 51 79	Spare nozzle for desoldering gun	"

7TH 79

20. Electrical Insulation Materials

Ebonite Solid Bars

Standard length is one meter.

Unit Per Mtr

CODE	Diam. mm	CODE	Diam. mm	CODE	Diam. mm
79 53 01	8	**79 53 09**	22	**79 53 17**	40
02	10	**10**	25	**18**	45
03	12	**11**	26	**19**	50
04	13	**12**	28	**20**	55
05	15	**13**	30	**21**	60
79 53 06	16	**79 53 14**	32	**79 53 22**	65
07	18	**15**	35		
08	20	**16**	38		

Ebonite Sheets

Standard size is 600 x 900 mm. Furnished either full sheet or small cut as required.

How to order: CODE

Ebonite sheet, 600 x 900 mm, THICKNESS mm

Unit Per Sht

CODE	Thick mm	CODE	Thick mm	CODE	Thick mm
		600 x 900 mm			
79 53 31	3	79 53 36	11	79 53 41	25
32	5	37	13	42	30
33	6	38	15		
34	8	39	18		
35	10	40	20		

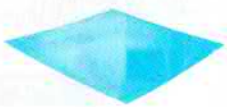
Bakelite Solid Bars

Standard length is one meter.

Unit Per Mtr

CODE	Diam. mm	CODE	Diam. mm	CODE	Diam. mm
79 53 51	8	79 53 59	22	79 53 67	40
52	10	60	25	68	45
53	12	61	26	69	50
54	13	62	28	70	55
55	15	63	30	71	60
79 53 56	16	79 53 64	32	79 53 72	65
57	18	65	35		
58	20	66	38		

Bakelite Sheets



Standard size is 1,000 x 1,000 mm.

How to order: CODE

Bakelite sheet, 1,000 x 1,000 mm, THICKNESS mm

Unit Per Pc.

CODE	Thick mm	CODE	Thick mm	CODE	Thick mm
79 53 81	0.5	79 53 87	6	79 53 93	20
82	1	88	8	94	25
83	2	89	10	95	30
84	3	90	12	96	40
85	4	91	15	97	45
79 53 86	5	79 53 92	18	79 53 98	50

Insulation Paper

Made from 100 % craft pulp for the insulation of electrical instruments. Available in thicknesses from 0.05 to 0.5 mm. Standard width is 450 mm, supplied in rolls of 20 meters.

Unit Per Mtr

CODE	Thick mm	Width mm	CODE	Thick mm	Width mm
79 54 01	0.05		79 54 06	0.18	
02	0.08		07	0.25	
03	0.10	450	08	0.38	450
04	0.13		09	0.50	
05	0.15				

Artificial Mica Sheets

Size for all sheets is 450 x 900 mm.

Unit Per Sht

CODE	Thickness mm	CODE	Thickness mm
79 54 11	0.5	79 54 14	1.6
12	0.8	15	2.0
13	1.0		

Insulating Mats from Rubber

A rubber insulating mat for added protection when working live or close to live parts. Fully insulating to reduce risk of short circuit up to AC 1,000V and DC 1,500V. Insulation standard: IEC 61112 DIN EN 61112.

Unit Per Sht

CODE	Size mm	Thick mm	Weight
79 54 16	500 x 500		301 grm
17	1,000 x 1,000	1.0	1.2 kgs
18	10,000 x 1,000		12 kgs

Ref. Knipex No. 98 67 05 / 98 67 10 / 98 67 15

Insulation Tapes

Cotton

For use in general insulation applications. 25 mtr roll.

Unit Per Spl.

CODE	Width mm	Meter Per Spool	CODE	Width mm	Meter Per Spool
79 54 21	13	25	79 54 23	25	25
22	19	25	24	32	25

Mica

For electrical and heat insulation. 25 mtr roll, 19 mm width.

79 54 27	Tape, mica, insulation, 19 mm x 25 mtr	Rol

P.V.C.

For electrical insulation in domestic and industrial installations, binding, pipe lagging, etc. Available in white, black, blue, red, yellow and green colours.

Unit Per Spl

CODE	Width mm	Meter Per Spool	CODE	Width mm	Meter Per Spool
79 54 33	19	10	79 54 32	50	20
31	19	20			

Rubber

High dielectric strength, moisture proof, water proof, weather resistant, acid and alkali resistant, non corrosive, low temperature resistant, age resistant. For use in the splicing and termination of rubber and plastic insulated cable.

79 54 36	Rubber insulation tape, 20 mm x 10 mtr	Rol

Empire

Varnished empire or lino tapes for insulation. 60 mtr roll, if not specified 19 mm width will be furnished.

Unit Per Spl

CODE	Width mm	Meter Per Spool	CODE	Width mm	Meter Per Spool
79 54 41	19	60	79 54 42	25	60

Electric Teflon Tapes

All purpose insulation tape for electrical installations, i.e. condensers, alternators, etc. Tapes wider and thicker than those listed below are available upon request.

How to order: CODE

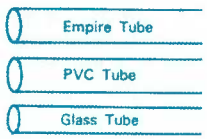
Electric teflon tape, WIDTH, THICKNESS mm

Unit Per Rol.

100 mm Width			300 mm Width		
CODE	Thick mm	Mtr Per Roll	CODE	Thick mm	Mtr Per Roll
79 54 51	0.10	10	79 54 61	0.10	10
52	0.13		62	0.13	
53	0.18		63	0.18	
54	0.20		64	0.20	
55	0.25		65	0.25	
79 54 56	0.30	10	79 54 66	0.30	10
57	0.40		67	0.40	
58	0.50		68	0.50	

Electric Sleeve Tubes

Varnished cloth rolled tube (empire tube) length 1 mtr. P.V.C. vinyl tube in various colours. Length 50 mtrs. Glass tube white colour, Length 1 mtr.



How to order: CODE

Electric sleeve tube, KIND of TUBE, INSIDE DIAM mm

Unit Per Mtr

Empire Tube		PVC Tube		Glass Tube	
CODE	Inside Diam mm	CODE	Inside Diam mm	CODE	Inside Diam mm
79 54 71	1	79 54 81	1	79 54 91	2
72	3	82	3	92	4
73	5	83	5	93	6
74	7	84	7	94	8
75	9	85	9	95	10
79 54 76	11	79 54 86	11		
77	13	87	13		
78	15	88	15		

Heat Shrink Plastic Tubing

Used to insulate wires, or to bundle them together, providing abrasion resistance and environmental protection for stranded and solid wire conductors, connections, joints and terminals in electrical work. Shrink tubing will shrink one half of its nominal diameter, and less than 7% of its length, when heated.

Please specify colour of tubing, with nominal size, finish length, material of tubing.

Nom. Size	Min. Expanded I.D.	Max. Recovered I.D.	Nom. Size	Min. Expanded I.D.	Max. Recovered I.D.
3/64	0.046" (1.17mm)	0.023" (0.058mm)	1/2	0.500" (12.70mm)	0.250" (6.35mm)
1/16	0.063" (1.60mm)	0.031" (0.079mm)	3/4	0.750" (19.05mm)	0.375" (9.53mm)
3/32	0.093" (2.36mm)	0.046" (1.17mm)	1	1.00" (25.40mm)	0.500" (12.70mm)
1/8	0.125" (3.18mm)	0.062" (1.57mm)	1-1/2	1.500" (38.10mm)	0.750" (19.05mm)
3/16	0.187" (4.75mm)	0.093" (2.36mm)	2	2.000" (50.80mm)	1.00" (25.40mm)
1/4	0.250" (6.35mm)	0.125" (3.18mm)	3	3.00" (76.20mm)	1.50" (38.10mm)
3/8	0.375" (9.53mm)	0.187" (4.75mm)	4	4.00" (101.60mm)	2.00" (50.80mm)

How to order: 79-54-96

Tubing, heat shrink, plastic, NOMINAL SIZE, FINISH LENGTH, COLOUR (mtr)

Insulation Putty (Neoseal)

An insulation sealing compound called "Neoseal". This is a common solution for sealing cable entrances through walls or floors...terminal boxes. Furnished in 1 kgs pkt.

79 55 01	Putty insulation 1 kgs	Pkt

Electric Contact Restorer

Used for electrical machinery. Cleans contact points with a protective oil film and immediately restores long-lasting, good contact. (Do not apply to relay contacts.) Contains no CFC's (Chlorofluorocarbons).

Unit Per Tin

CODE	79 55 05	79 55 06
grm	157	250

Electric Contact Relay Cleaners

Cleaner for relay contacts. Simply spray it on contact points. It dissolves and removes film and dirt, to ensure reliable contact. Does not affect metals or resin. Contains no CFC's (Chlorofluorocarbons).

Unit Per Tin

CODE	79 55 10	79 55 11
grm	100	260

Electrical Industry Formula

Prevents malfunction due to the deteriorating effects of moisture and corrosion; extends operational life and reduces down-time and maintenance. Displaces moisture, lubricates and penetrates. Restores and maintains the resistivity of insulating material and improves the conductivity of contacts, commutators, etc. 16 oz aerosols.

45 05 91	Electrical industry formula CRC 2-26, 16 oz tin	Tin

Insulation Varnishes

For general use with insulation or electrical apparatus. Red and clear types available. Furnished in 300 cc spray tins or 4 ltr liquid cans.

How to order: CODE

Insulation varnish, COLOUR, CONTENTS

CODE	Colour	Contents	Unit
79 55 21	Clear	Spray, 300 cc	Tin
22		Liquid, 4 ltr	Can
79 55 23	Red	Spray, 300 cc	Tin
24		Liquid, 4 ltr	Can

Electric Insulation Rubber Gloves

Rubber gloves with high dielectric strength.

Unit Per Pr.

CODE	Applicable to	Tested to
79 55 31	600V	3,000V
32	7,000V	20,000V

7TH 79

21. Megaphones & Loud Speakers

Transistor Powered Megaphones

High power transistor megaphone for use with R14P (UM-2) or R6P(UM-3) dry batteries. Megaphones have a well balanced, snug fitting pistol grip. Sound range in open air is 900 mtr and in cities about 300 mtr. Dry batteries are sold separately.

79 57 01 | 79 57 02 w/Siren | 79 57 03 w/Whistle | 79 57 04

How to order: CODE

Megaphone, transistor powered, RATED OUTPUT POWER, FUNCTION

Unit Per Pc.

CODE	Rated Output Power	Batteries	Audible Distance	Size mm Diam.x Length	Function
79 57 01	6W	R 6P(UM-3)x8	300 mtr	192x318	-
02	"	R 6P(UM-3)x8	300 "	192x318	w/Siren
03	"	R 6P(UM-3)x8	300 "	192x318	w/Whistle
04	12W	R14P(UM-2)x6	350 "	211x374	-

Transistor Powered Loud Speakers

Aluminium alloy made portable loud speakers with transistors. All speakers have a dark blue painted surface. Large input type speakers as well as spark proof speakers not listed here are also available if required.

Unit Per Pc.

CODE	Rated Input Power Watts	OHM At Rated Input Power	Mouth Diam. mm	Material
79 57 11	5	2,000	155	ABS Resin
12	10	1,000	300	Alum. Alloy
13	15	670	399	"
14	20	500	451	"

22. Test Instruments

Circuit Testers

Industrial quality tester for safe, easy testing of electrical circuits, spark-plugs, motors, fuses, etc. A built in neon lamp glows if the circuit is in order.

Twin Lead

Pencil

Unit Per Pc.

CODE	Type	Voltage
79 57 21	Twin Lead	80 - 550
22	Pencil	80 - 600

Clamp Meters

Generally a current is measured by closing the clamp meter jaws over the conductor. The specially shaped mating heads of the clamp form a closed magnetic circuit with the cable passing through it.

Unit Per Set

CODE	**79 57 30**	
Model	DCM60R	
True RMS	Yes	
ACA	199.9/600A	±(2.0% + 5) 50-60Hz ±(2.9% + 5) 60-400Hz
ACV	199.9/600V	±(1.5% + 5) 50-400Hz
Ω	199.9Ω	±(1.9% + 3)
Continuity	Buzzer sounds at less than 100Ω	
Clamp Diameter/ Conductor Size	25 mm / 10 x 30mm	
Withstand Voltage	Less than AC 3,700 Vrms (Root Mean Square)	
Power Source	R-03 (UM-4 or AAA) 1.5V x 2 pc	
Size / Weight	L187 x W50 x H29mm / 210 grm	
Name of Mfr.	Sanwa Electric Instrument Co., Ltd.	

Unit Per Set

CODE	79 57 31	
Model	DCM400	
ACA	40/400A	±(1.9% + 5) 50-500Hz ±(2.5% + 5) 60-500Hz
ACV	400 / 600V	±(1.5% + 5) 50-500Hz
DCV	400 / 600V	± (1% + 2)
Ω	400Ω	
Frequency (A)	20 - 4k/10k Hz	± (0.1% + 1)
Frequency (V)	4k/40k/400k/4M/ 1 MHz	
Continuity	Buzzer sounds at less than approx 40Ω	
Clamp Diameter/ Conductor Size	25 mm / 10 x 34mm	
Withstand Voltage	Less than AC 3,700 Vrms (Root Mean Square)	
Power Source	R-03 (UM-4 or AAA) 1.5V x 2 pc	
Size / Weight	L193 x W50 x H28mm / 230 grm	
Name of Mfr.	Sanwa Electric Instrument Co., Ltd.	

Unit Per Set

CODE	79 57 33
Model	374
True RMS	Yes
Current AC	0 – 600A
Voltage AC	0 – 600V
Voltage DC	0 – 600V
Resistance	0 – 600Ω/0 – 6,000Ω
Continuity	Less than 30Ω
Jaw Opening	34 mm
Power Source	R6P (UM-3 or AA) 1.5V x 2 pc
Size mm	L246 x W83 x H43
Weight	388 grm
Name of Mfr.	Fluke (U.K.) Ltd.

Remark : RMS denotes Remote Mean Square.

Unit Per Set

CODE	79 57 34	79 57 35
Model	CM4	CM5
RMS	RMS	True RMS
Current AC	0.1A - 60A/400A/600A	
Current DC	-	0.1A - 60A/400A/600A
Voltage AC	0.1V - 400V/600V	
Voltage DC	0.1V - 400V/600V	
Resistance	0.1Ω - 400Ω	

(to be continued)

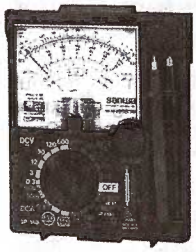
Continuity	Less than 30Ω	
Frequency	1 Hz - 400 Hz	
Jaw Opening	37 mm	45 mm
Over Voltage Category	CAT III 600V	
Power Source	LR-03 (AM-4) 1.5V x 2	6LR61 (9V) x 1
Size mm	L220 x W83 x H45	L235 x W85 x H31
Weight	324 grm	375 grm
Name of Mfr.	Theo Benning GmbH & Co. KG	

Remark : RMS denotes Remote Mean Square.

Avo Meters
(Testers)

These are matched, portable instruments; highly accurate for industrial electricity testing. They are designed to meet the requirements of most industrial test situations.

Carrying cases are available for all models. The specifications listed below are for your reference.



How to order: CODE

Avo meter, TYPE, MEASURING RANGE of DCV, ACV, DCA, ACA with MANUFACTURER'S NAME & MODEL

Unit Per Set

CODE		79 57 41	79 57 42
Model		SP-18D	YX-361TR
Type		Drop shock proof	Zero center & continuity LED
Measuring Range	DCV	300m (5kΩ/v) 3/12/ 30/120V/600V. (20kΩ/V) ± 3% f.s.	0.1/0.5/2.5/ 10/50/250/1,000V (20kΩ/V) ± 2.5% f.s. 25kV(w/HV probe)
	ACV	12/30/120/300/ 600V (9kΩV) ± 3% f.s.	2.5/10V ± 4% f.s. 50/250/1,000V (9kΩ/V) ± 3% f.s.
	DCA	60μ/30m/0.3A ± 3% f.s.	50μ/2.5m/25m/ 0.25A(250mV) ± 2.5% f.s.
	Ω	2k/20k/2MΩ ± 3% of arc. 200MΩ ± 5% of arc.	2k/20k/200k/2M/ 20MΩ ± 3% of arc.
Power Source		R6P (1.5V) x 2	R6P (1.5V) x 2, 6F22(9V) x 1
Size mm		159.5 x 129 x 41.5	150 x 100 x 37
Weight grm		320	290

Name of Mfr.: Sanwa Electric Instrument Co.,Ltd.

Unit Per Set

CODE		79 57 43	79 57 44
Model		SH-88TR	CX-506a
Type		Zero center & C check	Universal polarity switching
Measuring Range	DCV	0.12/3/12/30/120/300/1,200V(20kΩ/V) ± 2.5% f.s. 25kV (w/HV probe).	120m (4kΩ)±4%f.s. 3/12/30/120/300 (50kΩ/V) 1,000V (15kΩ/V) ±2.5%f.s.
	ACV	3V±5% f.s. 12/30/120/300/1,200V(9kΩ/V) ± 3% f.s.	3/12V±4%f.s. 30/120/300/750V (8kΩ/V) ± 3% f.s.
	DCA	50μ/3m/30m/0.3A (300mV) ± 2.5% f.s.	30μ/0.3m±3%f.s. 3m/30m/0.3A ± 2.5% f.s.
	Ω	3k/30k/300k/3M/30MΩ ±3% of arc.	5k/50k/500k/5M/50MΩ ±3% of arc.
Power Source		R6(1.5V) x 2, 6F22(9V) x 1	R6(1.5V) x 2, 6F22(9V) x 1
Size mm		150 x 100 x 36	165 x 106 x 46
Weight grm		280	370

Name of Mfr.: Sanwa Electric Instrument Co.,Ltd.

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Compact System Digital Multi Testers

These compact system digital multi-testers cover all basic measuring functions of DC voltage, AC voltage, DC current, AC current and resistance.

Unit Per Set

CODE	79 57 54	79 57 55	79 57 56
Model	CD771	CD772	CD800a
Type	4,000 count	AC True RMS & Wide current	4,000 count display
DCV	400mV 4/40/400/1,000V	400mV 4/40/400/1,000V	400mV 4/40/400/600V
ACV	4/40/400/1,000V	4/40/400/1,000V	4/40/400/600V
DCA	400μ/4,000μ/40m/400m/4/10A	400μ/4,000μ/40m/400m/4/15A	40m/400mA
ACA	400μ/4,000μ/40m/400m/4/10A	400μ/4,000μ/40m/400m/4/15A	40m/400mA
Resistance	400/4k/40k/400k 4M/40MΩ	400/4k/40k/400k 4M/40MΩ	400/4k/40k/400kΩ 4M/40MΩ
Capacitance	50n/500n/5μ/50μ/100μF	50n/500n/5μ/50μ/100μF	50/500nF 5μ/50μ/100μF
Frequency	5/50/500/5k/50k/100kHz	5/50/500/5k/50k/100kHz	5Hz – 100kHz
Over Voltage Category	IEC61010 CAT.III 600V CAT.II 1,000V	IEC61010 CAT.III 600V CAT.II 1,000V	-
CE Mark	Applied	Applied	-
Power Source	R6P(1.5V)×2	R6P(1.5V) x 2	R6P(1.5V) x 2
Size mm	H166xW82x D44	H166xW82x D44	H176xW104x D46
Weight grm	360	360	340
Name of Mfr.	Sanwa Electric Instrument Co.,Ltd.		

Unit Per Set

CODE	79 57 60	79 57 67	79 57 68
Model	115	177	27II
Type	True RMS & 6,000 count	True RMS & 6,000 count	6,000 count & display mode
DCV	600mV 60/600V	600mV 6/60/600/1,000V	600mV 6/60/600/1,000V
ACV	600mV 6/60/600V	600mV 6/60/600/1,000V	600mV 6/60/600/1,000V
DCA	6A/10A continuous or 20A overload for 30 seconds maximum	60m/400mA 6A/10A	600μ/6,000μA 60mA/400mA/6A/10A
ACA	6A/10A continuous or 20A overload for 30 seconds maximum	60m/400mA 6A/10A	600μ/6,000μA 60mA/400mA/6A/10A
Resistance	600Ω 6k/60k/600kΩ 6M/40MΩ	600Ω 6k/60k/600kΩ 6M/50MΩ	600Ω 6k/60k/600kΩ 6M/50MΩ
Frequency	99.99/999.9Hz 9.999k/50kHz	99.99/999.9Hz 9.999k/99.99kHz	199.99/1999.9Hz 19.999/199.99kHz >200kHz
Capacitance	1,000nF 10μ/100μ/10,000μF	1,000nF 10μ/100μ/9,999μF	10/100nF 1/10/100μF 9,999μF
Safety Compliance	ANSI/SA-S82.01-1988, CSA C22.2 No.231 and IEC 61010-1-95 Overvoltage Category III, 600V	ANSI/ISA-S82.02.01, CSA C22.2-1010.1, IEC 61010 to 1,000V Overvoltage Category III, 600V Overvoltage Category IV	IEC 1010-1 CAT III/MSHA Approved
Power Source	9V Alkaline battery	Alkaline battery	3 x AA battery
Size mm	H167xW96x D46	H185xW90x D43	H198xW100x D63.5
Weight grm	350	420	698.5
Name of Mfr.	Fluke (U.K.) Ltd.		

Unit Per Set

CODE	79 57 86	79 57 87	79 57 88
Model	MM5	MM6	MM7
Type	3,400 count & bar graph	True RMS & 4,000 count	True RMS & 4,000 count
DCV	300mV 3/30/300/1,000V	400mV 4/40/400/1,000V	400mV 4/40/400/1,000V
ACV	3/30/300/750V	400mV 4/40/400/750V	400mV 4/40/400/750V
DCA	30mA/300mA 10A	40m/400mA 10A	40m/400mA 10A
ACA	30mA/300mA 10A	40m/400mA 10A	40m/400mA 10A
Resistance	300/3k/30k/300kΩ 3MΩ/30MΩ	400/4k/40k/400kΩ 4M/40MΩ	400/4k/40k/400kΩ 4M/40MΩ

(to be continued)

Unit Per Set

CODE	79 57 86	79 57 87	79 57 88
Frequency	3k/30k/ 300kHz 3/30MHz	4k/40k/ 400kHz 4M/40MHz	4k/40k/ 400kHz 4M/40MHz
Revolution	30k/300kRPM, 3M/30M/ 300MRPM	40k/400kRPM, 4M/40M/ 400MRPM	40k/400kRPM, 4M/40M/ 400MRPM
Capacity	-	4n/40n/400nF 4μ/40μ/ 400μF 4m/40mF	4n/40n/400nF 4μ/40μ/ 400μF 4m/40mF
Temperature	-	-	-20°C up to +800°C
Over Voltage Category	CAT III 600V, CAT II 1,000V	CAT III 600V, CAT II 1,000V	CAT III 600V, CAT II 1,000V
Power Source	LR03(1.5V)x2	6LR61(9V)x1	6LR61(9V)v1
Size mm	H188xW94x D40	H188xW94x D40	H188xW94x D40
Weight grm	440	440	440
Name of Mfr.	Theo Benning GmbH & Co.KG		

Solar-powered Digital Multi Testers

Pocket type and high performance, magnesium dioxide lithium secondary battery powered with amorphous solar battery to store solar energy.

Basic Futures:
3-3/4 digits 4,000 count / 0.7% best accuracy / Range hold / Auto power off (15 min.) / Low power ohm (input voltage 0.4V) at continuity range / Power saving design.

Specification

Model	PS8a	
Type	Solor powered	
DCV	400m/4/40/400/500V	±(0.7%+3)
ACV	4/40/400/500V	±(2.3%+5)
Resistance	400/4k/40k/400k/4M/40MΩ	±(2.0%+5)
Continuity	Buzzer sounds at less than 10-120Ω	Open voltage
Band Width	40 - 400 Hz	
Power Source	Amorphous solar battery + manganese dioxide lithium secondary battery	
Size mm	H115 x W57 x D18	
Weight grm	85	

Name of Mfr.: Sanwa Electric Instrument Co.,Ltd.

79 57 69	Digital multi tester, solar powered model PS8a	Pc.

Insulation Testers

AC 0 – 600V

A solid state insulation tester. Constructed for the purpose of testing the insulation of household electrical appliances.

How to order: CODE

Insulation tester, AC 0 – 600V, TYPE with MANUFACTURER'S NAME & MODEL

Unit Per Set

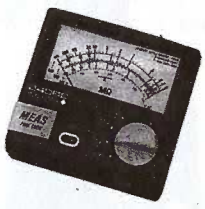
CODE	79 57 71	79 57 72
Model	PDM509S	DM509S
Insulation Resistance	500V / 100MΩ	500V / 1,000MΩ
	0.05 - 0.1 - 50 -100MΩ	0.5 - 1 - 500 -1,000MΩ
ACV	0 - 600V	
DCV	0 - 60V	
Power Source	Alkaline battery 6LR61 (9V) x 1	
Size mm	H144 x W99 x D43	
Weight grm	310	
Name of Mfr.	Sanwa Electric Instrument Co., Ltd.	

Unit Per Set

CODE	79 57 74	79 57 75
Model	1503	1507
Insulation Test Range	0.1 - 2,000MΩ	0.01MΩ- 10GΩ
Insulation Test Voltage	500V / 1,000V	50V / 100V / 250V / 500V / 1,000V
ACV	0.1 - 600V	
DCV	0.1 - 600V	
Standards	ANSI/ISA 82.02.01 (61010-1) 2004, CAN/ CSA-C22.2 No.61010-1-04, and IEC/EN 61010-1 2nd Edition	
Over Voltage Category	Category IV 600V	
Power Source	Alkaline battery LR6 (1.5V) x 4	
Size mm	H203 x W100 x D50	
Weight grm	550	
Name of Mfr.	Fluke (U.K.) Ltd.	

AC 0 – 1,000V

An all-transistor insulation resistance tester featuring simple push-button, operation. It has a voltmeter scale for measuring AC voltage in addition to insulation resistance. This portable instrument is used for insulation resistance measurement of electrical machines and devices, control and switching equipment, power line and cable wiring, as well as other applications.



How to order: CODE

Insulation tester, AC 0 – 1,000V/ohm rated with MANUFACTURER'S NAME & MODEL

Unit Per Set

CODE	79 57 76	79 57 77
Model	240644	240645
V /Ω Rated	250V/50MΩ 500V/100MΩ 1,000V/2,000MΩ	250V/500MΩ 500V/1,000MΩ 1,000V/2,000MΩ
Effective Measuring Range	0.01 – 2,000MΩ	0.1 – 2,000MΩ
AC Voltage Measuring Range	0 - 600V	
Power Source	240634/240635: R6 x 6	
Size	120 x 110 x 60 mm	
Weight	Approx. 500 grm	
Name of Mfr.	Yokogawa Meters & Instruments Corporation	

AC 1 – 1,000V

Unit Per Set

CODE	79 57 78
Model	IT100
Insulation Test Range	0.01 - 2,000MΩ
Insulation Test Voltage	250V / 500V / 1,000V
ACV	1 - 1,000V
DCV	1 - 1,000V
Low-impedance Resistance	0.01 - 20Ω
Resistance	1 - 2,000Ω
Standards	EN61557 part 1,2 and 4 (DIN VDE 0413 part 1,2 and 4) EN61010 part 1 (DIN VDE 0411 part 1)
Over Voltage Category	CAT III 600V, CAT II 1,000V
Power Source	Alkaline battery LR6 (1.5V) x 6
Size mm	H235 x W100 x D55
Weight grm	590
Name of Mfr.	Theo Benning GmbH & Co. KG

Digital Type Insulation Testers

Digital type insulation resistance tester.

Basic features :
Hot-line state (30V minimum) detection / large volt mark with the buzzer sound / Automatic data hold function / Bargraph just like analog meter / Large display with backlight.

How to order: CODE

Insulation tester, digital type, TYPE, VOLT/Ohm rated with MANUFACTURER'S NAME & MODEL

Unit Per Set

CODE	79 57 81
Model	MG500
MΩ	4M/40M/400M/4,000M ±(3%+4)
Test Voltage	500/250/125V
ACV/DCV	600V (AC/DC automatic detection) ±(3%+2)
Ω	4,000Ω (Buzzer and alarm indicator) ±(3%+3)
Ω	40Ω±(3%+10)
Battery	R6 x 6
Size mm	H170 x W142 x D57
Weight grm	600
Accessories	Test lead, Strap, Instruction manual

Name of Mfr.: Sanwa Electric Instrument Co.,Ltd.

Portable Wheatstone Bridges

Portable Wheatstone Bridge is convenient for use for general resistance measurement from 1Ω to 10Ω with 4 digit accuracy. The built-in galvanometer has taut-band suspension, minimizing the effects of shock.

Since the power source is self-contained, operation is easy and simple. The instrument can be used for field tests, maintenance, and other resistance type measurements.

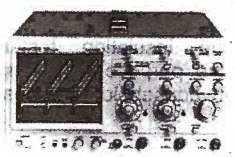
Specification

Measuring Range	1Ω to 10 Mohm in four digit reading
Minim. Division	0.001Ω
Accuracy	±0.1% 100Ω ~ 100 KΩ ±0.3% 10Ω ~ 1 MΩ ±0.6% 1Ω ~ 10 MΩ
Galvanometer Sensitivity	0.9 μA/div.
Power Source	3 x 1.5V R20 (UM-1) Dry Cell
Size	H182 x W226 x D128 mm
Weight	2 kgs

79 58 01	Wheatstone bridge, portable 1Ω to 10MΩ	Set

Oscilloscopes

An oscilloscope is an electro precision test instrument for detailed observation of the desired portion of complex waveforms. Wide range of models from different manufacturers. An outline of the basic specifications to determine the types of the oscilloscope is listed below. Before ordering, please write for, or ask for a catalogue for further information.



1. Frequency band area : _____MHz
2. Sensitivity : _____mV/div. (1 div. = 10 mm)
3. Power source currency : Alternating current, or Direct current
4. Power source voltage : _____volt
5. Frequency : _____Hz (50 or 60)

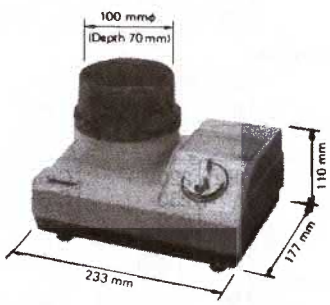
How to order: 79-58-10

Oscilloscope, with further information as
(1) Frequency band area,
(2) Sensitivity,
(3) AC or DC,
(4) Power source voltage,
(5) Frequency, etc.

23. Ultrasonic Parts Cleaners

Ultrasonic Parts Cleaners

Human ears cannot hear the sound waves produced by the ultrasonic parts cleaner because they are outside the normal audible frequency range. But they have ultrasonic power to get things really clean. When these ultrasonic waves are irradiated into the cleaning liquid, cavitation continuously occurs in the liquid and a high pressure of 1,000 atmospherics is created to clean whatever it touches. There is also the cleaning effect of the cleaning liquid agitation, removal of bubbles and emulsification so that without causing any scratches even microscopic dirt is taken away.



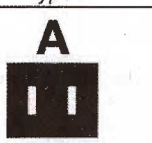
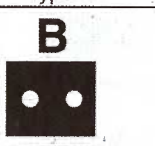
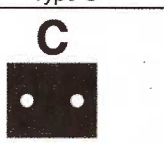
Specifications	
High Frequency Output	35W (average)
Ultrasonic Frequency	32KHz (average)
Power Source	AC: Transformerless type 115V ±10%
Cleaning Liquid	Neutral, acid or alkaline detergent (depending on the material used in the tank)
Cleaning Tank Material	Stainless steel
Cleaning Tank Dimension	100 mmø (inner dia.) x 70 mm (depth) (approx. 510cc max.)
Dimension	233 (W) x 177 (D) x 110 (H) mm 9-1/4" (W) x 7" (D) x 4-3/8" (H)
Weight	2.5 kgs (5.5lbs.)
Accessories	Inner tank, dripguard frame, cleaning liquid exchanger pump, sound insulation cover, basket

Objects to be Cleaned

Main Items to be cleaned	Things to be removed
Precision Products Watch, clock and components, band, spring, bearing, jewelry, engraving,etc.	Oil, dust, sweat, residue, powder, dirt
Optics Glass, lens, frame	Grinding powder, oil, dust
Electric/Electronic Components Relays, switch contactors, parts, coils, gears, moldings, springs, etc.	Elements, etchings
Laboratories Glass utensiles for laboratory analysis work, electron microscope components	Blood, medicine, bacteria, etc.

79 58 21	Ultrasonic parts cleaner, AC 115V frequency output 32 watt, 32 KHz	Set

Electricity of the World Principal Nation

Type A	Type B	Type C	Type O
			
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		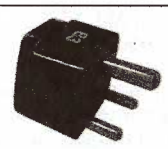	

7TH
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Country	Cycle	Voltage	Plug Type
Asia			
Bangladesh	50Hz	230V	A/B/C/BF/B3
Bhutan	50	230	C
Brunei	50	240	BF/B3
Cambodia	50	120/220	A/C/BF
China	50	110/220	All Types
Hong Kong	50	200/220	B/C/BF/B3
India	50	115/230/240	B/C/BF/B3/SE
Indonesia	50	127/220/230	A/B/C/BF/B3/SE
Japan	50/60	100	A
Laos	50	220	A/C/SE
Macao	50	115/127/220	A/B/C/BF/B3/SE
Malaysia	50	240	B/C/BF/B3/SE
Maldives	50	220	B/C/BF/B3
Mongolia	50	220	B/C/B3/SE
Myanmar	50	230	B/C/BF/B3/SE
Nepal	50	115/220	A/B/C/BF/B3/SE
N.Korea	60	100/200/220	A/B/C/BF/B3/O/SE
Pakistan	50	230	A/B/C/B3
Philippines	60	120/230/240	A/B/C/B3/O
Singapore	50	115/230	B/C/BF/B3
S.Korea	60	220	C/SE
Sri Lanka	50	230	B/C/BF/B3
Taiwan	60	110/220	A/C/O
Thailand	50	220	A/B/C/BF/B3
Vietnam	50	110/220	A/C/BF/SE
Oceania			
Australia	50Hz	240/250V	O
Fiji	50	120/240	A/B/C/O
Guam	50	120/240	A/BF/O
Kiribati	50	240	BF/O
Marshall Islands	60	110/220	A/C/O
Micronesia	60	110/220	A/C/O
Nauru	50	240	O
New Caledonia	50	220	B/C/B3/O/SE
New Zealand	50	230/240	O
Niue	50	220	O
Palau	50	110/220	A/O
Papua New Guinea	50	240	O
Samoa	50	230	O
Solomon Islands	60	240	B/B3/O
Tonga	60	240	O
Tuvalu	50	240	O
Vanuatu	50	240	C/B3/O
North America			
U.S.A.	60Hz	120V	A
Canada	60	120/240	A/BF
Europe			
Albania	50Hz	220V	C/SE
Austria	50	230	C/BF/B3/O/SE
Belarus	50	220	C
Belgium	50	127/230	A/B/C/SE
Bosnia & Herzegovina	50	220	C/SE
Bulgaria	50	110/220	A/C/SE
Croatia	50	220	C/SE
Cyprus	50	240	C/BF/B3
Czech	50	230	C/SE
Denmark	50	230	C
Estonia	50	127/220	A/C/SE
Finland	50	120/230	A/B/C/SE
France	50	127/230	A/C/O/SE
Germany	50	127/230	A/C/SE
Gibraltar	50	230/240	B/C/BF/B3
Greece	50	230	B/C/B3/SE
Greenland	50	220	C
Hungary	50	220	B/C
Iceland	50	230	B/C/SE
Italy	50	125/220	A/C/SE
Ireland	50	230	A/B/C/BF/B3/SE
Kazakhstan	50	127/220	A/C/SE
Latvia	50	127/220	A/C/SE
Lithuania	50	220	C
Luxembourg	50	120/220	A/C/SE
Macedonia	50	220	C/SE
Malta	50	240	B/C/BF/B3
Moldova	50	127/220	A/C/SE
Monaco	50	127/220	A/B/C/SE

Country	Cycle	Voltage	Plug Type
Montenegro	50	220	C/SE
Netherlands	50	230	B/C/SE
Norway	50	230	C/SE
Poland	50	220	B/C/B3
Portugal	50	230	B/C/BF/B3/SE
Romania	50	220	C/SE
Russia	50	127/220	A/B/C/SE
Serbia	50	220	C/SE
Slovakia	50	220	B/C/SE
Slovenia	50	220	C
Spain	50	127/220	A/C/SE
Sweden	50	230	B/C/SE
Switzerland	50	230	A/B/C/SE
Turkmenistan	50	127/220	A/C/SE
U.K.	50	230/240	B/C/BF/B3
Ukraine	50	127/220	A/B/C/SE
Uzbekistan	50	127/220	A/C/SE
Central/South America			
Antigua & Barbuda	50Hz	230V	C/BF/SE
Argentina	60	220	C/BF/O/SE
Bahamas	60	120/240	A/C/BF/SE
Balbados	50	110/120/200	A/B/BF/B3
Belize	60	120/240	A/C/BF/B3
Bolivia	60	110/220	A/C/SE
Brazil	60	110/127/220	A/C/SE
Cayman Islands	50	120/240	A/C/BF/B3
Chile	50	220	C/BF/B3/SE
Columbia	50	120	A
Costa Rica	50	120/240	A/C/BF/O/SE
Cuba	60	110/220	A/B/C/BF
Dominica	50	230	B/BF/B3
Dominican Republic	60	110/220	A/C/BF
El Salvador	60	110/220	A/BF/B3
Ecuador	60	115/120/220	A/C/B3/O
Grenada	50	230	C/BF
Guatemala	50	120/240	A/C/BF
Guyana	60	110/220	A/C/BF
Haiti	60	110/220	A/C/BF
Honduras	50	110	A
Jamaica	50	110/220	A/C/BF/B3
Mexico	50	120/127/230	A/C/SE
Nicaragua	60	120/240	A/BF
Panama	60	120/240	A/BF
Paraguay	50	220	A/C/SE
Peru	60	220	A/C/SE
Puerto Rico	60	120/240	A/C/BF
St. Christopher and Nevis	60	230	C/BF/B3
Saint Lucia	50	240	C/BF
Suriname	60	127	C/SE
Trinidad & Tobago	60	115/230	A/BF/O
Uruguay	50	220	C/BF/B3
Venezuela	60	120	A
Middle East			
Afganistan	50Hz	220V	B/C/B3/SE
Bahrain	50	110/230	A/BF
Iran	50	230	C/BF/SE
Iraq	50	220	B/C/BF/B3/SE
Israel	50	230	C/O/SE
Jordan	50	220	B/BF/B3
Lebanon	50	110/220	A/C
Oman	50	230	B/C/BF/B3
Qatar	50	240	BF
Quwait	50	240	B/C/B3/SE
Saudi Arabia	50	127/220	A/B/C/BF/B3/SE
Syria	50	220	B/C/B3/SE
Turkey	50	220	B/C/B3/SE
U.A.E.	50	220/240	B/C/BF/B3
Yemen	50	230	C/B3

Country	Cycle	Voltage	Plug Type
Africa			
Algeria	50Hz	127/220V	A/C/BF
Angola	50	220	B/C/B3
Benin	50	120/220	A/B/C/B3/SE
Botswana	50	220	B/C/BF/B3
Burkina Faso	50	220	B/C/SE
Burundi	50	220	B/C/B3/SE
Cameroon	50	127/220	A/C/BF
Canary Islands	50	127/220	A/C
Central Africa	50	220	B/C/B3/SE
Chad	50	220	C
Congo, Democratic Republic	50	220	C
Congo, Republic	50	220	B/C
Cote D'Ivoire	50	220	B/C/B3
Djibouti	50	220	C
Egypt	50	220	C/BF/B3/SE
Ethiopia	50	220	C
Gabon	50	220	C/BF/SE
Gambia	50	230	C/BF/B3
Ghana	50	220/230/240	C/BF/B3
Guinea, Republic	50	220	B/C
Guinea, Republic of Equatorial	50	220	B/C/BF
Kenya	50	240	B/C/BF/B3
Lesotho	50	220	C/B3
Liberia	50	120/240	A/C/B3/SE
Libya	50	127/230	A/C/B3
Madagascar	50	110/220	A/C/B3
Malawi	50	230	C/BF/B3
Mali	50	220	C/SE
Mauritania	50	220	C/SE
Mauritius	50	230	B/C/BF/B3/SE
Morocco	50	115/127/220	A/C/SE
Mozambique	50	220	C/B3/SE
Niger	50	220	B/C/B3/SE
Nigeria	50	230	B/C/BF/B3
Rwanda	50	110/220	A/C/SE
Saint Helena	50	240	C/BF/B3
Senegal	50	127/220	A/C/B3/SE
Seychelles	50	230	C/BF
Sierra Leone	50	230	B/C/BF/B3
Somalia	50	110/220/230	A/C/BF/B3
South Africa	50	220/230/250	B/C/BF/B3
Sudan	50	220/240	C/BF/B3
Swaziland	50	230	B/C/B3
Togo	50	220	B/C/BF
Tanzania	50	230	C/BF/B3
Tunisia	50	127/220	All Types
Uganda	50	240	C/BF
Zambia	50	230	B/C/BF/B3
Zimbabwe	50	220	C/BF/B3

Conversion Table

Length

	m	km	in	ft	yd	mile
m	1	1×10^{-3}	39.37	3.28	1.093	6.214×10^{-4}
km	1×10^{3}	1	3.937×10^{4}	3,280	1,093	0.621
in	0.0254	2.54×10^{-5}	1	1/12	1/36	1.58×10^{-5}
ft	0.305	3.048×10^{-4}	12	1	1/3	1.894×10^{-4}
yd	0.914	9.144×10^{-4}	36	3	1	5.682×10^{-4}
mile	1,609	1.609	63,360	5,280	1,760	1

Mass (Weight)

	g	kg	t	lb	oz
g	1	1×10^{-3}	1×10^{-6}	2.204×10^{-3}	0.0352
kg	1×10^{3}	1	1×10^{-3}	2.204	35.27
t	1×10^{6}	1×10^{3}	1	2,204	35,270
lb	453.6	0.4536	4.536×10^{-4}	1	16
oz	28.35	0.02835	2.835×10^{-5}	1/16	1

Volume

	cm^3 (cc or ml)	m^3	l	in^3	qt	pt	fl-oz	ft^3	gal
cm^3 (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m^3	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in^3	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
Ft^3	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

Pressure

	bar	kgf/cm^2	lbf/cm^2	mmHg (0°C)	Pa (SI)
bar	1	1.020	14.50	750.1	100,000
kgf/cm^2	0.9807	1	14.22	753.6	98,066
lbf/cm^2	0.0689	0.0703	1	51.72	6,895
mmHg (0°C)	0.00133	0.0013	0.0193	1	133.3
Pa (SI)	1×10^{-5}	1.02×10^{-5}	1.45×10^{-4}	10.2×10^{-4}	1

Stress

	Pa (SI)	MPa	kgf/mm^2	kgf/cm^2
Pa (SI)	1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
MPa	1×10^{6}	1	1.01972×10^{-1}	1.01972×10
kgf/mm^2	9.80665×10^{6}	9.80665	1	1×10^{2}
kgf/cm^2	9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

Force

	kW	kgf · m/sec	HP
kW	1	102.0	1.341
kgf · m/sec	0.009807	1	0.01315
HP	0.7457	76.04	1

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PACKING & JOINTING

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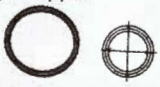
Teflon Products P. 81-48 ~ 49	Sealing & Bonding Items P. 81-49 ~ 58	Gasket Removers P. 81-58	O Rings/Copper Rings  P. 81-58 ~ 59
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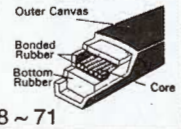
Heat Insulation Pipe Covers P. 81-66 ~ 68	V-Belts  P. 81-68 ~ 71	Porthole Glasses P. 81-72	Rubber Door Packing P81-72

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810393	81-3	810518	81-3	810712	81-5	811096	81-11	811176	81-12	811328	81-7	811627	81-25
810394	81-3	810519	81-3	810715	81-6	811097	81-11	811177	81-12	811329	81-7	811628	81-25
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815466	81-8	815552	81-9
815467	81-8	815601	81-14
815468	81-8	815602	81-14
815469	81-8	815603	81-14
815470	81-8	815605	81-14
815471	81-8	815606	81-14
815472	81-8	815607	81-14
815473	81-8	815608	81-14
815474	81-8	815609	81-14
815475	81-8	815610	81-14
815481	81-9	815611	81-15
815482	81-9	815612	81-15
815483	81-9	815613	81-15
815484	81-9	815614	81-15
815485	81-9	815615	81-15
815486	81-9	815616	81-15
815487	81-9	815621	81-15
815488	81-9	815622	81-15
815489	81-9	815623	81-15
815490	81-9	815624	81-15
815491	81-9	815625	81-15
815492	81-9	815626	81-15
815493	81-9	815631	81-15
815494	81-9	815632	81-15
815495	81-9	815633	81-15
815496	81-9	815634	81-15
815501	81-9	815635	81-15
815502	81-9	815636	81-15
815503	81-9	815637	81-15
815504	81-9	815638	81-15
815505	81-9	815639	81-15
815506	81-9	815641	81-16
815507	81-9	815642	81-16
815508	81-9	815643	81-16
815509	81-9	815651	81-16
815510	81-9	815652	81-16
815511	81-9	815653	81-16
815512	81-9		
815513	81-9		
815514	81-9		
815515	81-9		
815521	81-9		
815522	81-9		
815523	81-9		
815524	81-9		
815525	81-9		
815526	81-9		
815527	81-9		
815528	81-9		
815529	81-9		
815530	81-9		
815531	81-9		
815532	81-9		

Comparison Table of Packing Products

Products from a few manufacturers are listed below for your reference. If there is some question as to what types of products are most suitable for the working conditions, please ask for further information or brochures from the local manufacturer when ordering.

In the table below, the products for each manufacturer are listed vertically according to the working conditions which are listed in the left hand column.

When ordering: Packing

1. Specify the name of the machine to be applied:Stern tube.
2. Specify the type of fluid to be applied: Sea water.
3. Specify the type of material : Non asbestos.
4. Select CODE: 81 13 02.
5. Select a manufacturer from the columns to the below: Beldam Crossley.
6. List the type number of the packing from the manufacturer: Pilotpack 5080.
7. Specify the size and length in meter per box: 3.0 mm x 15 mtr per box.

Comparison Table of Non-Asbestos Packing Products

Service	Machine		Beldam Crossley (UK)	James Walker (UK)	Vulcan Engineering (UK)	Alligator (The Netherlands)	Drew Marine (U.S.A.)	Garlock (U.S.A.)	Spitmaan (India)	Champion (India)	Pillar (Japan)
Stern Tube											
Sea Water	Stern Tube Rudder Post		Pilotpack 2010 **81 13 02 - 12** Pilotpack 5080	Fluolion Sturntite Sextant	VF4 VT2	Marpack PE 031 Marpack PE 044	AMERFLON SG AMERINE 400 AMERINE 2500 AMERPACK 1200	#5413 #98	#2224 #23	#2224 #2224	**81 02 21 - 35** #426F **81 03 81 - 95** #6501L
Pump											
Sea Water	Main & Aux. Circulating Pump Cooling Water Pump Bilge Ballast Pump Sanitary Pump Fire Pump General Service Pump		**81 13 02 - 12** Pilotpack 5080 Pilotpack 5035 Pilotpack 2010	Liongraf Duracom Fluolion Emulsion 2XA Fluograf	VT2 VK5 VF4	Marpack PE 031 Marpack PE 044	AMERPACK 1200 AMERINE 400 AMERINE 2500	#98 #5200 Packmaster 5	#3 #176 #2224	#36 #176 #2224	**81 03 81 - 95** #6501L **81 04 18 - 69** #4526L **81 04 72 - 86** #4536WL
Fresh Water Hot Water	Boiler Feed Pump Boiler Water Circulating Pump		Pilotpack 5020 Pilotpack 5035	Fluograf Supagraf Ribbonpak	VK4 VK5	Marpack PE 025 Marpack PE 031 Marpack PE 044	AMERPACK 1200	#1333-G #98	#174 #176	#36/668 #176	**81 04 18 - 69** #4526L **81 05 46 - 54** #6733
	Drain Pump Condensate Pump Auxiliary Machinery Cooling Pump		**81 13 02 - 12** Pilotpack 5080 Pilotpack 5035	Supagraf Ribbonpak Fluograf Liongraf	VT2 VK5	Marpack PE 025 Marpack PE 031 Marpack PE 044	AMERINE 400	#98 #1333-G	#23 #176	#36/668 #176	**81 03 81 - 95** #6501L
Oil	Lubricating Oil Pump Fuel Oil Transfer Pump Fuel Oil Booster Pump Fuel Oil Burning Pump Cargo Oil Pump		**81 13 02 - 12** Pilotpack 5080 Pilotpack 3435	Fluograf Fluolin Emulsion 2XA Liongraf Supeta XA	VT2 VP2	Marpack PE 022 Marpack PE 305	AMERPACK 1200	#98 or #88	#23 #36	#3 #36	**81 03 81 - 95** #6501L **81 04 72 - 86** #4536WL
Chemical	Chemical Transfer pump	pH 2-13	Pilotpack 4001	Fluolion Filament L Fluograf	VR3	Marpack PE 025 Marpack PE 027 Marpack PE 044 Marpack PE 702	Packmaster 5	AMERPACK 2400	#78	#668	**81 04 72 - 86** #4536WL **81 05 21 - 33** #4527L
		pH 0-14	Pilotpack 3435	Fluolion Filament L Fluograf Liongraf	VP2	Marpack PE 027 Marpack PE 702	Packmaster 6 Packmaster 8	AMERINE 1400 AMERFLON 2001	#36	#36	**81 05 21 - 33** #4527L
Deck Machine											
Steam	Winch Windlass		Pilotpack 4000	Supagraf Ribbonpak M	VR3	Marpack PE 022 Marpack PE 305	AMERINE 800 AMERPACK 1200	#1303-FEP	#80	#668 (I)	**81 13 61 - 75** #6315CH
Valve											
Steam	Saturated Steam Valve		Pilotpack 4000	Supeta XA	VR3	Marpack PE 022 Marpack PE 305	AMERINE 800	#1303-FEP	#80	#668 (I)	**81 13 61 - 75** #6315CH
	Superheated Steam Valve		Pilotpack 4000	Supagraf Ribbonpak M	VR3	Marpack PE 022 Marpack PE 305	AMERINE 800	#1303-FEP	#80	#668 (I)	**81 05 81 - 91** #6711
Fresh & Sea Water Oil Chemical	Water Valve Fuel Oil Valve Chemical Valve		Pilotpack 7000 Pilotpack 3435	Fluolion Emulsion 2XA, Fluograf, Liongraf Fluolion Filament D	VT5 VP2	Marpack PE 022 Marpack PE 305	AMERINE 800	#1303-FEP	#169 #36	#2300 #36	**81 13 61 - 75** #6315CH
LNG · LPG	LNG-LPG Valve		Pilotpack 3408 Pilotpack 4000	Fluolion Filament D	VT9-D VR3	Marpack PE 025 Marpack PE 027 Marpack PE 044 Marpack PE 702	AMERPACK 1200 AMERINE 800 COMBINATION SET	Garlock & 98 Combination set	#2 #80	#1 #668 (I)	**81 04 17** #6616CH **81 04 16** #6710CH
Cover											
Gas	Man Holes		Pilotpack 4000	PTFE	VR3	Marpack PE 025 Marpack PE 027 Marpack PE 044 Marpack PE 702	AMERINE 800	#1303-FEP	#80	#668 (I)	**81 05 81 – 91** #6711 **81 13 45** #6114-M

Packing Product Selection Charts

Object	Application: Pumps Rotary	Application: Pumps Recip.	Application: Valves	Principal Materials of Manufacture	Operating Conditions: Shaft Speed m/s Rotary	Shaft Speed m/s Recip.	Pressure in Bar Rotary	Pressure in Bar Recip.	Pressure in Bar Valves	Max. Temp. Deg. C	pH Range	Beldam Crossley Products
Water	•	•	•	Flax, Graphite, Lubricants	8	2	20	40	70	120	5- 9	Pilotpack 65
	•	•	•	Flax, Mica, Lubricants	8	2	20	40	70	120	5- 9	Pilotpack 67
	•	•	•	Cotton, Lubricants	7	2	25	40	50	120	5- 9	Pilotpack 76
	•	•	•	Cotton, Graphite, Lubricants	7	2	25	40	50	120	5- 9	Pilotpack 116
	•	•	•	Flax, PTFE, Lubricants	10	2	20	40	70	120	5- 9	Pilotpack 2010
Solvents & Chemicals			•	Spirally wrapped PTFE cord	-	1	-	-	50	280	0-14	Pilotpack 3235
	•	•	•	PTFE filament yarn, PTFE	2	1	5	150	200	280	0-14	Pilotpack 3408
	•	•	•	PTFE filament yarn, PTFE, Lubricants	10	2	20	150	200	280	0-14	Pilotpack 3410
Water	•	•	•	PTFE, PTFE dispersion, Silicone	10	2	20	150	200	280	0-14	Pilotpack 3411
Solvents & Chemicals	•	•	•	Graphite impregnated PTFE, Lubricants	25	2	25	200	350	290	0-14	Pilotpack 3435
	•	•	•	Aramid, PTFE, Lubricants	20	2	20	200	250	300	2-13	Pilotpack 5020
Water	•	•	•	Ramie Yarn, PTFE Lubricants	11	1	20	70	100	140	2-12	Pilotpack 5025
Solvents & Chemicals	•	•	•	Aramid, Lubricants ePTFE graphited yarn	25	2	20	250	350	290	1-14	Pilotpack 5035
	•	•	•	Aramid, Lubricants Filament PTFE graphited yarn	25	2	20	250	350	300	1-14	Pilotpack 5080
Steam, Gas & Hot Water			•	BCX fibre, Inconel wire, Plastic core	-	1	-	120	170	540	3-14	Pilotpack 8300
	•	•	•	BCX fibre, Graphite, Lubricants	10	1	10	70	100	400	3-12	Pilotpack 8113

All Graphite Ribbon Packings for Valves

Pillar No. 6650

For high temperature & high pressure valves.

Performance:
Temperature -200°C to 400°C

Construction & Features :

Free-size packing of a tape shape made by corrugating both sides of all graphite sheet. It can be wound and formed in the stuffing boxes of any size of valve.

Applications:

For water, steam, oils, oil gas, solvents, heat transfer oil, LNG, strong acids and strong alkalis.

81 01 51	All graphite ribbon packing Pillar No.6650, 0.38 x 12.7 mm x 7.6 mtr	C/L
81 01 52	All graphite ribbon packing Pillar No.6650, 0.38 x 25.4 mm x 15.2 mtr	C/L
81 01 53	All graphite ribbon packing Pillar No.6650, 0.38 x 6.3 mm x 7.6 mtr	C/L

Ramie Fiber Braided Gland Packings for Stern Tube

Pillar No.426F

Structure and Features:

A gland packing made of braided hemp fibers impregnated with PTFE dispersion and white grease as lubricant.

Applications:

Ideal choice for sealing stern tube (low pressure sea water) and rubber stock. 426F can also be used for sealing rotating equipments and reciprocating equipments.

Performance:

Temperature	to 80°C
Pressure	to 0.6 MPaG (6.5 kgf/cm²)
Velocity	to 10 m/s
PV	to 3.4 MPaG · m/s (35 kgf/cm² · m/s)

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 02 21	3	20 mtr	**81 02 29**	16	
22	5	20	**30**	17.5	
23	6.5	20	**31**	19	3.6 mtr
24	8	3.6	**32**	20.5	
25	9.5	3.6	**33**	22	
81 02 26	11		**81 02 34**	24	
27	12.5	3.6 mtr	**35**	25.5	3.6 mtr
28	14.5				

Carbon Fiber Packings

Pillar No. 6527L

A packing consisting of carbon fiber woven in interlocking braids and processed with a special lubricant.

Feature:

Excellent in heat resistance and chemical resistance and ideal for pumps and agitators.

Applications:

Water, hot water, oil, solvent, strong acid, strong alkali, pumps, mixers

Performance:

PH 0 to 14
Temp. 350°C
Press. 1.6 MPa {16kgf/cm²}
Velocity 10 m/s
PV value 9.8 MPa·m/s {100 kgf/cm²·m/s}

Unit Per Box

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 05 16	5	3 mtr	**81 05 63**	16	3 mtr
81 05 17	6.5		**81 05 64**	17.5	
81 05 18	8		**81 05 96**	19	
81 05 19	9.5		**81 05 97**	20.5	
20	10		**98**	22	
81 05 45	11		**81 05 99**	24	
61	12.5		**81 06 00**	25.5	
62	14.5				

Carbonized Synthetic Fiber Braided Versatile Gland Packings

for Rotating & Reciprocating Equipments and Valves

Pillar No. 6501L

An original gland packing made of braided carbonized synthetic fibers impregnated with micro PTFE dispersion and treated with lubricating oil to achieve superior, well-balanced performance in lubricity, flexibility and strength.

Feature:

Become a standard gland packing for the standard pumps due to its high performance such as low abrasion of the stem.

Applications:

Its versatile and high performance has made this gland packing a popular choice for use with many types of rotating equipments as well as reciprocating valves. It is also great for use with stern tubes and rudder stocks.

Performance:

Temperature	to 200°C (Over 80°C, external cooling required)
Pressure	to 1.0 MPaG (10 kgf/cm²)
Velocity	to 20 m/s
PV	to 9.8 MPaG · m/s (100 kgf/cm² · m/s).

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 03 81	3	3 mtr	**81 03 88**	14.5	3 mtr
82	5		**89**	16	
83	6.5		**90**	17.5	
84	8		**91**	19	
85	9.5		**92**	20.5	
96	10		**93**	22	
81 03 86	11	3 mtr	**81 03 94**	24	3 mtr
87	12.5		**95**	25.5	

Carbonized Fiber Braided Versatile Gland Packings

for Rotating & Reciprocating Equipments and Valves

Pillar No. 6521L

A packing made of carbonized fiber which is impregnated with the PTFE resin liquid and interlocking braided into square and then impregnated with a special lubricant after.

Feature:

A sister product of Style 6501L, has further been improved in its pressure-proof property and has characteristics that its sealing property is less influenced by pressure fluctuation of pump and it is stable when used for a large-sized shaft.

Applications:

Water, hot water, oil, solvent, weak acid, weak alkali, pumps, mixers, sterntubes.

Performance:

pH 2 to 12
Temp. 200°C
Press. 1.2 MPa {12.5 kgf/cm²}
Velocity 20 m/s
PV value 9.8 MPa·m/s {100 kgf/cm²·m/s}

Unit Per Box

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 03 97	5	3 mtr	**81 04 91**	16	3 mtr
81 03 98	6.5		**81 04 92**	17.5	
81 03 99	8		**81 04 93**	19	
81 04 00	9.5		**81 04 94**	20.5	
87	10		**95**	22	
81 04 88	11		**81 04 96**	24	
89	12.5		**97**	25.5	
90	14.5				

PTFE Fiber Braided Gland Packings

Pillar No. 4505L

Structure & Features:

A Square-braided packing consisting of PTFE (Polytetrafluoroethylene resin) fiber impregnated with PTFE dispersion and lubricant. It has good so solvent and chemical resistance.

Applications:

Solvents, strong acid, strong alkali, pumps, valves, mixers.

Performance:

pH	0 to 14
Temperature	-100 to 260°C (Over 80°C, external cooling required)
Pressure	to 1.0 MPaG (10 kgf/cm²). (in pumps) to 10.3 MPagG(106 kgf/cm²).(in valves)
Velocity	to 10 m/s
PV	to 4.9 MPaG · m/s (50 kgf/cm² · m/s)

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 04 01	3	3 mtr	**81 04 06**	11	3 mtr
02	5		**07**	12.5	
03	6.5		**08**	14.5	
04	8		**09**	16	
05	9.5		**11**	19	

Pillarfoil Braided Packings

Mark III Combi for High Temperature & Pressure Valves

Pillar No.6710CH

A Pillarfoil packing braid over braid, reinforced by NCF600 wire. Suitable used for adapter packings to combine

with Pillar style 6616CH. When ordering, please specify outer dia size, inner dia size and height of the packing due to make to order.

Performance :

Temperature	-200 to 600°C (Maximum temperature in oxidizing atmosphere : 450°C)
Pressure	77.6 MPa {791 kgf/cm²} (ASME class 4500)

Application :

Water, Steam, Oil, Heat transfer oil, Solvent, Gas, Acid, Alkali, High pressure valves, Heat transfer oil valves, High pressure gas valves.

How to order: 81 - 04 - 16

Pillarfoil braided packing, Mark III Combi, Pillar style 6710CH, OUTER DIA, INNER DIA, HEIGHT in mm

Pillarfoil Packings

for High Pressure & High Temperature & Pressure Valves

Pillar No.6616CH

This is pure graphite wire mesh inserted, one cut type, high performance packing. Use style 6616CH in combination with style 6710CH.

Performance :

Temperature (Maximum	-200 to 600°C temperature in oxidizing atmosphere : 450°C)
Pressure	77.6 MPa {791 kgf/cm²} Class 4500

Application :

High pressure & High temperature valves, LNG valves

How to order: 81 - 04 - 17

Pillarfoil packing, Pillar No. 6616CH, OUTER DIA, INNER DIA, HEIGHT in mm

High-Intensity Aramid Fiber Braided Gland Packings

for Slurry Pump

Pillar No. 4526L

Structure:

A braided packing made of highly resistant aramid fibers treated with PTFE dispersion and lubricant.

Feature:

The packing stay flexible thanks to the original interlocked braiding technology.

Applications :

An ideal choice for applications that require packings made of strong fibers, such as slurry pumps.

Performance :

Temperature	to 260°C (Over 80°C, external cooling required)
Pressure	to 1.6 MPaG (16 kgf/cm²)(in pump) to 10.3 MPaG(106 kgf/cm²)(in valve)
Velocity	to 16 m/s
PV	to 14.7 MPaG · m/s (150 kgf/cm² · m/s)

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 04 18	3.0		**81 04 54**	14.5	
19	5.0		**55**	16.0	
20	6.5	3 mtr	**56**	17.5	3 mtr
58	8.0		**57**	19.0	
51	9.5		**60**	20.5	
81 04 59	10.0		**81 04 68**	22.0	
52	11.0	3 mtr	**69**	25.5	3 mtr
53	12.5				

Aramid Fiber Braided White Gland Packings

for Rotating Equipment

Pillar No. 4536WL

Structure:

A white gland packing made of aramid-fiber-covered yarn. It is treated with special lubricant and PTFE to ensure good lubricity.

Feature: It has outstanding flexibility and sealing properties.

Applications:

For rotating equipments that require white packings.

Performance:

Temperature	to 260°C (Over 80°C, external cooling required)
Pressure	to 1.0 MPaG (10 kgf/cm²)
Velocity	to 10 m/s
PV	to 6.5 MPaG · m/s (150 kgf/cm² · m/s)

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 04 72	5.0		**81 04 80**	16.0	
73	6.5		**81**	17.5	
74	8.0	3 mtr	**82**	19.0	3 mtr
75	9.5		**83**	20.5	
76	10.0		**84**	22.0	
81 04 77	11.0		**81 04 85**	24.0	
78	12.5	3 mtr	**86**	25.5	3 mtr
79	14.5				

Particular-processed PTFE Fiber Braided Gland Packings

for Chemical Pumps

Pillar No. 4527L

Structure:

A packing consisting of the PTFE fiber, and containing highly pure graphite and a special lubricant woven into interlocked braids.

Features:

Achieved high sealing performance and chemical resistance by the flexibility obtained from interlocked braiding technology.

Applications:

Recommended for use with chemical transfer pumps.

Performance :

pH	0 to 14
Temperature	-100°C to 260°C (Over 80°C, external cooling required)
Pressure	to 1.2 MPaG (12.5 kgf/cm²)
Velocity	to 20 m/s
PV	to 12.3 MPaG · m/s (125 kgf/cm² · m/s)

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 05 21	5.0		**81 05 28**	14.5	
22	6.5		**29**	16.0	
23	8.0	3 mtr	**30**	17.5	3 mtr
24	9.5		**31**	19.0	
25	10.0		**32**	20.5	
81 05 26	11.0	3 mtr	**81 05 33**	22.0	3 mtr
27	12.5				

Non-Asbestos Braided Packings
for Low-Torque Adjusting Valves

Pillar No. 4519

PTFE fiber covers the inner core which is made of spun carbon fiber threads. This packing is a combination of the excellent features of PTFE in chemical resistance and the heat resistance and elasticity of carbon fiber. The low friction surface of this fiber makes it suitable particularly for adjusting valves in which smooth revolution of the valve rod is especially important.

Performance:

pH	0 to 14
Temperature	260°C
Pressure	Class 600
Fluid	Oil solvent, acid, alkali.

Applications : For valves, control valves.

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 05 37	5.0		**81 05 41**	11	
38	6.5	3 mtr	**42**	12.5	3 mtr
39	8.0		**43**	14.5	
40	9.5		**44**	16	

Braided Gland Packings
for High Temp. Pump

Pillar No. 6733

Structure:

A gland packing made of braided aramid-fibre-reinforced braided expanded graphite yarn.

Features and Applications:

Treated with highly thermally resistant lubricant and is great for use with high-temperature high-pressure pumps, such as boiler feed pumps and boiler circulation pumps.

Performance:

Temperature	to 350°C
Pressure	to 2.0 MPaG (20 kgf/cm²)
Velocity	to 20 m/s
PV	to 19.6 MPaG · m/s (200 kgf/cm² · m/s)

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 05 46	3		**81 05 50**	9.5	
47	5	3 mtr	**51**	11	3 mtr
48	6.5		**52**	12.5	
49	8		**54**	16	

Braided Gland Packings
for High Temperature and High Pressure Valves

Pillar No. 6711

Structure:

A graphite packing made of braided expanded graphite yarn reinforced with NCF600 wire with its surface being coated with graphite powder.

Features:

Can be used without top and bottom adaptor packing.

Application:

It is suitable for high-temperature and high pressure valves.

Performance :

Temperature	-200 to 600°C (at oxygen atmosphere limited to 450°C)
Pressure	to 25.9 MPaG (264 kgf/cm²) (Class 1500)

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 05 81	3.0		**81 05 86**	11.0	
82	5.0		**87**	12.5	
83	6.5	3 mtr	**88**	14.5	3 mtr
84	8.0		**89**	16.0	
85	9.5		**91**	19.0	

Pilotpack 67 Packings
for Sea and Fresh Water

Beldam Pilotpack 67

Plaited from high grade flax blended with other natural fibres carefully selected to provide a high wet strength when in contact with sea water thereby ensuring a long packing life. Each strand is throughly impregnated with a special water resistant mica lubricant before plaiting.

Performance:

Max. Temperature	120°C
Pressure	70 bar
pH	5 - 9
Speed	8 m/s

Applications:

Reciprocating, rotary and static, Stern glands and in smaller sizes general purpose water packing.

How to order: CODE

Pilotpack 67 packing, Beldam Crossley SIZE mm x LENGTH mtr

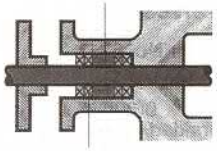
Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 07 01	3.0		**81 07 07**	12.5	
02	5.0	15 mtr	**08**	14.5	10 mtr
03	6.5		**09**	16.0	
04	8.0		**81 07 10**	19.0	
81 07 05	9.5	10 mtr	**11**	22.0	5 mtr
06	11.0		**12**	25.0	

All-purpose Grand Packings

Threebond No.5910

No.5910



Old Grand Packing

Preformed in triangle shape for easy installation and can be fitted into any size or any shape of stuffing box due to self expansion performance by built-in air bubbles.

Performance :

Temperature	-200 to 300°C
Pressure	1,400 kg/cm²
Fluid	Oxalic acid, Alkali, Alcohol, Organic solvent

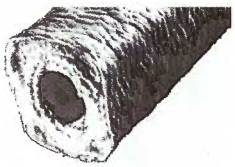
Applications:

Chemical pumps, Turbine pumps, Vertical pumps, Plunger pumps, Centrifugal pumps, Reciprocating pumps, Gate valves, Globe valves, Air valves, Solenoid valves

81 07 15	Grand packing, all-purpose Threebond No.5910, 1 kgs/box	Box

Tank Lid Packings

Pilot Lidpack 3800



Constructions:

Specially developed to seal marine cargo tank lids. The PTFE outer cover gives complete protection to the packing and is abrasion resistant. The unique core construction enables the packing to be welded together to form an endless seal, thus preventing the chance of any leakage at the joint.

Performance :

Max. Temperature	100°C
Pressure	1 Bar
pH	1 to 14.

Applications :

For static cargo or chemical tanks, and acids, alkalis, oils, solvents, chemicals and edible products.

In coils or cut to size upon request. Also available in square or rectangular sections as required.

Unit Per Mtr

Square Section		Rectangular Section	
CODE	Size mm	CODE	Size mm
81 07 21	20 × 20	**81 07 26**	20 × 15
22	25 × 25	**27**	30 × 20
23	35 × 35	**28**	35 × 25
24	38 × 38	**29**	40 × 30
25	40 × 40		

Endless welded rings ready for fitting.

81 07 30	Tank lid packing, Pilot Lidpack 3800, endless welded ring, SECTIONAL SIZE, INNER DIAM, OUTER DIAM	Pc.

Tankatite 440

Constructed from a resilient elastomeric core spirally wrapped with P.T.F.E. tape for added chemical protection. The core is then surrounded with successive braided jackets of inert polypropylene which is wrapped with further layers of P.T.F.E. tape and finally enclosed in braid of P.T.F.E. yarns. Tankatite 440 provides a reliable seal for tank lids, main hatches, and cleaning covers on tankers carrying all known bulk liquid cargoes in all IMO classes.

It will protect the cargo from sea-water ingress and prevent any environmental contamination by the cargo itself.

Tankatite 440 meets U.S. Coast Guard requirements for tank lid sealing of hazardous cargoes and is pressure tight beyond Lloyds and Det Norske Veritas (DNV) test criteria. Any reasonable length can be supplied in square or rectangular from 12.5 mm upwards, or can be supplied in factory produced endless ring form to exactly fit the tank lid recess.

Unit Per Mtr

Square Section		Rectangular Section	
CODE	Size mm	CODE	Size mm
81 07 31	25 × 25	**81 07 35**	20 × 15
32	30 × 30	**36**	30 × 20
33	38 × 38	**37**	40 × 25
34	40 × 40	**38**	40 × 30

Non-Asbestos Universal Packings

Pilotpack 5080

A firm compression packing of the crossplait type designed for effective sealing over a wide scope of static or dynamic applications. The packing is a composite of two base fibres that provide good heat dissipation, abrasion resistance, with the ability to withstand high pressures. The packing also possesses a surface lubricant for initial bedding-in purposes that aids longer term performance.

Performance :

Max. Temperature	300
Pressure	Up to 350 bar
pH	1 - 14
Speed	Up to 25 m/s-1

Applications :

Pumps and valves, Condensates, Dilute acids and alkalis, Oils, Solvents, Abrasive Media, Steam and water.

How to order: CODE

Pilotpack packing, Beldam Crossley No.5080, SIZE mm x LENGTH mtr

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 13 02	5.0		**81 13 07**	12.5	
03	6.5	15 mtr	**08**	14.5	10 mtr
04	8.0		**09**	16.0	
81 13 05	9.5	10 mtr	**81 13 10**	19.0	
06	11.0		**11**	22.0	5 mtr
			12	25.0	

Pilotpack 8113 Packings

for Oils, Hot Water and Steam

Greasy graphited, general purpose, non-asbestos, pump and valve packing. Each strand or high temperature BCX yarn is impregnated with a graphite lubricant to give good, firm, uniformly lubricated packing with a low coefficient of friction.

Performance:

Max. Temperature	400°C
Pressure	100 bar
pH	3 - 12
Speed	10 m/s

Applications :
Rotary, reciprocating and static. Saturated steam, hot water, hot air and gases. Piston rods and valves rods. Ballast, bilge and cargo feed pumps.

How to order: CODE

Pilotpack packing, Beldam Crossley No.8113, SIZE mm x LENGTH mtr

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 13 21	3.0	15 mtr	**81 13 27**	12.5	10 mtr
22	5.0		**28**	14.5	
23	6.5		**29**	16.0	
24	8.0		**81 13 30**	19.0	5 mtr
81 13 25	9.5	10 mtr	**31**	22.0	
26	11.0		**32**	25.0	

Pillarfoil Braided Packings (Mark VII)

for manhole Cover

Pillar No. 6114-M

This is made of flexible graphite yarn reinforced by organic fiber and braided. This flexible graphite material is pretreated on its surface to obtain low torque properties as well as sealability.

Performance:
Temperature 400°C
Fluid Hot air, exhaust gas, dust.

Applications: For manhole packing

How to order: 81 - 13 - 45

Pillarfoil braided packing, (Mark VII), Pillar No. 6114-M, SIZE mm x LENGTH mtr

Low Friction Type Braided Gland Packings

for High Temperature & High Pressure Valves

Pillar No. 6315CH

Structure:
A gland packing made of braided expanded graphite yarn reinforced with stainless wire.

Features:
Its surface is coated with lubricant and graphite powder to minimize the sliding resistance of the valve stem.

Applications:
Suitable for use with high-temperature and pressure valves.

Performance:
Temperature -200 to 600°C
(at oxygen atmosphere limited to 450°C)
Pressure to 25.9 MPaG (264 kgf/cm²)
ANSI Class 1500

Unit Per Box

CODE	Size mm	Length Per Box	CODE	Size mm	Length Per Box
81 13 61	3.0	3 mtr	**81 13 69**	16.0	3 mtr
62	5.0		**70**	17.5	
63	6.5		**71**	19.0	
64	8.0		**72**	20.5	
65	9.5		**73**	22.0	
81 13 66	11.0		**81 13 74**	24.0	
67	12.5		**75**	25.5	
68	14.5				

(to be continued)

Grafan Fibre & Inconel Wire Packings

Vulcan VR31

Braided packings constructed from 100% Grafan yarns to form truly exceptional capability and performance. It is additional reinforced with inconel wire to create the packing for high temperature, high pressure valves. Can be merely cut to length and spiraled into the gland. Extreme condition, long life and zero leakage packing for all uses up to high temperature, high pressure, high speed applications on pumps, valves, mixers, agitators, expansion joints, ball valve seats and other static seals. It is designed for use in static applications only. Against all acids, alkalis and solvents (except very strong oxidizers), gases, feed water and superheated, or saturated, steam.

Service Capability	
Pressure rating: 360 Bar	Rotary speed: 1 m/s
Temperature: -200 + 3,000 deg.C (Inert ATM)	
Temperature: -200 + 600 deg.C (In air)	
pH range: 0-14	

Unit Per C/L

CODE	Size mm x mtr	CODE	Size mm x mtr
81 51 01	3 mm x 3 mtr	**81 51 05**	10 mm x 3 mtr
02	5 mm x 3 mtr	**06**	11 mm x 3 mtr
03	7 mm x 3 mtr	**07**	13 mm x 3 mtr
04	8 mm x 3 mtr	**08**	14 mm x 3 mtr

Name of Mfr. : Vulcan Engineering

PTFE Graphite Fibre Packings

Vulcan VP2

Manufactured from 100% Vulcan type G1 fibre. This newly developed outstanding yarn is very similar in material construction to the original GORE GFO fibre and has been manufactured to optimise performance at an improved cost. They will increase service life whilst minimizing wear and gland adjustments, against nearly all media in static, rotary and reciprocating uses.

Service Capability	
Pressure rating : 150 Bar	Rotary speed : 25 m/s
Temperature : -200 + 280°C	pH range : 0 - 14

Unit Per C/L

CODE	Size mm x mtr	CODE	Size mm x mtr
81 51 11	3 mm x 3 mtr	**81 51 15**	10 mm x 3 mtr
12	5 mm x 3 mtr	**16**	11 mm x 3 mtr
13	7 mm x 3 mtr	**17**	13 mm x 3 mtr
14	8 mm x 3 mtr	**18**	14 mm x 3 mtr

Name of Mfr. : Vulcan Engineering

Non-Asbestos Gland Packings

Carbon Fiber Based

For Water & Oil Pumps
Valqua® No. 6201

Coil packing made of carbonized fabric yarn, processed with PTFE dispersion and lubricating oil, then

braided into a square cross-section and finished with PTFE, fine graphite and lubricating oil.

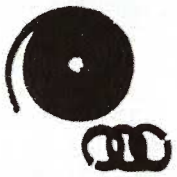
Features:
- Serviceable for relatively versatile fluids.
- Allows permissible PV value and shaft speed limit.
- Reduced shaft wear due to packing.

Temperature	Pressure	pH	Speed
200°C / 392°F	1 MPa	2 to 12	20 m/s

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 54 01	3.0		**81 54 09**	11	
02	4.0		**10**	12.5	
03	5.0	3	**11**	14.5	3
04	6.0		**12**	16	
05	6.5		**13**	19	
81 54 06	8.0		**81 54 14**	20	
07	9.5	3	**15**	22	3
08	10.0		**16**	25	

For General Use Valves & Reciprocating Motion Machines
Valqua® No. 6232



Coil packing made of carbon fiber yarns, processed with PTFE dispersion and lubricating oil, then braided into a square-cross section and finished with PTFE, fine graphite and lubricating oil.

Features:
- Good compatibility with shafts means excellent sealing property even at low tightening pressures.
- Suitable for almost all fluids except for strong oxidizing fluids.

Temperature	Pressure	pH
260°C / 500°F	10.3 MPa	0 to 14

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 54 21	3		**81 54 29**	12.5	
22	4		**30**	14.5	
23	5	3	**31**	16	3
24	6.5		**32**	19	
25	8		**33**	20	
81 54 26	9.5		**81 54 34**	22	
27	10	3	**35**	25	3
28	11				

For Chemical Pumps
Valqua® No. 6262

Coil packing made of carbon fiber yarns, processed with PTFE dispersion and lubricating oil, then braided into a square cross-section and finished with PTFE, fine graphite and lubricating oil.

Features:
- Allows permissible PV value and shaft speed limit.
- Reduced shaft wear due to packing.
- Suitable for almost all fluids except for strong oxidizing fluids.

Temperature	Pressure	pH	Speed
200°C / 500°F	1.6 MPa	0 to 14	20 m/s

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 54 41	3		**81 54 49**	11	
42	4		**50**	12.5	
43	5	3	**51**	14.5	3
44	6		**52**	16	
45	6.5		**53**	19	
81 54 46	8		**81 54 54**	20	
47	9.5	3	**55**	22	3
48	10		**56**	25	

Shaft Seal Gland Packings

PTFE Fiber Based

For Corrosive Fluid Valves
VALQUA® No. 7233

Coil packing made of PTFE fiber yarns, processed with PTFE dispersion, then braided into a square cross-section.

Features:
- Made of 100% PTFE, and therefore resistant to almost all fluids. Best suited for chemical use valve shaft seals for handling corrosive fluids.
- When low torque or gas sealing properties are required, use the following products which are treated with lubricating oil:
- No. 7233 (O) for general gas-based fluids.
- No. 7233 (SO) for low-temperature use of inflammable gas and liquefied gas.
- No. 7233 (FO) for gas susceptible to burning, such as oxygen and ozone.
- Compliant with the Food Sanitation Law, and the Regulations concerning Food & Additives.

Temperature	Pressure	pH
260°C / 500°F	10.3 MPa	0 to 14

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 54 61	3		**81 54 69**	12.5	
62	4		**70**	14.5	
63	5	3	**71**	16	3
64	6.5		**72**	19	
65	8		**73**	20	
81 54 66	9.5		**81 54 74**	22	
67	10	3	**75**	25	3
68	11				

Special Fiber Based

For Low & Medium Shaft Speed Pumps and Rotary Equipment
Valqua® No. 8132

Coil packing made of blended yarn of aramid fibers and of artificial inorganic fibers treated with PTFE dispersion, braided into a square cross section, and then finished soft with PTFE dispersion and lubricating oil.

Features:
- Flexible and compatible with shafts.
- Being white, can be used for fluid applications where black should be avoided.
- Can be used as shaft seals of pumps for handling water-based and oil-based fluids as well as weak acid and weak alkaline fluids.
- Also used as shaft seals for rotating machines where contamination is undesirable, such as mixers and agitators.

Temperature	Pressure	pH	Speed
200°C / 500°F	1.0 MPa	2 to 13	10 m/s

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 54 81	3		**81 54 89**	11	
82	4		**90**	12.5	
83	5	3	**91**	14.5	3
84	6		**92**	16	
85	6.5		**93**	19	
81 54 86	8		**81 54 94**	20	
87	9.5	3	**95**	22	3
88	10		**96**	25	

For rotating machines
Valqua® No. 8137

Coil packing made of blended yarn of aramid fibers and of artificial inorganic fibers treated with PTFE dispersion, braided into a square cross-section, then finished with PTFE dispersion.

Features:
- White clean packing without lubricating oil.
- Excellent cost per performance.
- Can be widely used for general-use valves as well as for shaft seals of agitators and plunger pumps.

Temperature	Pressure	pH	Speed
260°C / 500°F	14.7 MPa	2 to 13	1 m/s

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 55 01	3(1)		**81 55 09**	12.5	
02	4		**10**	14.5	
03	5	3	**11**	16	3
04	6.5		**12**	19	
05	8		**13**	20	
81 55 06	9.5		**81 55 14**	22	
07	10	3	**15**	25	3
08	11				

Note(1) For manufacturing reasons, rectangular products with a cross section of 3 mm x 5 mm are available.

Flexible Graphite Based

For General Use Valves
Valqua® No. VFT-22

Coil packing made of expanded graphite yarn clad with PTFE film, and braided into a square cross-section, that is, gland packing that makes use of the features of each material.

Features:
- Excellent in sealing property and durability with expanded graphite as the major material.
- Low stem friction as the surface is clad with PTFE.

Temperature	Pressure	pH
300°C / 572°F	10.3 MPa	0 to 14

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 55 21	3		**81 55 29**	12.5	
22	4		**30**	14.5	
23	5	3	**31**	16	3
24	6.5		**32**	19	
25	8		**33**	20	
81 55 26	9.5		**81 55 34**	22	
27	10	3	**35**	25	3
28	11				

For High Temperature & High Pressure Valves
Valqua® No. VFX-15

A coil packing made of expanded graphite yarns reinforced with metal wire, braided into a square cross-section treated with lubricant oil.

Features:
- Can be used individually as a stem seal.
- Higher cost performance than existing graphite packing.

Temperature	Pressure	pH
650 (400)(1)°C / 1202 (752)°F	25.9 MPa	0 to 14

Note(1) Temperature limit in air.

Unit Per Box

CODE	Size (mm)	Length (m)	CODE	Size (mm)	Length (m)
81 55 41	3		**81 55 47**	12.5	
42	5		**48**	14.5	
43	6.5	3	**49**	16	3
44	8		**50**	19	
45	9.5		**51**	22	
81 55 46	11	3	**81 55 52**	25	3

Comparison Table of Gaskets

Products from a few manufacturers are listed below for your reference. If there is some question as to what types of products are most suitable for the condition of use, please ask for further information or brochures from the local manufacturer when ordering.

In the table, the products for each manufacturer are listed vertically according to the working conditions which are listed in the left hand column.

When ordering: Gasket

1. Select the purpose: All purpose.
2. Specify the name of the machine to be applied: Pump, valve, etc.
3. Specify the type of material: Non-asbestos.
4. Select the CODE: 81 11 00.
5. Select a manufacturer from (one of) the columns to the right: Beldam Crossley.
6. List the type number of the gasket from the manufacturer: Pilotseal 178.
7. Specify the thickness and size (Width x Length) in mm. 1.0 mm x 1,500 x 1,500 mm.

Comparison Table of Non-Asbestos Gaskets

Purpose	CODE	Beldam Crossley (UK)	James Walker (UK)	Alligator (The Netherlands)	Drew Marine (U.S.A.)	Garlock (U.S.A.)	Spitmaan (India)	Champion (India)	Pillar (Japan)
All Purpose	**81 11 00** Non-asbestos	**81 12 91-96** Pilotseal 178, Pilotseal 34	Inca, Centurion, Sentinel	Marpack PA 245, Marpack PA 250, Marpack PA 276, Marpack PA 277	Amerine CF, Amerine S	#3400 (#3000 for water, air, lube oil system), #9850, #9800	AF 170, AF 139	AF139	**81 11 24-29** #5650 **81 11 44-59** #5600
Steam	**81 11 10** Non-asbestos	Pilotseal 34, "Ibex 162" Spiral Wound Gaskets	Chieftain, Centurion, Metaflex Gaskets	Marpack PA 231, Marpack PA 256	Amerine CF, Amerine S	#3400, #9900 (Not recommended for superheated steam)	Spiral Wound	Spiral Wound AF154	#2603-EEE
Exhaust Gas	**81 11 30** Non-asbestos	Pilotseal 34, Pilotseal 2T	Chieftain, Supagraf N7, Super Twilstele XA	Marpack PA 256	Amerine CFR, Milam mica sheet	HTC 9850, #9900, Graphlock 3200, Graphlock 3400	AF 170 (Non Metallic / Metallic)	AF154	**81 10 25-29** #6633
Feed Water, Boiler water, Blow off, Drain	**81 11 50** Non-asbestos	**81 12 91-96** Pilotseal 178	Chieftain, Sentinel, Inca, Centurion	Marpack PA 245, Marpack PA 250, Marpack PA 276, Marpack PA 277	Amerine CF, Amerine S	#3300, Graphlock #3400	AF 154	AF139	#2603-EEE
Compressed Air	**81 11 60** Non-asbestos	Pilotseal 34, **81 12 91-96** Pilotseal 178	Inca Centurion, Sentinel, Chieftain	Marpack PA 245, Marpack PA 250	Amerine CF, Amerine S	#3300	AF 159, AF 139	AF139	#5001, **81 13 55-58** #5003-NBR
Fresh Water, Condensate Water, Seawater. Bilge, and Ballast	**81 11 70** Non-asbestos	**81 12 91-96** Pilotseal 178	Rubber Insertion 332C, Inca, Sentinel, Centurion, Chieftain	Marpack PA 245, Marpack PA 250, Marpack PA 276, Marpack PA 277	Amerine CFR, Amerine S	#3300, #9850, #3400, #9900	AF 111, AF 120	AF154	**81 10 25-29** #6633 **81 10 71-76** #5611 **81 11 24-29** #5650, #5600 #5001, #5002 #5003-NBR
Fuel Oil, Cargo Oil, Lubricating Oil	**81 11 80** Non-asbestos	**81 12 91-96** Pilotseal 178	Gaskoid, Inca, Sentinel	Marpack PA 090, Marpack PA 245, Marpack PA 250, Marpack PA 276, Marpack PA 277	Amerine CF, Amerine S	#3000, #9850	AF 159	AF159	**81 10 25-29** #6633 **81 10 71-76** #5611 **81 11 24-29** #5650, #5600 #5001, #5002 #5003-NBR
Chemical	**81 11 90** Non-asbestos	Pilotseal 550, PTFE Gaskets	PTFE Sheet Steel Lined PTFE Gaskets, Chieftain	Marpack PO 473, Marpack PO 500, Marpack PO 665, Marpack PO 808, Marpack PO 850, Marpack PO 860	PTFE Sheet	#3000 (Suited for mild solvent and aliphatic hydrocarbons), #3510, #3504, #3565, #3535 Joint Sealantt	AF 120, AF 154, AF 160	PTFE Gaskets	#4430AF #4400

Graphite Joint Sheet Gaskets

Pillar No. 5650

A joint sheet gasket made of graphite black lead and aramid fiber bound with a rubber binder.

Feature:
1. Highly thermally resistant.
2. High mechanical strength.
3. Non-adhesive to flange surfaces.
4. Great workability.

Applications:

Gaskets for pipe flanges, maintenance hatches, and valve bonnets. Especially suitable for use with pipes that carry saturated vapors.

Performance:

Temperature -100 to 260°C
Pressure up to 5.2 MPaG (ASME Class 300)

Unit Per Sht.

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 11 24	0.5	1,500 × 1,500	**81 11 26**	1.0	1,500 × 2,000
25	0.8	1,500 × 1,500	**27**	1.5	
			28	2.0	
			29	3.0	

Expanded Graphite Joint Sheet Gaskets

Pillar No. 5600

Structure:

A joint sheet gasket made of expanded graphite, inorganic-fiber and aramid fiber bound with a rubber binder.

Feature:
1. Very flexible.
2. Highly thermally resistant.

3. Great gas-sealing performance.
4. Roll-upable for compact storage.

Applications:
Gaskets for pipe flanges, maintenance hatches, and valve bonnets. Especially suitable for use with pipes that carry saturated vapors.

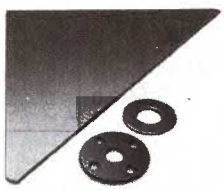
Performance:
Temperature -50 to 260°C
Pressure up to 4.0 MPaG

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 10 07	0.5		**81 10 39**	0.5	
08	0.8		**58**	0.8	
09	1.0	1,270 × 1,270	**59**	1.0	1,270 × 3,810
22	1.5		**69**	1.5	
23	2.0		**77**	2.0	
81 10 38	3.0	1,270 × 1,270	**81 10 78**	3.0	1,270 × 3,810

Tear Resistant Type Graphite Sheet Gaskets
for High Temperature Sheet Gasket

Pillar No. 6633
Structure:
An expanded graphite sheet gasket reinforced with stainless steel foil to protect against tearing and improve ease of handling.



Features:
1. Extremely thermally resistant.
2. Tear resistant.
3. Easily cut with a knife or scissors.
4. Highly chemically resistant.

Applications:
Suitable for use with pipe flanges and other types of applications that require gaskets with thermal resistance and anti-chemical properties.

Performance :
Temperature -200 to 400°C
Pressure up to 5.2 MPaG

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 10 25	0.5		**81 10 27**	1.5	
24	0.8	1,000 × 1,000	**28**	2.0	1,000 × 1,000
26	1.0		**29**	3.0	

Joint Sheet Gaskets
(Common Used)

Pillar No. 5611
Structure:
A joint sheet gasket made of inorganic fiber and aramid fiber bound with a rubber binder.

Features:
1. High mechanical strength.
2. Superior fit with flange surfaces that ensures high sealing performance.
3. Great workability.

Applications:
Gasket for pipe flanges, maintenance hatches, and valve bonnets. Especially suitable for use with pipes that carry room-temperature water or oil.

Performance:
Temperature -50 to 120°C
Pressure up to 3.3 MPaG

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 10 71	0.5		**81 10 40**	0.5	
72	0.8		**45**	0.8	
73	1.0	1,270 × 1,270	**46**	1.0	1,270 × 3,810
74	1.5		**47**	1.5	
75	2.0		**48**	2.0	
81 10 76	3.0	1,270 × 1,270	**81 10 49**	3.0	1,270 × 3,810

Vegetable Fiber Oil-Proof Joint Sheets

Construction & Features:
Made of chemically treated vegetable fiber. For packing against gasoline, oil, water, and lubricating oil.

Performance:
Temperature 100°C
Pressure 1.0 MPa (10 kgf/cm²).

Applications:
Gasket for oil pumps, crank cases, transmission covers, gasoline pumps, oil drums, etc.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 10 79	0.1		**81 10 84**	0.8	
81	0.3	1,000 × 1,000	**85**	1.0	1,000 × 1,000
82	0.4		**86**	1.6	
83	0.6		**88**	3.0	

Fiber Joint Sheets

Construction & Features:
A red paper packing sheet which is chemically neutralized from cotton fiber and treated with zinc chloride solvents.

Applications:
Flange packing for water and oil service or electrical insulation.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 10 91	0.35		**81 10 95**	1.6	
92	0.5	910 × 1,220	**96**	2.4	910 × 1,220
93	0.8		**97**	3.2	
94	1.0				

Cortex Joint Sheets

Construction & Features:
Made of cork skin and mixed with oil resistant rubber by rolling and curing.

Applications:
Pipe flange packing for tank covers, etc.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 11 01	1.0		**81 11 03**	2.0	
02	1.5	915 × 1,830	**04**	3.0	915 × 1,830

Natural Rubber Joint Sheets

Applications:

For pipe flanges or cover gaskets where gas, hot or cold water, diluted solutions, low pressures and service steam are used.

Unit Per Mtr

CODE	Thick mm	Sheet Size mm	CODE	Thick mm	Sheet Size mm
81 11 11	1.0		81 11 17	6.0	
12	1.5		18	8.0	
13	2.0	1,000 × 1,000	19	10.0	1,000 × 1,000
14	3.0		20	12.0	
15	4.0		21	15.0	
81 11 16	5.0	1,000 × 1,000	81 11 22	20.0	1,000 × 1,000

Synthetic Rubber Joint Sheets

Construction & Features:

Made from natural oil-resistant rubber mixed into sheet form.

Applications:

For pipe flanges servicing petroleum solvent for heavy or light oil and for animal or vegetable oils.

Unit Per Mtr

CODE	Thick mm	Sheet Size mm	CODE	Thick mm	Sheet Size mm
81 11 31	1.0		81 11 37	6.0	
32	1.5		38	8.0	
33	2.0	1,000 × 1,000	39	10.0	1,000 × 1,000
34	3.0		40	12.0	
35	4.0		41	15.0	
81 11 36	5.0	1,000 × 1,000	81 11 42	20.0	1,000 × 1,000

7TH 81

Viton Rubber Sheets

Viton sheeting, known as fluoroelastomer or FKM, is highly appreciated for the most demanding industrial applications as it has the highest resistance to hydrocarbons, acids, alkalis and even oxidants, and its mechanical properties remain intact at temperatures of up to 200°C.

- Tensile strength : 6 – 8 MPA
- Elongation : 300%
- High temperature : 200°C
- Hardness 75+/15 Shore A

Applications:

Industrial maintenance (oils / high temperature) / Sealing

Unit Per Mtr

CODE	Thickness × Width mm	Temperature	Shore Hardness	Article No.
81 11 43	1 x 1,000			RP630010
44	1.5 x 1,000			RP630015
45	2 x 1,000	200°C	75°	RP630020
46	3 x 1,000			RP630030
47	4 x 1,000			RP630040
81 11 48	5 x 1,000	200°C	75°	RP630050
49	6 x 1,000			RP630060

Cotton Insertion Rubber Joint Sheets

Construction:

Cotton inserted natural rubber sheet.

Applications:

For the same use as a natural rubber sheet.

Unit Per Mtr

CODE	Thick mm	Sheet Size mm	CODE	Thick mm	Sheet Size mm
81 11 51	1.5				
52	2.0	1,000 × 1,000	81 11 53	3.0	1,000 × 1,000

Canvas Inserted Rubber Joint Sheets

Construction & Features:

Made of quality, strong canvas inserted onto rubber sheet in the same way as cotton insertions but this construction is more durable.

Unit Per Mtr

CODE	Thick mm	Sheet Size mm	CODE	Thick mm	Sheet Size mm
81 11 61	1.0		81 11 64	3.0	
62	1.5	1,000 × 1,000	65	4.0	1,000 × 1,000
63	2.0		66	5.0	

Leather Sheets

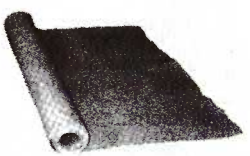
Suitable for a wide variety of applications.

Unit Per Mtr

CODE	Thick mm	Sheet Size mm	CODE	Thick mm	Sheet Size mm
81 11 71	1.0		81 11 75	4.0	
72	1.5	300 × 300	76	5.0	300 × 300
73	2.0		77	6.0	
74	3.0		78	8.0	

Felt Sheet Packings

Made from pressed white sheep hair shaped into sheet form. Used for filling or stopping oil because of its high absorbency to oil.



How to order: CODE

Felt sheet packing, WIDTH x LENGTH, THICKNESS mm

Unit Per Sht

CODE	Thickness mm	CODE	Thickness mm
	W x L 900 x 1,000 mm		W x L 1,800 x 1,000 mm
81 11 81	2	81 11 91	2
82	3	92	3
83	4	93	4
84	5	94	5
85	6	95	6
81 11 86	8	81 11 96	8
87	10	97	10
88	12	98	12
89	20	99	20

Non-Asbestos Mica Jointing Sheets

Pilotseal Jointing (201)

Non-asbestos jointing material for use in the sealing of hot, dry gases.

Performance:

Max. Temperature	900°C
Max. Pressure	20 bar
Tensile Strength	20 MPa
Density	1.72 g/cm³

Applications :

For use in refractory underlays, metal foundries, exhaust

manifolds and as thermal insulation and sealing gasket within a wide range of industries.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 12 63	0.5		**81 12 66**	1.5	
64	1.0	1,250 × 1,250	**67**	2.0	1,250 × 1,250
65	1.3		**68**	3.0	

Pilot Non-Asbestos Jointing Pilotseal 172

for Steam, Water, Oils, Gases, Dilute Acids and Alkalis

High quality compressed jointing manufactured from heat resistant fibre and polymer.

The anti-stick graphite silver finish facilities easy gasket removal and flange cleaning

Performance:

Max. Temperature	475°C
Max. Pressure	13.8 N/mm² (2,000 psi)
Tensile Strength	10.3 N/mm² (1,500 psi)
Density	1.4 gm/cc

Applications:

For sealing against steam, water, oils, gases, dilute acids and alkalis.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 12 80	0.5		**81 12 83**	1.5	
81	0.75	1,500 × 1,500	**84**	2.0	1,500 × 1,500
82	1.0		**85**	3.0	

Expand Metal Insert Graphite Joint Sheets

Novaphit SSTC

The highest quality gasket material based on pure exfoliated graphite with a stainless steel mesh reinforcement and no binders or adhesives. It is easier to cut than the traditional tang metal reinforced graphite and it is fire-safe approved by Lloyds. It exhibits virtually no creep in service. Available in sheet form or as a Cut Gasket to suit standard or non-standard flanges.

Performance:

Temperature	-240°C to 550°C Steam 360°C (max)
Stress Relaxation	300/C - 43 N/mm² (approx)
DIN 52913	175/C - 45 N/mm² (approx)

Applications:

For sealing high pressure steam, most hydrocarbons, solvents, flammable liquids, fuels, gases, alkalis and many acids.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 12 86	1.0		**81 12 88**	2.0	
87	1.5	1,000 × 1,000	**89**	3.0	1,000 × 1,000

Non-Asbestos Jointing Pilotseal 178

for Steam, Water, Oils, Gases, Dilute Acids and Alkalis

General service non-asbestos jointing manufactured from heat resistant synthetic fibre and polymer. The printed green 25mm squares assist when cutting and making gaskets.

Performance:

Max. Temperature	400°C
Max. Pressure	6.9 N/mm²
Tensile Strength	10.3 N/mm² (1,500 psi)
Density	1.95 gm/cc

Applications :

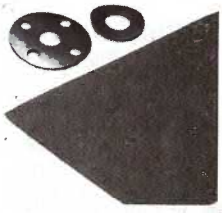
For sealing against steam, water, oils, gases, dilute acids and alkalis.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 12 91	0.5		**81 12 94**	1.5	
92	0.75	1,500 × 1,500	**95**	2.0	1,500 × 1,500
93	1.0		**96**	3.0	

High-Strength Rubber Sheet Gaskets

Reinforced in Aramid Fiber



Pillar No.5003-NBR

Structure:

An NBR rubber sheet gasket reinforced with short aramid fibers.

Feature

1. High sealing performance.
2. Low stress relaxation and high mechanical strength.
3. High insulation performance.

Applications:

- Flange gaskets for water (including sea water) pipes
- Insulation gaskets
- Flanges for watertight test

Performance:

Temperature	-30 to 120°C
Pressure	up to 2.6 MPaG

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 13 55	1.5		**81 13 57**	3.0	
56	2.0	1,270 × 1,270	**58**	6.0	1,270 × 1,270

Low Creep PTFE Sheet Gaskets

Mixed with Selectable Fillers

Pillar No.4001, 4002, and 4003

Structure:

PTFE sheet gaskets with fillers.

Features & Applications:

Protected from creeping of PTFE sheet gasket by using different types of filler.

4001: High anti-creeping and acid-resistance properties. It is best suitable to the strong acid, hydrocarbon, water, steam, etc.

4002: Good compression property and superior fit with flange surfaces. It is also best suitable to the lining flange, etc. tightened at low torque, and to the substitution of enveloped gasket.

4003: High anti-creeping and alkaline-resistance properties. It is best suitable to the strong alkali and oxygen, and is also applicable safely to the food application in safe.

Properties and Performance

Pillar No.	4001	4002	4003
Hue (Colour)	Light brown	Aqua blue	White
Filler	Silicone dioxide low creep acid resistance	Particular glass compressible fit in well	Barium oxide low creep alkali-resistant
Temperature	-210 to 260°C		
Pressure	Up to 8.3 MPaG	Up to 5.1 MPaG	Up to 8.3 MPaG

Unit Per Sht.

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
4001			4003		
81 13 81	1.5	1,500 × 1,500	**81 13 87**	1.5	1,500 × 1,500
82	2.0		**88**	2.0	
83	3.0		**89**	3.0	
4002					
81 13 84	1.5	1,500 × 1,500			
85	2.0				
86	3.0				

Bi-directional PTFE Gasketing Materials

SICHEM S11

A bi-directional orientated gasketing material on PTFE-basis, filled with silica, designed to achieve the lowest creep values and seal integrity, combining excellent chemical resistance and optimal sealing performances. Can be used for applications with pH-range from 0 to 14 with exception to hydrogen fluoride, fluorine compounds and molten alkali metals.

Applications:
For all types of flanges joint connections in maritime applications in all sizes for temperatures from -260°C/+260°C and pressures classes up to 80 Bar

Characteristics :
Density: 2.2 g/cm³
Leckage DIN 3535 = < 0.05 mg/(s*m)
KSW DIN 28090-2 = < 4.0%
KRW DIN 28090-2 = >1.7%
WSW DIN 28090-2 = <24%
Tensile Strength ASTM F 152 = 15 N/mm²

Characteristics Certifications:
* FDA-Approval BAM proofed for gaseous oxygen until 40 bar and +225°C
* Cryogenic application approved EN 13555 (Qmin, Qsmin, PQR, ...)
* TA-Luft + Blow out test DNV GL, DVGW

Unit Per Sht

CODE	Thick (mm)	Size (mm)	CODE	Thick (mm)	Size (mm)
81 13 90	1.5	1,500 x 1,500	**81 13 93**	2.0	1,750 x 1,750
91	1.5	1,750 x 1,750	**94**	3.0	1,500 x 1,500
92	2.0	1,500 x 1,500	**95**	3.0	1,750 x 1,750

Name of Mfr.: FMI s.p.a.

High Performance Non-Asbestos Sheets

BLACKHYPER™
Valqua® No. GF300

This gasket is mainly composed of PTFE as a binder and doesn't contain any rubber.

Features:
- Very minor change in physical properties even under high temperatures.
- Excellent chemical resistance.
- Excellent heat resistance.
- Easy to handle.
- Does not harden easily.
- No hardening makes retightening possible.

Temperature	Pressure
-200 to 300°C / -328 to 572°F	Max 3.5 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, liquefied gas
Applications: Pipe flanges, valve bonnets, towers & tanks, pressure vessels and heat exchangers
Color type: Black
Print color: Black

The ring molded article supports JPI (ASME / ANSI).

Unit Per Sht

CODE	Thickness (mm)	CODE	Thickness (mm)
1,270 × 1,270 (mm)		1,500 × 1,500 (mm)	
81 56 01	1.0	**81 56 03**	3.0
02	1.5		

Compressed Non-Asbestos Fiber Sheets

Compressed Non-Asbestos Fiber Sheets are rolled and vulcanized sheet-type gasket materials, in which special rubber binders and a small amount of filler material are mixed with organic and inorganic fibers.

General use type
Valqua® No. 6500

Features:
- An economical option
- Easy to handle

Temperature	Pressure
-50 to 183°C / -58 to 361°F	Max 3 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), liquefied gas
Applications: Pipe flanges, valve bonnets and other equipment used in various industries
Color type: Blue
Print color: Black

The ring molded article supports JPI (ASME / ANSI).

Unit Per Sht

CODE	Thickness (mm)	CODE	Thickness (mm)
1,270 × 1,270 (mm)		2,540 × 3,810 (mm)	
81 56 05	1.0	**81 56 08**	1.0
06	1.5	**09**	1.5
07	3.0	**10**	3.0

Anti-corrosion type
Valqua® No. 6500AC

This gasket is low in leachable chloride.

Feature:
- Corrosion suppressive

Temperature	Pressure
-50 to 183°C / -58 to 361°F	Max 3 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), liquefied gas

Applications: Stainless steel pipe flanges, valve bonnets and other equipment used in various industries requiring corrosion resistance
Color type: Blue
Print color: Orange

Unit Per Sht

CODE	Thickness (mm)	CODE	Thickness (mm)
1,270 × 1,270 (mm)		2,540 × 3,810 (mm)	
81 56 11	1.0	**81 56 14**	1.0
12	1.5	**15**	1.5
13	3.0	**16**	3.0

High cost performance type
Valqua® No. 6509

This gasket was developed for low-pressure application.

Features:
- Superior cost performance.
- Easy to handle and good workability.

Temperature	Pressure
-50 to 160°C / -58 to 320°F	Max 2.5MPa

Suitable fluids: General fluids (water, steam, oil, etc.), liquefied gas
Applications: Pipe flange, valve bonnets and covers of other equipment
Color type: Blue
Print color: Black

The ring molded article supports JPI (ASME / ANSI).

Unit Per Sht

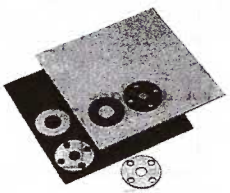
CODE	Thickness (mm)	CODE	Thickness (mm)
1,270 × 1,270 (mm)		2,540 × 3,810 (mm)	
81 56 21	1.0	**81 56 24**	1.0
22	1.5	**25**	1.5
23	3.0	**26**	3.0

VALFLON™ (PTFE) Gaskets

These are sheet gaskets made of VALFLON™ (PTFE) with excellent chemical resistant and non-stick properties.

VALQUALON™
(PTFE-blended sheet) Gasket
Valqua® No. 7020 (For oxidizing)

In order to improve the cold flow (the creep phenomenon), which is a drawback in PTFE, these gaskets are shaped by means of a special manufacturing process where inorganic filler material is compounded.



Features:
- Excellent acid resistance.
- Heat resistance.
- Anti-cold flow properties.
- Can handle various chemicals.

Temperature	Pressure
-200 to 200°C / -328 to 392 °F	Max 4 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, corrosive liquids (especially, acid liquid), liquefied gas, cryogenic fluid, flammable gas
Applications: Pipe flanges, valve bonnets, towers & tanks

The ring molded article supports JPI (ASME / ANSI).

Unit Per Sht

CODE	Thickness (mm)	CODE	Thickness (mm)
1,000 × 1,000 (mm)		1,270 × 1,270 (mm)	
81 56 31	1.0	**81 56 33**	2.0
32	1.5	**34**	3.0

Black VALQUALON™ Gasket
Valqua® No. 7026 (For alkali)

Similar to their companion products, the No. 7020 and No. 7026 gaskets have excellent heat resistance, chemical resistance, and anti-cold flow properties.

Features:
- Excellent alkali resistance.
- Heat resistance.
- Anti-cold flow properties.
- Handling various chemical.

Temperature	Pressure
-200 to 200°C / -328 to 392°F	Max 4MPa

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, corrosive liquids (especially, alkali liquid), liquefied gas, cryogenic fluid.
Applications: Pipe flanges, valve bonnets, towers & tanks.

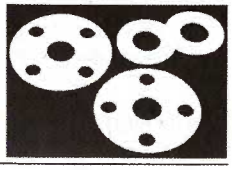
The ring molded article supports JPI (ASME / ANSI)

Unit Per Sht

CODE	Thickness (mm)	Width × Length (mm)
81 56 35	1.5	1,270 × 1,270
36	2.0	
37	3.0	

New VALFON™ Gasket
Valqua® No. 7010-EX

Made of New VALFLON™ material with improved anti-creeping performance, while maintaining the PTFE's excellent chemical resistance.



Features:
- Anti-creeping performance.
- Excellent chemical resistance.
- Heat resistance.
- Non-stick properties.

Temperature	Pressure
-50 to 150°C / -58 to 302°F	Max 1 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, corrosive liquids, liquefied gas
Applications: Pipe flanges, valve bonnets, towers & tanks

The ring molded article supports JPI (ASME / ANSI).

Unit Per Sht

CODE	Thick (mm)	Size (mm)	CODE	Thick (mm)	Size (mm)
81 56 38	1.5	1,100×1,100	**81 56 39**	3.0	1,100×1,100

VALFON™ Soft Sheet
Valqua® No. 7GP61S

This highly flexible sheet has a specially made mesh construction.

Features:
- Highly flexible sheets.

- Excellent chemicals resistance.
- Heat resistance.

Temperature	Pressure
-240 to 260°C / -400 to 500°F	Max 2 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, corrosive liquids
Applications: Pipe flanges, valve bonnets, towers & tanks

The ring molded article supports JPI (ASME / ANSI).

Unit Per Sht

CODE	Thickness (mm)	Width × Length (mm)
81 56 41	1.5	1,500 × 1,500
42	2.0	
43	3.0	

VALQUAFOIL™ (Expanded Graphite) Gaskets

Valqua® No. VF-35E

Leverages the characteristics of the pure graphite sealing material VALQUAFOIL™.

Features:
- Excellent heat resistance.
- Very small changes in physical properties under high temperatures .
- Low stress relaxation.
- Chemical resistance.

7TH
81

Temperature	Pressure
-240 to 400°C / -400 to 752°F	Max 5 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), corrosive liquids, liquefied gas, cryogenic fluid
Unsuitable fluids: Not applicable to oxidizing acids such as hot concentrated sulfuric acid and concentrated nitric acid.
Applications: Pipe flanges, valve bonnets, covers, various industries

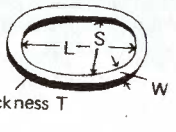
The ring molded article supports JPI (ASME / ANSI).

Unit Per Sht

CODE	Thick (mm)	Size	CODE	Thick (mm)	Size
81 56 51	0.8	1,000 × 1,000	**81 56 53**	3.0	1,000 × 1,000
52	1.6				

Non-Asbestos Manhole Packings

Flat folded glass cloth with rubber lined manhole packing in the required manhole sizes. All sizes are made to order except for the standard sizes listed below. When ordering, specify the inside longer length (L), inside shorter length (S), width (W), and thickness (T).



How to order: CODE

Manhole packing, non-asbestos, INSIDE LONGER LENGTH, INSIDE SHORTER LENGTH, WIDTH and THICKNESS mm

Unit Per Pc.

CODE	Dimensions mm			
	Inside Length (L)	Inside Length (S)	Width (W)	Thick (T)
81 15 96	400	300	25.4	6.4
97	400	300	22.3	9.6
81 15 98	380	260	25.4	6.4
99	380	260	22.3	9.6

*Sizes not listed above are made to order.

Non-Asbestos Tombo Gasket Selection Charts

Fluid	Temperature °C	#1120	#1995	#1834R-GR
Water Hot Water Steam Salt Water (Brine)	100	○	○	○
	150	○	×	○
	200	○	×	○
	300	×	×	○
	400	×	×	○
	450	×	×	○

Fluid	Temperature °C	#1120	#1995	#1834R-GR
Gasoline Naphtha Kerosene Oil Gas LPG	100	○	○	○
	150	○	○	○
	200	○	×	○
	260	○	×	○
	300	×	×	○
	400	×	×	○
	450	×	×	○

Fluid	Temperature °C	#1120	#1995	#1834R-GR
Benzene Toluene xylene Organic Solutions	100	×	×	○
	150	×	×	○
	200	×	×	○
	260	×	×	○
	300	×	×	○
	400	×	×	○
	450	×	×	○

Fluid	Temperature °C	#1120	#1995	#1834R-GR
Air Exhaust Gas	100	○	○	○
	150	○	○	○
	200	○	×	○
	260	○	×	○
	300	×	×	○
	400	×	×	○
	500	×	×	×
	700	×	×	×

- This selection guide shows typical recommended gaskets for fluids, temperatures. Further details, please consult your local suppliers.
- Products listed in this guide are used in diverse locations and for numerous types of machinery and equipment, and actual conditions of use also differ extensively. Consequently, when using these products, we recommend that you implement verification tests under the actual conditions of use.

Type #1120 CLINSIL-Top
High temperature sheet gaskets
Main material: Expanded graphite, Aramid fibers, Rubber
Applicable standards: TA Luft (Clean air) approval, tested in accordance to VDI 2440 at 250°C.

Type #1995 CLINSIL-Brown
General purpose non-asbestos sheet gaskets
Main material: Inorganic fibers, Aramid fibers, Rubber
Applicable standard: Germanischer Lloyd Type Certificate No.44 059-06HH
API-6FA Approval Fire Safety : UK/ DOT, Rule 54 Appendix D
BAM Approved (130 bar/90°C)
TA Luft Approval

Type #1834R-GR GRASEAL Vortex Gasket
Semi-metallic gaskets (Spiral wound gasket)
Spiral wound gasket with graphite filler
Good sealing performance for high temperature / high pressure applications

Clutch Facing

Wire reinforced resin molded belt impregnated with heat and wear resistant synthetic resin and press molded. Various shapes and sizes are available so please specify all the necessary details when ordering or provide your supplier with a sample.

81 17 81	Clutch facing (To be specified with further details)	Pc.

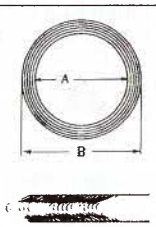
Spiral Wound Gaskets

Spirally wound gaskets are constructed of a continuous strip of preformed V shaped metal which is wound spirally with pure graphite and inorganic fibers as fillers instead of asbestos, which is excellent in gas sealing and heat resistance. The complex combination of a single metal ply and soft filler offers greater resiliency than any other metallic gasket and therefore provides good compensation for relaxation, temperature or pressure cycling, and shock or vibration.

Because there is a variety of sizes, shapes, and materials available such as copper, iron, stainless steel, monel, aluminium, and combinations of metal, pure graphite and inorganic fibers, please specify the details referring to the illustration below. A sample is acceptable for order made gaskets, but the standard shapes are illustrated below for your information.

Round Shape "R"

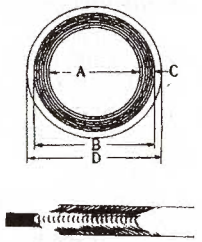
When ordering, specify PRESSURE, MATERIAL, OUTER DIAM (B), INNER DIAM (A), and THICKNESS.



(to be continued)

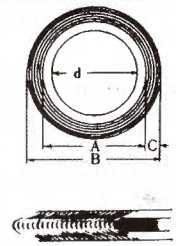
Round Shape with Outer Ring "OR"

When ordering, specify PRESSURE, MATERIAL, OUTER DIAM (D & B), INNER DIAM (A), and THICKNESS.



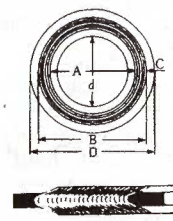
Round Shape with Inner Ring "IR"

When ordering, specify PRESSURE, MATERIAL, OUTER DIAM (B), INNER DIAM (d & A), and THICKNESS.



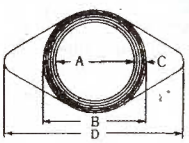
Round Shape with Inner & Outer Rings "IOR"

When ordering, specify PRESSURE, MATERIAL, OUTER DIAM (D & B), INNER DIAM (d & A), and THICKNESS.



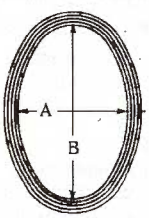
Hanger Shape

When ordering, specify PRESSURE, MATERIAL, LARGEST OUTSIDE SIZE (D), OUTER DIAM (B), INNER DIAM (A), and THICKNESS. Inner or outer ring if any:



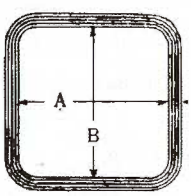
Oval Shape

When ordering, specify PRESSURE, MATERIAL, INNER & OUTER SIZES for A, INNER & OUTER SIZES for B, and THICKNESS.



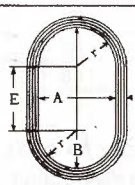
Square Shape

When ordering, specify PRESSURE, MATERIAL, INNER & OUTER SIZES for A, INNER & OUTER SIZES for B and THICKNESS.



Oblong Shape

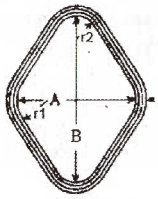
When ordering, specify PRESSURE, MATERIAL, INNER & OUTER SIZES for A, INNER & OUTER SIZES for B, RADIUS for r, LENGTH for E, and THICKNESS.



(to be continued)

Diamond Shape

When ordering, specify PRESSURE, MATERIAL, INNER & OUTER SIZES for A, INNER & OUTER SIZES for B, RADIUS for r1 & r2, and THICKNESS.



81 18 01	Gasket, wound, spiral, round shape "R", PRESSURE, MATERIAL OUTER DIAM, INNER DIAM, THICKNESS	Pc.

Non-Asbestos Spiral Wound Gasket

Manufacturing ranges:

(mm)

Gasket Thickness	Manufacturing ranges Inside Diameter
4.5	10 to 3,000

Unit Per Pc.

Valqua® No.	Type	
*** 0 Series (for example 6590 series)	R	Basic
*** 1 Series (for example 6591 series)	OR	With Outer Ring
*** 2 Series (for example 6592 series)	IR	With Inner Ring
*** 6 Series (for example 6596 series)	IOR	With Inner & Outer Ring

Applications: Pipe flanges, tanks, valve bonnets and other equipment

BLACKTIGHT™
VALQUA® No. 6590 Series

These gaskets are composed of pure graphite (expanded graphite) as filler material.

Features:
- Reducing retightening frequency.
- Excellent air tightness.
- Excellent sealing properties at very low temperatures.

Temperature	Pressure
-270 to 450°C / -454 to 842°F	Max 30.0 MPa

Suitable fluids: General fluids (water, oil, etc.), high temperature & high pressure steam, liquefied gas, cryogenic fluid

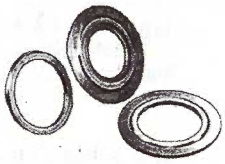
Unit Per Pc.

CODE	Valqua® No.	Type	
81 18 03	6590	R	Basic
04	6591	OR	With outer ring
05	6592	IR	With inner ring
06	6596	IOR	With inner & outer ring

How to order: 81-18-XX

Gasket, wound, spiral, SHAPE, PRESSURE, MATERIAL (INNER RING, HOOP, OUTER RING), OUTER DIAM, INNER DIAM, THICKNESS

WHITETIGHT™
VALQUA® No. 7590 Series



These gaskets are composed of PTFE tape as a filler material.

Features:
- Excellent corrosion resistance.
- Excellent air tightness.

Temperature	Pressure
-260 to 300°C / -436 to 572°F	Max 20.0 MPa

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, corrosive liquids, liquefied gas, gas (oxygen, etc.)

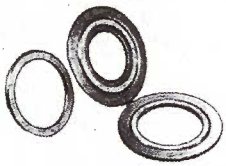
Unit Per Pc.

CODE	Valqua® No.	Type	
81 18 07	7590	R	Basic
08	7592	IR	With inner ring
09	7596	IOR	With inner & outer ring

How to order: 81-18-XX

Gasket, wound, spiral, SHAPE, PRESSURE, MATERIAL (INNER RING, HOOP, OUTER RING), OUTER DIAM, INNER DIAM, THICKNESS

CLEANTIGHT™
VALQUA® No. 8590 Series



These gaskets are composed of non-asbestos-based inorganic paper tape as a filler material.

Features:
- Excellent heat resistance

Temperature	Pressure
-200 to 500°C / -328 to 932°F	Max 30.0 MPa

Suitable fluids: General fluids (water, steam, oil etc.), high-temperature & high-pressure fluids, liquefied gas

Unit Per Pc.

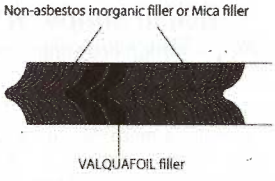
CODE	Valqua® No.	Type	
81 18 31	8590	R	Basic
32	8591	OR	With outer ring
33	8592	IR	With inner ring
34	8596	IOR	With inner & outer ring

How to order: 81-18-XX

Gasket, wound, spiral, SHAPE, PRESSURE, MATERIAL (INNER RING, HOOP, OUTER RING), OUTER DIAM, INNER DIAM, THICKNESS

Spiral Wound Gaskets with Lines

Lined CLEANTIGHT™
VALQUA® No. 8590L Series



These gaskets are composed of VALQUAFOIL™ (expanded graphite sealing material) filler that has been wound in the middle of inorganic fillers.

Features:
- Excellent heat resistance.
- Airtight.

Temperature	Pressure
-200 to 600°C / -328 to 1,112°F	Max 30.0 MPa

Unit Per Pc.

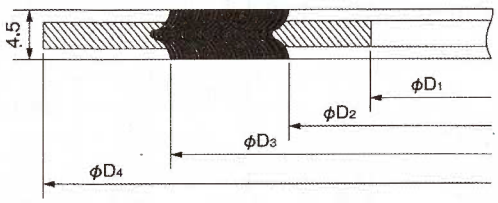
CODE	Valqua® No.	Type	
81 18 35	8590L	R	Basic
36	8591L	OR	With outer ring
37	8592L	IR	With inner ring
38	8596L	IOR	With inner & outer ring

How to order: 81-18-XX

Gasket, wound, spiral, SHAPE, PRESSURE, MATERIAL (INNER RING, HOOP, OUTER RING), OUTER DIAM, INNER DIAM, THICKNESS

JIS Standard Gasket Size

IR ID = Inner Ring Inner Diameter
OR OD = Outer Ring Outer Diameter



10K (mm)

Nominal Diameter	IR ID	Main Gasket ID	Main Gasket OD	OR OD
	D1	D2	D3	D4
10A	18	24	37	52
15A	22	28	41	57
20A	28	34	47	62
25A	34	40	53	74
32A	43	51	67	84
40A	49	57	73	89
50A	61	69	89	104
65A	77	87	107	124
80A	91	101	118	134
90A	102	112	130	144
100A	115	127	143	159
125A	141	153	173	190
150A	170	182	203	220
175A	193	209	229	245
200A	220	236	254	270
225A	244	256	272	290
250A	271	287	310	332
300A	321	337	357	377
350A	359	375	400	422
400A	409	429	461	484
450A	461	486	518	539
500A	511	536	568	594
550A	564	589	621	650
600A	615	640	672	700

16K/20K (mm)

Nominal Diameter	IR ID	Main Gasket ID	Main Gasket OD	OR OD
	D1	D2	D3	D4
10A	18	24	37	52
15A	22	28	41	57
20A	28	34	47	62
25A	34	40	53	74
32A	43	51	67	84
40A	49	57	73	89
50A	61	69	89	104
65A	77	87	107	124
80A	89	99	119	140
90A	102	114	139	150
100A	115	127	152	165
125A	140	152	177	202
150A	166	182	214	237
175A	-	-	-	-
200A	217	233	265	282
225A	-	-	-	-
250A	268	288	328	354
300A	319	339	379	404
350A	356	376	416	450
400A	407	432	482	508
450A	458	483	533	573
500A	508	533	583	628
550A	559	584	634	684
600A	610	635	685	734

30K (mm)

Nominal Diameter	IR ID	Main Gasket ID	Main Gasket OD	OR OD
	D1	D2	D3	D4
10A	18	24	37	59
15A	22	28	41	64
20A	28	34	47	69
25A	34	40	53	79
32A	43	51	67	89
40A	49	57	73	100
50A	61	69	89	114
65A	68	78	98	140
80A	80	90	110	150
90A	92	102	127	162
100A	104	116	141	172
125A	128	140	165	207
150A	153	165	197	249
175A	-	-	-	-
200A	202	218	250	294
225A	-	-	-	-
250A	251	271	311	360
300A	300	320	360	418
350A	336	356	396	463
400A	383	403	453	524

40K (mm)

Nominal Diameter	IR ID	Main Gasket ID	Main Gasket OD	OR OD
	D1	D2	D3	D4
10A	15	21	34	59
15A	18	24	37	64
20A	23	29	42	69
25A	29	35	48	79
32A	38	44	60	89
40A	43	51	67	100
50A	55	63	79	114
65A	68	78	98	140
80A	80	90	110	150
90A	92	102	127	162
100A	104	116	141	182
125A	128	140	165	224
150A	153	165	197	265
175A	-	-	-	-
200A	202	218	250	315
225A	-	-	-	-
250A	251	271	311	378
300A	300	320	360	434
350A	336	356	396	479
400A	383	403	453	531

(to be continued)

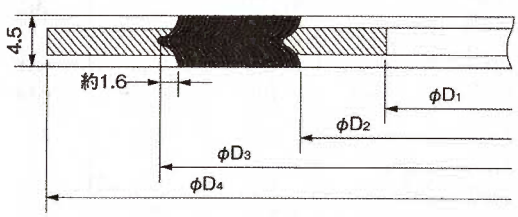
63K

(mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
10A	15	21	34	64
15A	18	24	37	69
20A	23	29	42	75
25A	29	35	48	80
32A	38	44	60	90
40A	43	51	67	107
50A	55	63	79	125
65A	68	78	98	152
80A	80	90	110	162
90A	92	102	127	179
100A	104	116	141	194
125A	128	140	165	235
150A	153	165	197	275
175A	-	-	-	-
200A	202	218	250	328
225A	-	-	-	-
250A	251	271	311	394
300A	300	320	360	446
350A	336	356	396	488
400A	383	403	453	545

ASME Standard Gasket Size

IR ID = Inner Ring Inner Diameter
OR OD = Outer Ring Outer Diameter



Class 150

(mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
1/2B	14.2	19.1	31.8	47.8
3/4B	20.6	25.4	39.6	57.2
1B	26.9	31.8	47.8	66.8
1-1/4B	38.1	47.8	60.5	76.2
1-1/2B	44.5	54.1	69.9	85.9
2B	55.6	69.9	85.9	104.9
2-1/2B	66.5	82.6	98.6	124.0
3B	81.0	101.6	120.7	136.7
4B	106.4	127.0	149.4	174.8
5B	131.8	155.7	177.8	196.9
6B	157.2	182.6	209.6	222.3
8B	215.9	233.4	263.7	279.4
10B	268.2	287.3	317.5	339.9
12B	317.5	339.9	374.7	409.7
14B	349.3	371.6	406.4	450.9
16B	400.1	422.4	463.6	514.4
18B	449.3	474.7	527.1	549.4
20B	500.1	525.5	577.9	606.6
24B	603.3	628.7	685.8	717.6

Class 300

(mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
1/2B	14.2	19.1	31.8	54.1
3/4B	20.6	25.4	39.6	66.8
1B	26.9	31.8	47.8	73.2
1-1/4B	38.1	47.8	60.5	82.6
1-1/2B	44.5	54.1	69.9	95.3
2B	55.6	69.9	85.9	111.3
2-1/2B	66.5	82.6	98.6	130.3
3B	81.0	101.6	120.7	149.4
4B	106.4	127.0	149.4	181.1
5B	131.8	155.7	177.8	215.9
6B	157.2	182.6	209.6	251.0
8B	215.9	233.4	263.7	308.1
10B	268.2	287.3	317.5	362.0
12B	317.5	339.9	374.7	422.4
14B	349.3	371.6	406.4	485.9
16B	400.1	422.4	463.6	539.8
18B	449.3	474.7	527.1	596.9
20B	500.1	525.5	577.9	654.1
24B	603.3	628.7	685.8	774.7

Class 400

(mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
1/2B	14.2	19.1	31.8	54.1
3/4B	20.6	25.4	39.6	66.8
1B	26.9	31.8	47.8	73.2
1-1/4B	38.1	47.8	60.5	82.6
1-1/2B	44.5	54.1	69.9	95.3
2B	55.6	69.9	85.9	111.3
2-1/2B	66.5	82.6	98.6	130.3
3B	81.0	101.6	120.7	149.4
4B	102.6	120.7	149.4	177.8
5B	128.3	147.6	177.8	212.9
6B	154.9	174.8	209.6	247.7
8B	205.7	225.6	263.7	304.8
10B	255.3	274.6	317.5	358.9
12B	307.3	327.2	374.7	419.1
14B	342.9	362.0	406.4	482.6
16B	389.9	412.8	463.6	536.7
18B	438.2	469.9	527.1	593.9
20B	489.0	520.7	577.9	647.7
24B	590.6	628.7	685.8	768.4

Class 600

(mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
1/2B	14.2	19.1	31.8	54.1
3/4B	20.6	25.4	39.6	66.8
1B	26.9	31.8	47.8	73.2
1-1/4B	38.1	47.8	60.5	82.6
1-1/2B	44.5	54.1	69.9	95.3
2B	55.6	69.9	85.9	111.3
2-1/2B	66.5	82.6	98.6	130.3
3B	81.0	101.6	120.7	149.4
4B	102.6	120.7	149.4	193.8
5B	128.3	147.6	177.8	241.3
6B	154.9	174.8	209.6	266.7
8B	205.7	225.6	263.7	320.8
10B	255.3	274.6	317.5	400.1
12B	307.3	327.2	374.7	457.2
14B	342.9	362.0	406.4	492.3
16B	389.9	412.8	463.6	565.2
18B	438.2	469.9	527.1	612.9
20B	489.0	520.7	577.9	682.8
24B	590.6	628.7	685.8	790.7

Class 900 (mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
1/2B	14.2	19.1	31.8	63.5
3/4B	20.6	25.4	39.6	69.9
1B	26.9	31.8	47.8	79.5
1-1/4B	33.3	39.6	60.5	88.9
1-1/2B	41.4	47.8	69.9	98.6
2B	52.3	58.7	85.9	143.0
2-1/2B	63.5	69.9	98.6	165.1
3B	78.7	95.3	120.7	168.4
4B	102.6	120.7	149.4	206.5
5B	128.3	147.6	177.8	247.7
6B	154.9	174.8	209.6	289.1
8B	196.9	222.3	257.3	358.9
10B	246.1	276.4	311.2	435.1
12B	292.1	323.9	368.3	498.6
14B	320.8	355.6	400.1	520.7
16B	374.7	412.8	457.2	574.8
18B	425.5	463.6	520.7	638.3
20B	482.6	520.7	571.5	698.5
24B	590.6	628.7	679.5	838.2

Class 1500 (mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
1/2B	14.2	19.1	31.8	63.5
3/4B	20.6	25.4	39.6	69.9
1B	26.9	31.8	47.8	79.5
1-1/4B	33.3	39.6	60.5	88.9
1-1/2B	41.4	47.8	69.9	98.6
2B	52.3	58.7	85.9	143.0
2-1/2B	63.5	69.9	98.6	165.1
3B	78.7	92.2	120.7	174.8
4B	97.8	117.6	149.4	209.6
5B	124.5	143.0	177.8	254.0
6B	147.3	171.5	209.6	282.7
8B	196.9	215.9	257.3	352.6
10B	246.1	266.7	311.2	435.1
12B	292.1	323.9	368.3	520.7
14B	320.8	362.0	400.1	577.9
16B	368.3	406.4	457.2	641.4
18B	425.5	463.6	520.7	704.9
20B	476.3	514.4	571.5	755.7
24B	577.9	616.0	679.5	901.7

Class 2500 (mm)

Nominal Diameter	IR ID	Main Gasket		OR OD
		ID	OD	
	D1	D2	D3	D4
1/2B	14.2	19.1	31.8	69.9
3/4B	20.6	25.4	39.6	76.2
1B	26.9	31.8	47.8	85.9
1-1/4B	33.3	39.6	60.5	104.9
1-1/2B	41.4	47.8	69.9	117.6
2B	52.3	58.7	85.9	146.1
2-1/2B	63.5	69.9	98.6	168.4
3B	78.7	92.2	120.7	196.9
4B	97.8	117.6	149.4	235.0
5B	124.5	143.0	177.8	279.4
6B	147.3	171.5	209.6	317.5
8B	196.9	215.9	257.3	387.4
10B	246.1	270.0	311.2	476.3
12B	292.1	317.5	368.3	549.4

Semi-Metallic Gaskets

For high temperatures and pressures or extremely corrosive conditions such as with liquid or gas service flanges. Made of steel, copper, aluminium, or stainless steel. Double jacket, single jacket, double shell and double jacket shell types are available. Because there are so many types it may be necessary to provide a sample with identification of the material.

81 19 01	Semi-metallic gasket, (specification required)	Pc.

For Reference

Material	Service
Low carbon steel (SS41)	530°C (986°F), 2.0 - 4.9 MPa (20 - 50 kgf/cm² or 280 - 700 psi) Steam, lube oil, light oil, organic solvents, L.P.G., air, general gas ammonia, dilute solution, alcohol
Copper (Cu)	400°C (752°F), 2.0 - 4.9 MPa (20 - 50 kgf/cm² or 280 - 700 psi) Steam, water, sea water, air, general gas, lube oil, light oil, L.P.G.
Aluminium (Al)	400°C (752°F), 2.0 - 4.9 MPa (20 - 50 kgf/cm² or 280 - 700 psi) Steam, lube oil, L.P.G. ammonia, petroleum, carbon, dioxide gas, freon, sea water, formaldehyde
Stainless steel (SUS403) (SUS304) (SUS316)	530°C (986°F), 2.0 - 4.9 MPa (20 - 50 kgf/cm² (280 - 700 psi) Steam, oil, organic solvents, lube oil, sea water, ammonia, caustic soda

VALFLON™ Envelope Gaskets

VALQUA® No. N7030 series

VALFLON™ (PTFE) Envelope Gasket using Compressed Non-Asbestos Fiber Sheet and Flexible Graphite in the core.

Feature:
- Excellent chemical resistance

Type	Temperature	Pressure (MPa)	Standard thickness (mm)
N	-100 to 150°C -148 to 302°F	Max 1.5	2.8
S	-100 to 200°C -148 to 392°F	Max 2.0	3.2
H	-100 to 260°C -148 to 500°F	Max 3.0	4.0

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, corrosive liquids, liquefied gas

Applications: Pipe flanges, tanks, valve bonnets, and other equipment used in various industries

The ring molded article supports JPI (ASME / ANSI).

Type of VALFLON™ Envelope Gasket.

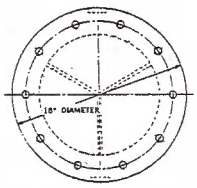
CODE	VALQUA® No.	Type
81 19 03	N7030 (N) Compressed non-asbestos fiber sheet inserted between VALFLON™ (PTFE) jacket	VALFLON™(PTFE) Jacket Compressed Non-Asbestos Fiber Sheet **N type**
81 19 04	N7030 (S) Compressed non-asbestos fiber sheet inserted between VALFLON™ (PTFE) jacket and non-asbestos felt sheet	VALFLON™(PTFE) Jacket Non-Asbestos Felt Sheet Compressed Non-Asbestos Fiber Sheet **S type**
81 19 05	N7030 (H) Thin stainless steel sheet inserted between VALFLON™ (PTFE) jacket, non-asbestos felt sheet and expanded graphite sheet	VALFLON™(PTFE) Jacket Non-Asbestos Felt Sheet Thin stainless steel sheet VALQUAFOIL™ (expanded graphite) Sheet **H type**

How to order: CODE

Gasket, envelope Valflon, VALQUA® N7030 (N) or (S) or (H), JIS, PRESSURE, NOMINAL DIAMETER

7TH 81

Hole Gaskets for Deck Opening



For deck opening holes on tankers. The available materials are non-asbestos, oil, vegetable oil, or oil-resistant rubber gaskets.

Guide of How to order:

When ordering, please specify the following points :

CODE.....	**81 20 01**
Name.....	Hole gasket for deck opening
Material	Oil resist rubber
Size O.D. × I.D. × Th.....	460 × 320 × 3.2 mm
Bolt Hole Circle×Diam×No...	390×22 mm × 10 holes

Flange Gaskets

Two types of gaskets are available.

Ring gaskets which cover from the face of the flange to the inside edge of the bolts, and full face gaskets which cover the whole face of the flange including the bolt holes. These gaskets are made of either non-asbestos oil or vegetable oil. When ordering, specify the type of gasket (ring or full face), the pipe size and material, and the bolt hole number and size if required.

Guide of How to order

CODE **81 21 01**

Name .... Flange gasket

Type ..... Full face
Pipe Size 100A
Material .....Vegetable oil

Full Face Flange Gaskets – Copper Wrapped

Non-Asbestos

5 kgf/cm² - Thick 2.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 18 11	40A	49 × 120	**81 18 16**	100A	115 × 200
12	50A	61 × 130	**17**	125A	141 × 235
13	65A	84 × 155	**18**	150A	167 × 265
14	80A	90 × 180	**19**	175A	192 × 300
15	90A	102 × 190	**20**	200A	218 × 320

10 kgf/cm² - Thick 2.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 18 21	40A	49 × 140	**81 18 26**	100A	115 × 210
22	50A	61 × 155	**27**	125A	141 × 250
23	65A	84 × 175	**28**	150A	167 × 280
24	80A	90 × 185	**29**	175A	192 × 305
25	90A	102 × 195	**30**	200A	218 × 330

Soft Flange Gaskets

Non-Asbestos

Valqua V6500

Raised Face

5 kgf/cm² - Thick 1.5 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 18 51	15A	22 × 50	**81 18 56**	50A	61 × 93
52	20A	28 × 55	**57**	65A	84 × 118
53	25A	35 × 65	**58**	80A	90 × 129
54	32A	43 × 78	**59**	100A	115 × 149
55	40A	49 × 83	**60**	125A	141 × 184

10 kgf/cm² - Thick 1.5 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 18 61	15A	22 × 58	**81 18 66**	50A	61 × 104
62	20A	28 × 63	**67**	65A	84 × 124
63	25A	35 × 74	**68**	80A	90 × 134
64	32A	43 × 84	**69**	100A	115 × 159
65	40A	49 × 89	**70**	125A	141 × 190

Full Face

5 kgf/cm² - Thick 1.5 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 18 71	15A	22 × 80	**81 18 76**	50A	61 × 130
72	20A	28 × 85	**77**	65A	84 × 155
73	25A	35 × 95	**78**	80A	90 × 180
74	32A	43 × 115	**79**	100A	115 × 200
75	40A	49 × 120	**80**	125A	141 × 235

10 kgf/cm² - Thick 1.5 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 18 81	15A	22 × 95	**81 18 86**	50A	61 × 155
82	20A	28 × 100	**87**	65A	84 × 175
83	25A	35 × 125	**88**	80A	90 × 185
84	32A	43 × 135	**89**	100A	115 × 210
85	40A	49 × 140	**90**	125A	141 × 250

Flange Soft Gaskets

Non-Asbestos

Victor VC610

Raised Face

5 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 19 11	15A	22 × 50	**81 19 18**	80A	90 × 129
12	20A	28 × 55	**19**	100A	115 × 149
13	25A	35 × 65	**20**	125A	141 × 184
14	32A	43 × 78	**21**	150A	167 × 214
15	40A	49 × 83	**22**	200A	218 × 260
81 19 16	50A	61 × 93	**81 19 23**	250A	270 × 325
17	65A	84 × 118	**24**	300A	321 × 370

10 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 19 26	15A	22 × 58	**81 19 33**	80A	90 × 134
27	20A	28 × 63	**34**	100A	115 × 159
28	25A	35 × 74	**35**	125A	141 × 190
29	32A	43 × 84	**36**	150A	167 × 220
30	40A	49 × 89	**37**	200A	218 × 270
81 19 31	50A	61 × 104	**81 19 38**	250A	270 × 333
32	65A	84 × 124	**39**	300A	321 × 378

Full Face

5 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 19 41	15A	22 × 80	**81 19 48**	80A	90 × 180
42	20A	28 × 85	**49**	100A	115 × 200
43	25A	35 × 95	**50**	125A	141 × 235
44	32A	43 × 115	**51**	150A	167 × 265
45	40A	49 × 120	**52**	200A	218 × 320
81 19 46	50A	61 × 130	**81 19 53**	250A	270 × 385
47	65A	84 × 155	**54**	300A	321 × 430

10 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 19 56	15A	22 × 95	**81 19 63**	80A	90 × 185
57	20A	28 × 100	**64**	100A	115 × 210
58	25A	35 × 125	**65**	125A	141 × 250
59	32A	43 × 135	**66**	150A	167 × 280
60	40A	49 × 140	**67**	200A	218 × 330
81 19 61	50A	61 × 155	**81 19 68**	250A	270 × 400
62	65A	84 × 175	**69**	300A	321 × 445

Soft Flange Gaskets

EPDM (Ethylene-Propylene-Diene Methylene Linkage)

Raised Face

5 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 19 71	15A	22 × 50	**81 19 77**	65A	84 × 118
72	20A	28 × 55	**78**	80A	90 × 129
73	25A	35 × 65	**79**	100A	115 × 149
74	32A	43 × 78	**80**	125A	141 × 184
75	40A	49 × 83	**81**	150A	167 × 214
81 19 76	50A	61 × 93	**81 19 82**	200A	218 × 260

10 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 19 86	15A	22 × 58	**81 19 92**	65A	84 × 124
87	20A	28 × 63	**93**	80A	90 × 134
88	25A	35 × 74	**94**	100A	115 × 159
89	32A	43 × 84	**95**	125A	141 × 190
90	40A	49 × 89	**96**	150A	167 × 220
81 19 91	50A	61 × 104	**81 19 97**	200A	218 × 270

Full Face

5 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 20 11	15A	22 × 80	**81 20 17**	65A	84 × 155
12	20A	28 × 85	**18**	80A	90 × 180
13	25A	35 × 95	**19**	100A	115 × 200
14	32A	43 × 115	**20**	125A	141 × 235
15	40A	49 × 120	**21**	150A	167 × 265
81 20 16	50A	61 × 130	**81 20 22**	200A	218 × 320

10 kgf/cm² - Thick 3.0 mm

Unit Per Pc.

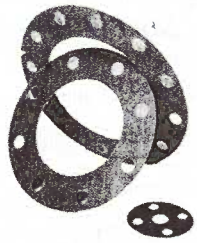
CODE	Nominal Size	I.D. × O.D. mm	CODE	Nominal Size	I.D. × O.D. mm
81 20 26	15A	22 × 95	**81 20 32**	65A	84 × 175
27	20A	28 × 100	**33**	80A	90 × 185
28	25A	35 × 125	**34**	100A	115 × 210
29	32A	43 × 135	**35**	125A	141 × 250
30	40A	49 × 140	**36**	150A	167 × 280
81 20 31	50A	61 × 155	**81 20 37**	200A	218 × 330

Application Table for Flange Gasket

	Water	Steam	Oil	Heavy Oil	Gas/ Air	Strong Acid	Weak Acid / Weak Alkali
Victor VC610	○ 100°C	×	○ 120°C	×	○ 100°C	×	○ 100°C
Valqua V6500	○ 100°C	×	○ 120°C	×	○ 100°C	×	○ 100°C
EPDM	○ 100°C	○ 120°C	×	×	Δ	×	○ 120°C

Gasket Rings

Natural Nitrile Rubber with Boltholes



Application: Hot and cold water and mild chemicals. Maximum temperature : 400°C. Maximum pressure : -0 bar 0°C - 100 bar. Maximum pressure and temperature depends on the thickness of the sheet and may not appear at the same time. All the jointings are asbestos free. Pressure : PN16. Temperature : 150°C. Thickness : 2 mm.

Full Face

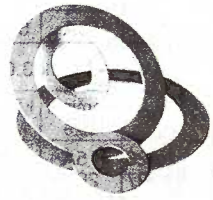
Unit Per Pc.

CODE	Nom Size	I.D. x O.D. mm	Bolt Hole (mm)		
			Pitch	No.	Hole
81 20 41	15	22 x 95	75	4	14
42	20	28 x 105	75	4	14
43	25	35 x 115	85	4	14
44	32	43 x 140	100	4	18
45	40	49 x 150	110	4	18
81 20 46	50	61 x 165	125	4	18
47	65	77 x 185	145	4	18
48	80	90 x 200	160	8	18
49	100	115 x 220	180	8	18
50	125	141 x 250	210	8	18
81 20 51	150	169 x 285	240	8	22
52	200	220 x 340	295	12	22
53	250	274 x 405	355	12	26
54	-	310 x 460	390	10	22
55	300	325 x 460	410	12	26
81 20 56	350	368 x 520	470	16	26
57	400	420 x 580	525	16	30
58	450	470 x 615	565	16	27
59	500	520 x 715	650	20	33
60	600	620 x 840	770	20	36

Name of Mfr. : Alligator

Gasket Rings

Natural Nitrile Rubber without Boltholes



Maximum temperature : 400°C. Maximum pressure : -0 bar 0°C - 100 bar. Maximum pressure and temperature depends on the thickness of the sheet and may not appear at the same time. All the jointings are asbestos free. Pressure : PN16.

Application: Hot and cold water and mild chemicals.
Raised Face, Thickness : 2 mm. Temperature : 150°C.

Unit Per Pc.

CODE	Nom Size	I.D. x O.D. mm	CODE	Nom Size	I.D. x O.D. mm
81 20 61	350	368 x 445	**81 20 64**	500	520 x 618
62	400	420 x 497	**65**	600	620 x 735
63	450	470 x 557	**66**	650	670 x 750

Name of Mfr. : Alligator

Application : High pressure steam
Raised Face, Thickness : 3 mm

Unit Per Pc.

CODE	Nom Size	I.D. x O.D. mm	CODE	Nom Size	I.D. x O.D. mm
81 20 67	350	368 x 445	**81 20 70**	500	520 x 618
68	400	420 x 497	**71**	600	620 x 735
69	450	470 x 557			

Name of Mfr. : Alligator

Graphited Gasket Rings

Without Boltholes

An asbestos free jointing with both sides graphite. Application : High pressure. Maximum temperature : 400°C. Pressure : PN16. Maximum pressure : - 0 bar 0°C - 100 bar. Maximum pressure and temperature depends on the thickness of the sheet and may not appear at the same time. Thickness : 2 mm.

Unit Per Pc.

CODE	Nom Size	I.D. x O.D. mm	CODE	Nom Size	I.D. x O.D. mm
81 20 72	15	22 x 50	**81 20 78**	80	90 x 142
73	20	28 x 60	**79**	100	115 x 162
74	32	43 x 82	**80**	125	141 x 192
75	40	49 x 92	**81**	150	169 x 218
76	50	61 x 107	**82**	200	220 x 273
81 20 77	65	77 x 127			

Name of Mfr. : Alligator – Model PA700

Carbon Cloth Gloves

These carbon cloth gloves provide a protective barrier against fire, heat, etc. The fist is manufactured with a separated thumb. Overall length is 350 mm.

81 15 86	Gloves, carbon cloth, two divided	Pr.

Ceramic Spinning & Textile

Made of 85 % ceramic fiber and 15 % organic fiber. Ceramic fiber is made from Alumina and Silica. The maximum temperature breakdown per reinforcement used is as follows.

Reinforcement	Glass	Stainless Wire	Nickel Chrome
Temperature	400°C	800°C	1,100°C

Ceramic Cloths

How to order: CODE

Ceramic cloth, KIND of REINFORCEMENT, THICKNESS x WIDTH mm

Unit Per Mtr

CODE	Reinforcement	Size mm		Maximum Temperature
		Thick	Width	
81 16 01	Glass	2	1,000	400°C
02		3	1,000	
81 16 03	Stainless Wire	2	1,000	800°C
04		3	1,000	
81 16 05	Nickel Chrome Wire	2	1,000	1,100°C
06		3	1,000	

Ceramic Yarn

How to order: CODE

Ceramic yarn, KIND of REINFORCEMENT, DIAM mm

Unit Per Rol.

CODE	Reinforcement	Actual Dia. mm	Weight g/m	Weight /roll	Maximum Temperature
81 16 11	Glass	1.0	1.10	1 kgs	400°C
12		1.5	1.64	1 kgs	
81 16 13	Stainless Wire	1.0	1.10	1 kgs	800°C
14		1.5	1.64	1 kgs	
81 16 15	Nickel Chrome	1.0	1.12	1 kgs	1,100°C
16	Wire	1.5	1.66	1 kgs	

Ceramic Yarn Rope

Unit Per Rol.

CODE	Diameter mm	Length Mtr / roll	Weight kgs / roll
81 16 21	4.0	150	1.0
22	6.5	58	1.0
23	9.6	27	1.0
24	12.5	30	1.9
25	16.0	30	3.0
81 16 26	19.0	30	4.1
27	25.0	30	7.1
28	30.0	15	5.1
29	40.0	15	9.1
30	50.0	15	14.0

Ceramic Twist Rope

Unit Per Rol.

CODE	Diameter mm	Length Mtr / roll	Weight kgs / roll
81 16 31	9.6	30	1.2
32	12.5	30	2.0
33	16.0	30	3.3
34	19.0	30	4.4
35	25.0	30	7.7
81 16 36	30.0	15	5.5
37	40.0	15	10.2
38	50.0	15	15.3

Ceramic Soft Rope

How to order: CODE

Ceramic soft rope, KIND of WRAPPING, DIAM mm

Unit Per Rol.

CODE	Diameter mm	Length Mtr / roll	Weight kgs / roll
Wrapped by Glass Yarn			
81 16 41	15	30	2.5
42	20	30	3.6
43	25	30	4.5
44	30	30	6.2
45	50	15	8.4
Wrapped by Stainless Wire			
81 16 46	15	30	2.1
47	20	30	3.3
48	25	30	4.4
49	30	30	6.1
50	50	15	8.1

Ceramic Ribbons

How to order: CODE

Ceramic ribbon, KIND of REINFORCEMENT, THICKNESS x WIDTH mm

Unit Per Rol.

CODE	Reinforcement	Size T mm x W mm x L mtr	Weight kgs / roll	Maximum Temperature
81 16 51	Glass	2 x 25 x 30	0.9	400°C
52		2 x 50 x 30	1.8	
53		2 x 75 x 30	2.7	
54		3 x 25 x 30	1.3	
55		3 x 50 x 30	2.6	
56		3 x 75 x 30	3.9	
81 16 57	Stainless Wire	2 x 25 x 30	0.9	800°C
58		2 x 50 x 30	1.8	
59		2 x 75 x 30	2.7	
60		3 x 25 x 30	1.3	
61		3 x 50 x 30	2.6	
62		3 x 75 x 30	3.9	
81 16 63	Nickel chrome wire	2 x 25 x 30	0.9	1,100°C
64		2 x 50 x 30	1.8	
65		2 x 75 x 30	2.7	
66		3 x 25 x 30	1.3	
67		3 x 50 x 30	2.6	
68		3 x 75 x 30	3.9	

Ceramic Fiber Blanket Sheets

Ceramic fiber blanket made from the purest of raw materials. Which are electromelted, air-brown at high speed and fiberized. Light in weight and soft to the touch, ceramic fiber blanket has various application with excellent refractory and insulating properties. Suitable for sealing, filtering, and reinforcing of various composites.

Typical Application:

Furnace linings, heat seals, packing, fire protection, noise reduction, filter material

General Properties

Max. Service Temperature	1,260°C (2,300°F)
Melting Point	1,760°C
Fiber Diameter (μm)	2.8
Fiber Length (mm)	250
Specific Gravity	2.6
Chemical Analysis	Al_2O_3 : 47.1% SiO_2 : 52.3%

Unit Per Sht

CODE	Size	
	Thick	W x L
81 16 71	6	600 x 7,200
72	12.5	600 x 7,200
73	25	600 x 7,200
74	30	600 x 3,600

Textile Products

Ceramic Fiber Textile

VALQUA® No. 105SN (Smoke Prevention Treated Cloth)

Ceramic fiber textile is made of smoke - prevention treated ceramic fibers.

Features:
- Excellent heat resistance and fire resistance.
- Low heat conductivity and excellent heat insulation properties.
- High flexibility and excellent workability.
- Excellent chemical stability.

Color tone	Weave	Reinforcing material	Max. service temperature	Ignition loss
Liver	Plain weave	Stainless steel wire	1,260°C / 2,300°F	< 10 %

Application:
High-temperature curtains, various high-temperature heat insulating materials, protectors against weld sparks and the like

Unit Per Rol.

CODE	Size		CODE	Size	
	Thick × Width (mm)	Length (m)		Thick × Width (mm)	Length (m)
81 16 81	1.8 × 25	30	**81 16 82**	2.7 × 25	30

Glass Fibre Spinning & Textiles

Made with glass fibre and organic fibre spun to staple yarn.

Glass Cloths

Unit Per Mtr

CODE	Thickness mm	Width mm	Weight (g/m^2)
81 17 01	1.3	1,000	850
02	1.7	1,000	1,000
03	3.0	1,000	2,000

Glass Tapes

Unit Per Rol.

CODE	Thickness mm	Width mm	Lenght mtr	Weight kgs/roll
81 17 10	1.7	38	30	1.1
81 17 11	1.3	50	30	1.2
12	1.7			1.5
13	3.0			3.0
81 17 14	1.7	75	30	2.5
81 17 15	1.7	100	30	3.2

Glass Duct Packings

Made with glass fiber cloth and tape for use as duct packing. With holes of 100 mm pitch and one side paper seal. Packing without holes may be supplied upon request.

Unit per Rol.

CODE	Thickness x Width x Length mm mm mtr	Weight kgs / roll
81 17 21	1.7 x 25 x 30	0.7
22	1.7 x 32 x 30	0.8
23	1.7 x 38 x 30	0.9
81 17 24	3.0 x 25 x 15	0.6
25	3.0 x 32 x 15	0.7
26	3.0 x 38 x 15	0.8

Glass Wool Mats

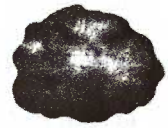
Felt type made by a needle punch method without using any adhesive binder.

Unit Per Rol.

CODE	Thickness × Width × Length mm mm mm	Weight g/m^2
81 17 31	3 × 1,000 × 30	300
32	5 × 1,000 × 30	500
33	6 × 1,000 × 25	600
34	8 × 1,000 × 20	800
35	10 × 1,000 × 20	1,000
81 17 36	15 × 1,000 × 10	2,000
37	20 × 1,000 × 10	3,000

Glass Wool

Made from yarn with the process of making glass wool mat by a needle punch method. Maximum temperature : 600°C.

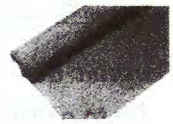


81 17 41	Glass Wool	kgs

Carbonized Fibre Spinning & Textiles

Carbon Cloths

Made from a chemical called PAN (Polyacrylo Nitril) by special heat treatment. It is very flexible and has excellent heat resistance.



Unit Per Rol.

CODE	Thickness (mm) × Width (mm) × Length (mm)
81 17 51	1.0 × 1,000 × 30
52	2.0 × 1,000 × 30

Carbon Yarns

Unit per Rol.

CODE	Diameter mm	Weight kgs / roll
81 17 61	9.5	1.0
62	16.0	2.5
63	22.0	2.5

Carbon Tapes

Unit Per Rol.

CODE	Thickness (mm) × Width (mm) × Length (mm)
81 17 71	1.0 × 25 × 30
72	1.0 × 50 × 30
73	1.0 × 75 × 30
81 17 74	2.0 × 25 × 30
75	2.0 × 50 × 30
76	2.0 × 75 × 30

Non-asbestos Brake Linings

High quality lining made of special non asbestos heat-resistant tightly woven fabric, brass wire reinforced, impregnated with oil-resistant, wear-proof and heat resistant synthetic resin, finished to prescribed size of roll, generally from 5 to 25 mm thick, 25 mm to 300 mm width and 20 mtr long.

Application :
For large capacity / floating winch / crane, windlass, heavy industrial machines, dredger.

Asbestos Free #1350-WS (from FB Industrial)
A tough-heavy duty asbestos zero material with a high degree of flexibility & long life. Developed for use of resistance to heat, oil, abrasion and withdurability, and has stable coefficient of friction for a long period.

Asbestos Free #1350-HB (from FB Industrial)
Grinded the both surface of #1350-WS, and impregnated again with heat-resistance special synthetic resin binder, and then finished to be dried up completely. Applicable for wide range of breaking and keeping for rotating objection.

Asbestos Free Uni Tex No.8000 (from Wakasugi)
Service: For heavy duty brake lining such as windlass and winches.
Material: Woven brake lining with recent non-asbestos fibres and brass wire, and treated with special chemicals.

81 16 76	Brake lining, non-asbestos, SIZE, THICKNESS × WIDTH × LENGTH	Mtr

Metal-filled Epoxies

Loctite® Aluminium Liquid

Aluminium filled, pourable and self-leveling, steel-filled epoxy. Ideal for casting or making molds. Works well to fill hard-to-reach areas. Can be machined when cured. Sets in 25 minutes. Typical applications include filling or leveling equipment, pouring molds, parts, and fixtures, making aluminium forming dies, casting aluminium parts.

CODE	Contents	Unit
81 21 76	1 lb	Set

Loctite® PC7254 (3475 Aluminum Putty)

Two-part epoxy system heavily reinforced with aluminium powder. Ideal for repairing aluminium parts under typical dry service temperatures to +93°C (+200°F), or where aluminium finish is desired. Use in repairing aluminium castings, repairing worn aluminium parts, making models and jigs for holding odd shaped parts, making aluminium dies.

CODE	Contents	Unit
81 21 77	1 lb	Set

Loctite® EA3476 (Stainless Steel Putty)

Stainless steel filled two-part epoxy. Repairs stainless steel parts on applications where a stainless steel finish is desired under typical dry service temperatures to +107°C (+225°F). Once hardened it can be machined, drilled, tapped or filed just like the original metal. Typical applications are renewing stainless steel pumps, rebuilding stainless steel shafts, resurfacing stainless steel equipment, repairing stainless steel castings, making stainless steel molds.

CODE	Contents	Unit
81 21 78	1 lb	Set

Loctite® EA3472 (3472 Steel Liquid)

Two-part pourable epoxy system heavily reinforced with steel powder for casting parts or filling voids under typical dry service temperatures to +107°C (+225°F). Once hardened it can be machined, drilled, tapped or filled just like steel. Rebuilds worn parts fast, reduces downtime, high steel content-cures to a steel-like finish, superior adhesion-form a solid bond to steel, cast iron, stainless steel, concrete, and clean and abraded bronze, copper, and aluminium.

CODE	Contents	Colour	Unit
81 21 79	1 lb	Grey	Set
81 21 80	4 lb		

Loctite® EA3471 (3471 Steel Putty)

Steel reinforced, two-part epoxy that cures to a metal-like finish and can be machined, drilled, tapped or filed under typical dry service temperatures to +107°C (+225°F). Typical applications are sealing cracked castings, tanks, vessels, and valves, patching non-structural defects in steel castings, making models and jigs for holding odds shaped parts, making metal dies, resurfacing worn air seals, and filling cavitated areas.

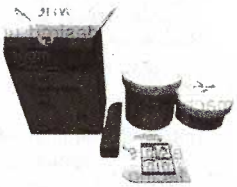
CODE	Contents	Colour	Unit
81 21 81	1 lb	Grey	Set
81 21 82	4 lb		

Loctite® PC7290 (3474 Wear Resistant Putty)

Ceramic fibers give this trowelable putty excellent wear and abrasion resistant properties under typical dry service temperature to +107°C (+225°F). Provides smooth, low friction finish for equipment exposed to wear, erosion, and cavitation. Typical applications are filling cavitation, providing protective coating in or on: pipes, pumps, elbows, transitions, butterfly valves, deflection plates, turbine blades, and tanks.

CODE	Contents	Colour	Unit
81 21 83	1 lb	Grey	Set
81 21 84	3 lb		

Loctite® (3478 Superior Metal)



Non-rusting, ferro-silicone-filled epoxy. Extremely high compressive strength and wear resistance. Ideal for rebuilding worn surfaces exposed to harsh environments. Can be machined, drilled and tapped in 6-8 hours. For final finish cuts, let the product cure for 24 hours and use carbide tooling. Spreadable putty. Sets in 20 minutes.

CODE	Contents	Colour	Unit
81 21 85	1 lb	Grey	Set
81 21 86	4 kgs		

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Loctite® (3463 Metal Magic Steel)

Steel epoxy in stick form. Cut off a section, knead and apply to leaking pipes or damaged equipment. Cures in 10 minutes. National Science Foundation (NSF) approved, standard 61.

CODE	Contents	Colour	Unit
81 21 90	50 grm	Grey	Pc.
81 21 91	113 grm		

Loctite® EA9480 (Underwater Repair Epoxy)

This putty-like materials is ideal for plumbing, irrigation, and marine applications because it is unaffected by chlorinated or salt water. Ideally suited for underwater repairs. Sets in 15 minutes.

CODE	Contents	Unit
81 21 93	113 grm	Pc.

Loctite® EA3473 (3473 Fast Set Steel Putty)

Set in 3 minutes, steel reinforced, two-part epoxy designed for making fast and curable repairs to a variety of metals. This product is typically used in applications with maximum temperature +93°C (200°F). Typical applications include fuel and gas tank holes, stripped threads, cracked battery cases, leaking storage tanks, and leaks on pipes and elbows.

CODE	Contents	Colour	Unit
81 21 99	1 lb	Grey	Set

General Repair Products

Loctite®

Unit Per Pc.

CODE	Contents	Type	Colour	Description
81 21 51 **52**	24 ml 50 ml	Loctite® Hysol® 3430 General Purpose Epoxy Adhesive	Ultra clear	General purpose, high-strength, ultra clear five-minute epoxy suitable for all applications requiring optically clear bond lines; toughened; water resistant; medium viscosity.
81 21 53	3 grm	Loctite® Double Bubble Epoxy Adhesive	Clear	Very fast (3 min.) multi purpose epoxy; ideal for small and quick repairs; easy to use: just burst plastic pouches and mix product.
81 21 54	50 ml	Loctite® 3295 Acrylic Adhesive	Green	General purpose 2K acrylic adhesive; good impact resistance, particularly suitable to bond metals, ceramics and plastics; convenient dispensing via static mixing nozzle from cartridge.
81 21 55 **81 21 56**	50 ml 300 ml	Loctite® SI 5970 Oil Resistant Silicone Sealant	Black	Versatile 1-component silicone with very good oil resistance; neutral curing.
81 21 57 **81 21 58**	1 kgs can 10 kgs pack with 40 grm bars	Terostat IX Sealing Butyl	Grey	Kneadable, slightly tacky sealing materials; used for sealing, spacing and sound insulation; very good water and aging resistance; can be overpainted.
81 21 59	30 ml	Terostat 81 Butyl Sealing Tape	Black	High quality sealing tape; high tackiness and self-welding; very good water and aging resistance; no corrosive constituents. Standard size: 20 mm x 2 mm x 30 m; other sizes upon request.

(to be continued)

Unit Per Pc.

CODE	Contents	Type	Colour	Description
81 21 60	310 ml	Terostat 2759 Sealing Butyl	Grey	High quality butyl rubber-based sealant; aging- and weather-resistant material; low solvent content.
81 21 61 **81 21 62** **81 21 63**	310 ml	Terostat MS 939 Elastic Bonding Adhesive	White Grey Black	General purpose elastic bonding adhesive; high strength, good elasticity.
81 21 64 **81 21 65**	50 ml 400 ml	Terostat MS 9399 Rapid Curing Elastic Bonding Adhesive	White	Universal and easy to handle 2K repair adhesive with high initial strength, short tack-free time and good elasticity.

Fix and Repair Tapes
TEROSON VR5080(Loctite® 5080)

Fabric reinforced emergency repair tape; easy to tear by hand; for repairing, reinforcing, fixing, sealing and protecting; pressure resistance up to 4 bar (pipe leakage).

Unit Per Rol.

CODE	Length	Colour
81 21 68	25 mtr	Grey
81 21 69	50 mtr	

Loctite® 5070 Pipe Repair Kits

No tools required, cures in 30 minutes. Easy-to-use pipe repair kit. Use for temporary and medium term repair of leaking pipes, and reinforcement of weak areas. Urethane impregnated fiberglass tape, activated by water, for reliable, temporary repairs of metal, plastic, and composite pipes. Kit contains Fixmaster Metal Magic Steel epoxy stick, urethane impregnated fiberglass tape, and gloves. Cures in 30 minutes. The maximum temperature resistance is +121°C(+250°F). Yellow color is available. Typical application include sealing cracked castings, tanks, vessels, valves and pipes. It also repairs pipe joints and reinforces tanks, vessels, valves, joints and elbows.

Unit Per Set

CODE	Width×Length mm	CODE	Width×Length mm
81 21 73	50 mm x 1,800 mm	**81 21 74**	100 mm x 3,600 mm

Loctite® 5075 Insulating and Sealing Wraps

Non-sticky, self fusing multipurpose wrap withstanding extreme conditions. When stretched and wrapped around a surface, it fuses to itself and instantly seals and protects the area against air leakage, water leakage, corrosion and scratches. This innovative wrap contains no adhesive.

Unit Per Rol.

CODE	Size	Colour
81 21 75	4.27 m (width: 2.5 cm)	Red

Loctite® Fixmaster® Flex80 Putty

Combine the properties of rubber and urethane in a trowelable repair compound. It is ideal for repairing metal, rubber, and urethane surfaces that are subject to wear and impact. Typical applications include pipe elbows, pump liners, pulleys, conveyor belts, rubber and urethane parts or sheeting, and couplings. This product is typically used in applications with an maximum temperature +82°C (+180°F).

CODE	Contents	Colour	Unit
81 21 87	1 lb	Black	Set
81 21 88	6 lb		

Loctite® EA 9017
(Poxy Pak Fast Cure Epoxy)

Two component, room temperature curing epoxy adhesive used for high strength, permanent bonding of metals, ceramics, concrete, wood, glass and most plastics. It will also fill or seal cracks and rebuild worn surfaces. Comes in a 1 oz. syringe with a built-in plunger for easy dispensing without equipment. This product can withstand temperatures up to +149°C (+300°F).

CODE	Content	Unit
81 21 98	1 oz	Pc.

ThistleBond Products
ThistleBond Repair Kits

Containing all the necessary materials and accessories which enable an epoxide resin/glass fabric ThistleBond Resin Laminate to be produced.

Engineering "A" Kit

This kit contains a specially selected range of high performance laminate, adhesive and engineering repair products.

Contents

2	Packs	ThistleBond Standard Resin & Hardener (20 units)
1	Unit	ThistleWrap Pipe Repair Tape
1	Tube	ThistleBond A & B Cement
1	Stick	ThistleBond PlasSteel Twist – Stick
1	Stick	ThistleBond PlasBronze Twist – Stick
1	Unit	ThistleBond Rapid Setting Super Metal Repair Paste
2	Rolls	Glass Tape 38 mm x 50 mtr
3	Pcs	Cloth (1 m²)
2	Pcs	Mat (0.5 m²)
1	Pc	Contour Cloth (225 mm x 275 mm)
3	Pcs	Linen scrim (0.5 m²)
1	Pc	Plastic Coated Paper (2 m²)
1	Roll	Cellophane
1	Roll	Masking Tape
1	Bag	Fairing Compound

(to be continued)

2	Bags	Sealer Filler
3	Pairs	Gloves
1	Pair	Scissors
3	Pcs	Brushes
10	Pcs	Stirring Tools
1	Pc	Trowelling Tool
1	Unit	Barrier Cream
1	Unit	Resin Removing Cream
1	Vol	Instruction Manual
1	Pc	Metal Box

Top Up "C" Kit

This kit contains a specially selected range of high performance laminate, adhesive and engineering repair products. Ideal for emergency repairs to leaking pipework.

Contents

5	Tins	ThistleBond Standard Resin & Hardener
1	Unit	ThistleWrap Pipe Repair Tape
1	Tube	ThistleBond A & B Cement
1	Stick	ThistleBond PlasSteel Twist – Stick
1	Unit	ThistleBond Rapid Setting Super Metal Repair Paste
1	Roll	Glass Tape 38 mm × 50 mtr
1	Pc	Cloth (1 m²)
1	Pc	Mat (0.5 m²)
1	Pc	Contour Cloth (225 mm × 275 mm)
1	Pc	Linen scrim (0.50 m²)
1	Roll	Cellophane
1	Roll	Masking Tape
1	Bag	Fairing Compound
1	Bag	Sealer Filler
1	Pair	Gloves
1	Pc	Brush
2	Pcs	Stirring Tools
1	Pc	Trowelling Tool
1	Tub	Barrier Cream
1	Tub	Resin Removing Cream
1	Vol	Instruction Manual
1	Pc	Container

LBRK "Lifeboat" Kit

This kit contains high performance, low viscosity, 100% solids materials designed for use as a resin repairs for polyester laminated hulls of lifeboats and liferafts. The material is easy to use and because of its adhesion properties it can also be used to effectively repair metals, wood, glass and synthetic materials.

Contents

2	Units	ThistleBond Lifeboat Resin & Hardener
1	Pc	ThistleBond Glass Mat (0.5m²)
1	Roll	Cellophane
1	Pc	Brush
2	Pcs	Stirring Tool
1	Tub	Barrier Cream
1	Tub	Resin Removing Cream
1	Vol	Instruction Manual
1	Pc	Surface Tissue (0.35m²)
1	Pc	Emery Paper (280mm × 230mm)
2	Pairs	Disposable Gloves
1	Pc	Container (Blue Lid)

81 22 35	ThistleBond Engineering "A" Kit complete, UPS11000	Set
81 22 37	ThistleBond Top Up "C" Kit complete, UPS13000	"
33 02 87	ThistleBond LBRK Lifeboat Repair Kit complete UPS17000	"
81 22 34	ThistleBond Lifeboat Resin separates 330 grm TRK19001	Pc.

Small Pipe Repair Kits

Designed to put all products required to carry out emergency repairs to leaking pipework. By utilizing Pipe Repair Bandage, immediate and cost effective repairs can be carried out, and surface preparation is at a minimum due to the surface tolerant characteristics of Bandage. The end result can offer long term protection at a working temperature of 270°C and at pressures ranging from 10 bar (150psi) through to 27 bar (400psi) if used in conjunction with "Stick Grade Metal(Code 812202) and a double wrap.

Contents :

5 units	"Pipe Repair Bandage" W50mm x L1.8mtr
1 unit	"Stick Grade Metal"
5 pairs	Disposable gloves
1 vol	Mixing and application instructions packaged in a robust plastic container (which serves as a water bucket)

81 23 67	ThistleBond Small Pipe Repair Kit UPS19500 T	Set

ThistleBond SG Stick Grade Metal

A specially packaged rapid curing synthetic metal repair compound for onsite repairs to metal components such as leaking pipes, tanks, ducts, radiators, etc.

81 22 02	ThistleBond SG Stick Grade Metal, 125 grm × 10, UPS19060	Pc.

ThistleBond EG Metal Repair Paste

A high performance multi-purpose synthetic metal repair compound specially developed for metal repairs requiring excellent mechanical strength combined with easy machining properties.

(to be continued)

81 22 11	ThistleBond EG Metal Repair Paste, 1 kgs / Unit UPS 105	Set

ThistleBond RH Standard Resin & Hardener

A high performance, solvent free epoxy system designed for onsite repairs to metal, wood, glass and synthetic materials. Excellent adhesion to both blast cleaned and mechanically prepared surfaces, excellent corrosion resistance even under seawater, unaffected by short term contact with industrial chemicals. Suitable for use up to 100°C (212°F) dry heat.

81 22 16	ThistleBond RH Standard Resin & Hardener, 225 grm x 10, UPS19000	Set

ThistleBond Sealer Filler

Special non-asbestos filler in powder form for addition to the resin mix after the initial mixing has taken place. The resultant sealer filler mix has two very useful properties. The mix is very thixotropic and can therefore be applied to vertical areas. The mix can be applied to operate at temperatures up to 180°C (356°F). When it is applied a pre-coat, prior to carrying out a repair, it will help to insulate the resin laminate from the operating temperature of the parent body repair.

81 22 20	ThistleBond Sealer Filler, 50 grm, UPS 19043	Bag

ThistleBond GT Glass Tapes

A high performance unique braided Glass Fibre Tape that, when used in conjunction with the UPS 19000 RH (Code 812216) offers the ultimate in both Leak Sealing and Pipe Protection.

81 22 23	ThistleBond GT Glass Tape, 50 mm x 50 mtr, UPS 19007	Roll
81 22 25	ThistleBond GT Glass Tape, 100 mm x 50 mtr, UPS 19009	"

ThistleBond A & B Cement

A high performance, two pack, solvent free epoxy repair system for use on metallic surfaces. Ideal for application where only minimal surface preparation can be carried out and is usually used in conjunction with RH Standard Resin & Hardener (Code 812216). Suitable for rebuilding corrosion pitting on metallic structures and in particular, as a fairing compound on pipework prior to wrapping with the RH Pipe Repair System.

81 22 30	ThistleBond A & B Cement, 200 grm UPS 19002	Set
81 22 31	ThistleBond A & B Cement, 1 kgs UPS 19003	"

ThistleBond Therma-Tech LG

A single component Water based Encapsulation System, designed to protect all types of Thermal Insulation materials and dangerous asbestos Fibre against surface Spread of Flame.

81 22 32	ThistleBond Therma-Tech LG, 20 Litre TPC 625	Set

Devcon Products

Precision Repair Epoxy

Devcon Titanium Putty

Titanium-reinforced epoxy putty for making repairs that can be precision machined. Provides excellent temperature resistance, high compressive strength and unmatched resistance to a broad range of chemicals and acids.

- Resistance to chemicals and most acids, bases, solvents, and alkalis.
- Temperature resistance to 350°F.
- High compressive strength (18,800 psi).

81 22 41	Devcon Titanium putty, 1 lb / unit	Set
42	Devcon Titanium putty, 2 lb / unit	"

Devcon HR SUPER 3000

Provides excellent temperature resistance with continuous service temperatures (200-220°C) and maximum temperature (300°C). Enhances strength when used with enclosed glass tape under high temperature and pressures. Ideal for emergency repairs as cures in a few minutes at over 100°C. Trowelable and bonds to most metals.

81 22 43	Devcon HR Super 3000, 500 grm / unit	Set

Emergency Repair Epoxy

Devcon Underwater Repair Putty (UW)

For repairing, patching and rebuilding equipment in habitually wet environments, even underwater.

- Bonds to steel, iron, aluminium, brass, bronze, concrete, wood, and plastics.
- Penetrates moisture; eliminates the need to dry substrates thoroughly before repairs.
- Cures at temperatures down to 40°F.

81 22 46	Devcon Underwater repair putty UW, 1 lb/unit	Set

Rubber Repair and Casting Urethanes

Devcon Flexane 80 Putty or Liquid

Putty:
Trowelable 100 % solid urethane compound. Easy to mix and cures to tough, medium-hard rubber for a broad range of lining and protection applications. Withstands continuous service temperatures up to 180°F (dry environments) and 120°F (wet environments). Bonds to metal, concrete, rubber, wood and fiberglass.

Liquid:
Castable, non-shrinking, medium-viscosity urethane compound for making rugged, flexible molds, forming dies, cast parts and non-scratching holding fixtures, as well as abrasion and noise-resistant linings and encapsulating parts. Mixes and pours easily and cures at room temperature to a semi-rigid rubber material.

- Mixes easily and trowels on smoothly.
- Cures to a tough medium-hard rubber (Shore A 87).
- Service temperatures to 180°F dry / 120°F wet.
- Flexane Primers are recommended for maximum adhesion to metal, rubber, and concrete surfaces.

81 22 48	Devcon Flexane 80 putty 1 lb / unit	Set
49	Devcon Flexane 80 Liquid 1 lb / unit	"

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General Repair Epoxies

Devcon Plastic Steel Putty (A)

Metal filled epoxy putty used for routine maintenance, production, and tooling applications.

Bonds to most metal, concrete and some plastics and is ideal for patching and repairing areas where welding would be undesirable or impossible.

- Bonds to most metals, concrete, and some plastics.
- Cures at room temperature.
- Can be drilled, tapped, machine, water, and chemicals.
- Ideal for patching and repairing areas where welding or brazing would be undesirable or impossible.

81 22 51	Devcon Plastic steel A, 1 lb/unit	Set
52	Devcon Plastic steel A, 4 lb/unit	"

Devcon Plastic Steel Liquid (B)

Steel-filled liquid epoxy with the performance properties of Plastic Steel Putty (A). Can be cast over models for accurate detail reproduction when making holding fixtures, light-gauge forming dies and molds. Hardens in about an hour.

- Hardens in about an hour.
- High compressive strength.
- Machinable to close tolerances.
- Low viscosity makes it an ideal leveling compound for machinery and equipment.

81 22 56	Devcon Plastic steel B, 1 lb/unit	Set
81 22 57	Devcon Plastic steel B, 4 lb/unit	"

Devcon Plastic Steel 5-minute Putty (SF)

Fast-curing, steel-filled epoxy for dependable emergency repairs in less than 1 hour. Cures to a tough, steel-filled material that can be machined, drilled, tapped or sanded.

- Cure in less than 1 hour.
- Tough, steel-filled material can be machined, drilled, tapped, or sanded.

81 22 62	Devcon Plastic steel SF, 1 lb/unit	Set

Devcon Aluminium Putty (F)

Aluminium-filled epoxy putty for dependable non-rusting repairs to aluminium castings, machinery and equipment. Bonds to aluminium and other metals. Can be machined, drilled or tapped.

- Repairs air conditioning system components.
- Excellent resistance to chlorofluorocarbons.
- Bonds to aluminum and many other metals.
- Fills porosity in aluminum castings.
- Can be machined, drilled or tapped using conventional metalworking tools.

81 22 66	Devcon Aluminium putty F, 1 lb/unit	Set
67	Devcon Aluminium putty F, 3 lb/unit	"

Devcon Aluminium Liquid (F-2)

Aluminium-filled pourable epoxy for molds, patterns, holding fixtures and cosmetic casting repairs. Cures just over 1 hour.

- Can be machined, drilled, or tapped.
- Low viscosity provides accurate reproduction of mold details and of delicate or intricate parts.

81 22 71	Devcon Aluminium Liquid F-2, 1 lb/unit	Set

Devcon Wear Resistant Putty (WR)

High wear-resistant, self-lubricating compound for repairs requiring smooth surfaces against sliding wear.

Nonshrinking liquid used for building up metal shafts and pumps, making bearings and general repairs. Also ideal for making metal-forming dies and duplicating masters. Cures to a smooth surface.

- Bonds to steel, iron, aluminium, ceramic, concrete, brass, and some plastics.
- Contains wear-resistant fillers for low-friction applications.

81 22 81	Devcon Wear Resistant WR, 500 g / unit	Set

Devcon Wear Resistant Putty (WR-2)

Smooth, non-rusting, all purpose epoxy putty for repairs requiring low friction finishes, excellent wear resistance and protection from bi-metallic corrosion.

Bonds to steel, iron, aluminium, ceramics, concrete, brass, and some plastics.

- Bonds to steel, iron, aluminium, ceramic, concrete, brass, and some plastics.
- Contains wear-resistant fillers for low-friction applications.

81 22 86	Devcon Wear Resistant WR-2, 1 lb/unit	Set

Devcon Bronze Putty (BR)

Bronze-filled epoxy putty for repairing bronze and brass bushings, shafts, castings and equipment parts. Ideal for repairing and rebuilding areas where brazing would be undesirable or impossible.

- Repairs and rebuilds areas where brazing would be undesirable or impossible.
- Bonds securely to bronze alloys, brass, copper and ferrous metals.

81 22 90	Devcon Bronze putty BR, 1 lb/ unit	Set

Devcon Stainless Steel Putty (ST)

Stainless steel-filled epoxy putty, ideal for patching, repairing and rebuilding stainless steel food processing equipment. It is non-rusting and bonds to ferrous and non-ferrous metals.

- Bonds to ferrous and nonferrous metals.
- Nonrusting.
- NSF certified for potable water applications and acceptable for use in meat and poultry plants.

81 22 92	Devcon Stainless steel putty ST, 1 lb/unit	Set

Devcon Magic Bond
(cures in 12 hours at 25°C)

Devcon Fasstik
(shows 85% of strength in 15 min. at 25°C)

Ideal for emergency repairs. Easy to carry and use: cut as you need, mix with fingers and patch.

For Magic Bond
- For plumbing repairs and marine use.
- Cures rock-hard in 30-40 minutes, seals permanently.
- Cure even under water.

For Fasstik
- NSF certified for use in potable water applications.

81 22 93	Devcon Magic Bond, 114 g / unit	Pc.
94	Devcon New Fasstik, 114 g / unit	"

Devcon Zip Patch

Easy-to-use waterproof adhesive patch kit. Hardens in minutes at room temperature. Excellent adhesion to iron, steel, stainless steel, titanium, FRP, aluminium, wood, ceramics, composites, acrylics, PVC, and other plastics. Makes permanent, waterproof field repairs to pipes, tanks, and containers.

Contents; Glass fibre patch 100 mm x 230 mm, Activator spray, Spatula, Protective gloves

81 22 98	Devcon Zip Patch	Kit

Cordobond Products

Cordobond
Strong-Back Resin & Activator

Liquids to be mixed together for use with glass cloth, glass mat and glass tape. The mixture hardens into a rigid mass that bonds with high tenacity to almost any surface to produce a tight seal which will not dissolve in water, oil or most chemicals and will resist elevated temperatures and pressures.

81 23 01	Cordobond Strong-back resin & activator, 453 grm / Unit	Set
02	-"- 906 "	"

Cordobond
Strong-Back Putty (Red)

A tough, dense compound which sets up hard and possesses high adhesive qualities. Used for plugging large holes before reinforcement with activated Cordobond strong-back resin and fiberglass cloth.

81 23 06	Cordobond Strong-back putty 226 grm / Unit	Set

Cordobond
Strong-Back Sealer

Sticky material for sealing small holes, cracks and leaks around tank and pipe fittings where pressures are low. Can be applied by trowel or putty knife.

81 23 08	Cordobond Strong-back sealer, 113 grm / Unit	Set

Cordobond
Strong-Back Steel Putty

Combination of steel packed resin and activator for repairing cracks, holes, crevices, defects, etc. in steel and other metals. Steel putty can be drilled, threaded, machined, filed or hack-sawed.

81 23 10	Cordobond Strong-back steel putty, 453 grm / Unit	Set

Cordobond
Strong-Back Leveling Compounds (Yellow)

Trowel applied packed resin and activator used for building up corroded and pitted areas to a uniform surface.

81 23 12	Cordobond Strong-back leveling compound, 453 grm / Unit	Set

Cordobond Glass Sheets

Glass tape, cloth and reinforced mat. The tape and cloth are made of woven glass yarn. Provides the main strength

of a patch when saturated with activated Cordobond strong-back resin. The mat is made of fibers which are felted together and reinforced. Due to its absorbing and reinforcing qualities, glass mat is used to speed up the curing and provides additional strength.

81 23 21	Cordobond glass cloth, 1,000 × 1,000 mm	Sht
22	" mat, 900 × 900 mm	"
23	Cordobond glass tape, 38 mm × 30 mtr	Rol
24	" , 76 mm × 150 mtr	"
25	" , 100 mm × 150 mtr	"

Cordobond Repair Kits

These repair kits are the commercial adaptation of the U.S. Navy kit, packed in suitable chests. The kit container size is 480 × 320 × 320 mm.

20	Unit	226 grm	Cordobond Strong-Back Standard Resin & Activator
2	Unit	226 grm	Cordobond Strong-Back Putty (red)
2	Unit	113 grm	Cordobond Strong-Back Sealer
2	Unit	453 grm	Cordobond Strong-Back Steel Putty
2	Unit	453 grm	Cordobond Strong-Back Level Compound
1	Sht	1mtr×2.7 mtr	Cordobond Glass Cloth
3	Rolls	38mm×1mtr	Cordobond Glass Tapes
1	Sht	1mtr×90cm	Cordobond Glass Mat
1	Sht	3cm×1mtr	Cordobond Contour Cloth
2	Pair		Neoprene Gloves
1	Pair		Scissors
12	Pcs		Wood Stirring Tools
1	Sht	2.4mtr×30cm	Kraft Paper
1	Ball		Twine
12	Pcs		Paint Brushes
1	Roll		Pressure Sensitive Tape

81 23 30	Cordobond repair kit complete	Set

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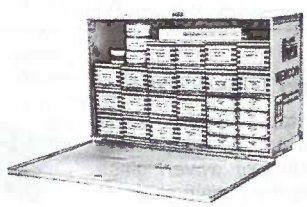
Wencon Products

Wencon Repair Kit for Marine

The mechanical first-aid kit for leaking pipes and tanks, for corroded cooler end covers, pump casings, valves, sea water filters, etc. Wencon repair kits are available in different sizes, depending on size and age of the vessel.

Covers most aspects of emergency repairs and long lasting maintenance. Suitable for all ships where repairs and maintenance are carried out frequently. Please select a suitable kit according to your vessel's size and age from the following range of kits.



Product No.	The 4 standard repair kit contains:	Kit 1 (812341)	Kit 2 (812331)	Kit 3 (812332)	Kit 4 (812333)	Tanker Kit (812326)
1010	Wencon Cream, 1 kgs	1 set	-	-	-	-
1000	Wencon Rapid, 1 kgs	1 set	1 set	-	-	-
1005	Wencon Rapid, 8 x 125 g	1 set	1 set	1 set	1 set	-
1020	Wencon Coating, white, 0.5 kgs	2 set	1 set	1 set	-	-
1030	Wencon Coating, blue, 0.5 kgs	2 set	1 set	1 set	-	-
1050	Wencon Hi-Temp, yellow, 0.5 kgs	1 set	-	-	-	-
1060	Wencon Hi-Temp, green, 0.5 kgs	1 set	1 set	1 set	-	-
1040	Wencon Putty, 8 x 125 g	1 set	1 set	1 set	1 set	-
1042	Wencon Putty, 4 x 125 g	-	-	-	-	1 set
1044	Wencon Pipe Tape 2 unit, 10 x 350 cm	-	-	-	-	-
1045	Wencon Pipe Tape 5 unit, 5 x 150 cm	1 box	1 box	1 box	1 box	-
1046	Wencon Pipe Tape 4 unit, 5 x 350 cm	1 box	1 box	-	-	1 box
1070	Wencon Exhaust Repair Kit, 2 x 250 g	1 box	1 box	1 box	1 box	-
1104	Wencon Bio Cleaner, 0.75ltr	-	-	-	-	-
1014	Wencon UW Cream, 0.5 kgs	1 set	-	-	-	2 set
1035	Wencon UW Coating, orange, 0.5 kgs	1 set	-	-	-	2 set
1036	Wencon UW Coating, brown, 0.5 kgs	-	-	-	-	2 set
1016	Wencon Ceramic Cream, 1 kgs	-	-	-	-	1 set
1017	Wencon Ceramic Coating, light grey, 0.5 kgs	-	-	-	-	1 set
1018	Wencon Ceramic Coating, light green, 0.5 kgs	-	-	-	-	1 set
1100	Wencon Cleaner, 0.5 ltr	3 set	2 set	1 set	1 set	-
1110	Wencon Release Agent, 50 g	1 box	1 box	1 box	1 box	-
1120	Wencon Reinforcement Tape, 5cm x 10 mtr	3 roll	2 roll	2 roll	1 roll	6 roll
1122	Wencon Reinforcement Tape, 10cm x 20 mtr	-	-	-	-	1 roll
1150	Wencon Aggregate No. 24, 1.5 kgs	-	-	-	-	-
2805	Wencon Application Tools	1 set	1 set	1 set	1 set	1 set
2808	Wencon Fixation Tools					1 set
	Wencon Manual	1 pcs	1 pcs	1 pcs	1 pcs	1 pcs
1250	Rotating Blaster single	-	-	-	-	-
1252	Rotating Blaster duo	-	-	-	-	-
1254	Rotating Blaster triss	-	-	-	-	-
	Plywood Box	1 large	1 medium	1 small	1 small	1 small

CODE	Kit No.	Application	Model	Unit
81 23 41	1	For old & large vessels	8700	Set
81 23 31	2	For new & large vessels	8704	"
81 23 32	3	For medium & large vessels	8708	"
81 23 33	4	For small in domestic traffic	8712	"
81 23 26		For Tanker vessels	8710	"

Name of Mfr. Wencon Aps

Wencon Exhaust Repair Kit

One-component cold weld product for repair of cracks and leaks in exhaust systems exposed to high temperatures. The compound resist temperatures up to 1,300°C (2,400°F).

The kit contains;

2 × 250 grm	Exhaust repair compound
1 pc	Metal mesh for reinforcement purposes
1 pc	Spatula
1 pc	Application data sheet

81 23 40	Wencon exhaust repair kit, 2 × 250 grm product no. 1070	Set

Wencon Cream / Rapid

Repairing and refurbishing metal structures being deteriorated through corrosion, bimetallic corrosion or in other ways. Especially used for corroded tanks, pump housings, valves, filter housing and strainers, tubes, heat exchanger end covers, flange faces. Roller bearing seats, alignment of bushings, shafts, hydraulic rams, key ways, etc. "Cream" and "Rapid" are both paste consistency and easy applied even to vertical surfaces, and "Cream" is for slow curing and "Rapid" is quick curing.

CODE	Description	Products No.	Contents	Unit
81 23 35	Wencon cream	1010	1kgs	Set
81 23 43	Wencon rapid	1005	8 x 125 grm	Set
47	Wencon rapid	1000	1 kgs	Set

Wencon UW Cream
Wet Surface

A two component cream, to be applied on wet surfaces or under water. The UW Cream is excellent for filling up holes, dents and rebuilding of surfaces which, due to high humidity, have to be done in wet conditions. Typical applications are corroded hulls and all underwater parts of ships and structures, tanks, pipes, flange faces, etc. Is also excellent for filling up cavitation damages on hulls and rudders. Wencon UW Cream has a strong adhesion to all metal surfaces.

81 23 34	Wencon UW cream, wet surface, #1014, 0.5 kgs	Can

Wencon Coating

For protecting your machine parts against bi-metallic corrosion, erosion / corrosion, impingement, entrainment, etc. The treatment will improve the flow characteristics in pumps and valves. Typical applications are coating of surfaces rebuild after deterioration, protection of tanks, pumps, valves, wet liners, cooler end covers etc. against corrosion and bi-metallic corrosion as well as a variety of small and large repair and maintenance jobs. Wencon Coating can be applied by spatula and is a double coat system in white and blue.

CODE	Description	Products No.	Contents	Unit
81 23 37	Wencon coating white	1020	0.5 kgs	Set
38	Wencon coating blue	1030	"	"

Wencon Hi-Temp

The high performance coating product for repair and protection in high temperature and aggressive environments. The Hi-Temp offers temperature up to 160° C, provided the media is not boiling. Typical applications are coating of surfaces rebuild after deterioration including repair of lining on inert gas systems, fresh water generators, hot pipes and heating coils, protection of tanks, pumps and valves against chemical and mechanical aggression, corrosion and bi-metallic corrosion. Wencon Hi-Temp is supplied in a double coat system in yellow and green.

CODE	Description	Products No.	Contents	Unit
81 23 45	Wencon hi-temp yellow	1050	0.5 kgs	Set
46	Wencon hi-temp green	1060	"	"

Wencon UW Coating
Wet Surface

Excellent liquid coating for applying on wet surfaces or under water, with a very good adhesion to metal surfaces. Typical applications are coatings of steel surfaces rebuild with Wencon UW Cream, and coatings under water - like ships hulls and/or other submerged structures, tanks, pipes etc. Examples of repairs under extreme conditions could be: on-site repair of sea-water filter housings, unable to achieve a dry surface and coating of scratched painting on hulls in splash-zones and under water. Wencon UW Coating is a double coat system and is supplied in two different colours, orange and brown.

81 23 36	Wencon UW Coating, wet surface, orange #1035, 0,5 kgs	Set
81 23 27	Wencon UW Coating, wet surface, brown, #1036, 0,5 kgs	"

WENCON Bio Cleaner

A water based alkaline degreaser, used for cleaning purposes prior to application of Wencon products, in order to ensure best possible adhesion. An environmentally friendly product and is classified as Non Dangerous Goods. Applied on wet and dry surfaces. For application on wet surface, Wencon UW Coating is needed as a primer before application of any further products. Supplied with a separate spray, which is set for foam spray when delivered. Recommend using foam spray, due to the efficiency.

81 25 97	Wencon Bio Cleaner, spray, #1104, 0.75 ltr/btl	Btl

Wencon Pipe Tape

A fast curing pipe repair bandage especially formulated to make quick and effective repairs of cracks, leaks, fractures, and corrosion porosity in piping carrying water, oil, steam, most gases and even solvents. Wencon Pipe Tape has good pressure, temperature and chemical resistance. Available in 3 sizes.

81 23 28	Wencon pipe tape, 2 unit pack 10 cm x 350 cm	Set
44	Wencon pipe tape, 5 unit pack 5 cm x 150 cm	"
48	Wencon pipe tape, 4 unit pack 5 cm x 350 cm	"

Wencon Putty

The quick curing, ready to use, mouldable, epoxy repair paste. This multipurpose epoxy paste is ideal for a wide range of emergency repairs where an ultra quick curing and mouldable compound is required. Typical applications are patching sealing and filling of cracks, leakages and holes in pipes, on flanges, in tanks etc. Used in combination with Wencon Pipe Tape.

81 23 42	Wencon putty , 8 x 125 grm, product no. 1040	Set
81 23 29	Wencon putty , 4 x 125 grm, product no. 1042	"

Wencon Cleaner

Trichlorethylene based non-flammable degreasing agent, which is used for cleaning purposes prior to application of the Wencon products.

81 23 49	Wencon cleaner, 0.5 ltr	Can

Wencon Release Agent

Used in applications where you want to prevent adhesion between Wencon and the substrate. The release agent is applied in a thin layer and left for drying in ten minutes. Remove excess material using a cloth.

81 23 50	Wencon release agent, 50 grm	Pc.

7TH 81

Wencon Ceramic Cream

The epoxy compound for repair and rebuilding of deteriorated metal parts, exposed to excessive wear. Typical applications are corroded tanks, pump housings, impellers, valves, pipes, flange faces, roller bearing seats, worn shafts, hydraulic rams and heat exchangers. Wencon Ceramic Cream is also excellent as a filling compound.

Wencon Ceramic Cream can be machined, drilled and worked like metal after curing. The compound has a paste consistency and is easily applied by spatula also to vertical surfaces.

81 25 92	Wencon ceramic cream, No.1016, 1 kgs	Set

Wencon Ceramic Coating

The versatile and cost effective two-component coating product for general repair, maintenance and protection of surfaces, exposed to excessive wear. Typical applications are coating of surfaces rebuild after deterioration, protection of tanks, pumps, valves, wet liners, cooler end covers etc. against wear, corrosion and bi-metallic corrosion as well as a variety of small and large repair and maintenance jobs.

Wencon Ceramic Coating is a double coat system and is consequently supplied in two different colours, light grey and light green. The product is liquid and is applied by brush, roller or spatula.

81 25 93	Wencon ceramic coating, Light Grey, No.1017, 0.5 kgs	Set
94	Wencon ceramic coating, Light Green, No.1018, 0.5 kgs	"

Wencon Application Tools

Wencon Application Tools are quality products regularly used in connection with mixing and application of Wencon repair products.

The kit contains:

- 4 spatulas for application of compounds and coatings.
- 4 brushes for application of coatings.
- 4 mixing knives for mixing of Wencon two component.
- 1 pair of scissors for cutting Wencon Reinforcement Tape, Pipe Tape and other soft material.
- 4 pairs of nitrile-gloves.

81 25 95	Wencon application tools, No.2805	Set

Wencon Fixation Tools

Used for repair of cracks and corrosion in tanks, leaking pittings and welding seams. The Fixation Tools help to support and secure Wencon products to the damaged part.

81 25 96	Wencon Fixation Tools, No.2808	Set

Belzona Polymerics

1111 Super Metal

The general purpose engineering compound for fully machinable repairs.

Belzona 1111 Super Metal has outstanding mechanical strength combined with excellent chemical resistance. The unique properties of 1111 Super Metal make it ideal for application to hydraulic rams, worn shafts, oversize housings, worn keyways, damaged engine blocks, distorted flanges, and also to repair pinholes and fractures in pipe work, particularly on T-pieces and elbows. Repairs tracked and eroded flange faces. Each unit contains basic resin and hardener.

Suitable for contact with potable water as it is certified to NSF/ANSI Standard 61 and satisfies the UK Drinking Water Inspectorate.

Unit Per Set

CODE	81 23 51	81 23 52	81 23 53
Size	1 kgs/unit	2 kgs/unit	5 kgs/unit

Epoxy Patch Kits

Two component system for use in the repair of iron, steel, stainless steel, aluminium and brass, or for producing molds, fixtures and forms. Workable in 45 min. at room temperature; fully cured in eight hours. Service temperature up to 250°F.

Unit Per Jar.

CODE	Type	Application	Unit
81 23 55	STL-16FP	Fast putty	1 lb / jar
56	STL-16P	Steel putty	1 lb / jar
57	STL-16L	Steel liquid	1 lb / jar
58	AL-16P	Aluminium putty	1 lb / jar
59	SS-16P	Stainless putty	1 lb / jar

Name of Mtr.: SAF-T-LOK Corporation

Water Activated Tapes
for Pipe Repair

Designed and recommended for stopping leaks in pipe which may occur due to corrosion or other reasons. Composed of a quality knitted fiberglass cloth coated with a special polyurethane resin which is activated by a 5 second immersion in water. Once activated by water the tape will transform from a wet adhesive into a rigid plastic state in minutes. Bonds to most common plastic or metallic pipe materials such as steel, iron, copper, PVC, fiberglass, and others. Recommended for leaks not exceeding 1/8" in diameter and pipe size 2" in diameter. May be used with good results on pipe with a temperature range from –29°C to 121°C. Each roll of products is individually packaged with gloves for handling.

Unit Per Rls

CODE	Size	Weight grm
81 23 61	5 cm × 1.2 mtr	130
64	5 cm × 1.5 mtr	100
62	5 cm × 3.6 mtr	205
81 23 65	7.5 cm × 1.2 mtr	160
81 23 63	10 cm × 1.2 mtr	307

Water Activated Fiberglass Tapes
for Pipe Repair
Syntho-Glass

A fiberglass pre-impregnated composite that is activated by salt or freshwater. It is ready to use and does not require any measuring or mixing. This system enables you to repair and reinforce virtually any diameter pipe in minutes. It is excellent on copper, steel, stainless steel, PVC, FRP, clay, concrete, rubber, and more. It is safe to use, nontoxic, noncombustible, and odorless.

Mechanical Properties

Tensile Strength	ASTM D 638 Type 1-8 ply	36,448 psi (2,513.6 bar)
Flexural Strength	ASTM D 790 Type 1-8 ply	26,100 psi (1,800 bar)
Compressive Strength	ASTM D 695 Type 1-8 ply	24,846 psi (1,713.5 bar)
Dielectric Strength	Volts	16,060
Temperature Resistance	Continuous, Intermittent	300°F, 500°F (149°C, 260°C)
Setting Time at 75°F	Minutes	28
Shelf Life	Months	24
PSI (Bar)	Continuous, Intermittent	300, 500 (20.6, 34.4)
Lap Shear		900 psi (6.2 MPa)

Unit Per Rls

CODE	Width × Length	CODE	Width × Length
81 24 51	5.08cm×1.524m (2"x5')	**81 24 56**	10.16cm×15.24m (4"x50')
52	7.62cm×2.743m (3"x9')	**57**	20.32cm×6.096m (8"x20')
53	10.16cm×4.572m (4"x15')	**58**	20.32cm×9.144m (8"x30')
54	10.16cm×6.096m (4"x20')	**59**	20.32cm×15.24m (8"x50')
55	10.16cm×9.144m (4"x30')		

Name of Mfr. : Neptune Research, Inc

High Pressure Leak Sealant Kits
STOPIT® HP™

A multi-component epoxy composite repair system designed for high-pressure sealing applications with working pressures up to 2,000 PSI (140 kg/cm²) and operating temperatures up to 165°F (74°C). The repair system provides a built in 5:1 safety margin.

Repair applications can be made regardless of pipe orientation and results in a durable coating approximately 5mm thick. The repair epoxy system has a working time of approximately 8 – 10 minutes and will allow return to service in as little as 4 hours.

Supplied in a kit with all the necessary components for field installation*. Standard kits for repair of pipes up to 4" in diameter are available; non-standard kits can be custom made to order with short delivery times.

* Installation requires no special training and involves minimal surface preparation.

Physical Properties of Sealant:

Shelf Life:	6 months from date of purchase when stored at 40° to 83°F (5° to 28°C).
Colour:	Component 1-Clear/Component 2- Straw/Fiber-yellow.
Mixing Ratio:	As supplied, dual cartridge dispenser.
Pot Life:	8 min. @72°F (22°C), after mixing for films less than 1/2" thick.
Glass Transition Temperature:	216°F (102°C), cured and annealed.
Cure Time:	- 4 hour @72°F (22°C) at 1/8" film thickness.
Sealant Viscosity:	Gel-like before cure.

Kit Contents

1 x Pre-filled dispensing cartridge(s) 2 x Static mixers with retainer 1 x Composite fabrics 1 x Instruction manual	1 x Mixing tray 1 x Safety gloves 1 x Clean-up supplies

Unit Per Set

CODE	For Nom. Pipe Size	CODE	For Nom. Pipe Size
81 24 61	1 Inch (25 mm)	**81 24 63**	3 Inch (75 mm)
81 24 62	2 Inch (50 mm)	**81 24 64**	4 Inch (100 mm)

Name of Mfr.: InduMar Products Inc.

Adjustable Pipe Repair Clamps

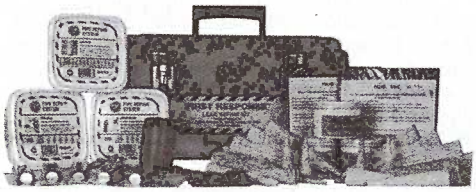
Adjustable Type 301 Stainless Steel repair clamps repair splits, pin holes or punctures in pipe or tubing. This handy tool is uniquely faced with expanded PTFE which is the most effective seal for all common chemicals and is food grade acceptable. The clamp conforms to most irregular surfaces and controls most pressures with simple hand-tightening. Adjustable to fit pipe and tube sizes from 1/2" to 6". Combine clamps to fit larger sizes. 10 clamps per case.

81 23 66	Stop-It® Pipe Repair Clamp for pipe size 1/2" to 6", 10 clamps per case	Case

Leak Repair Kits

InduMar - First Response™

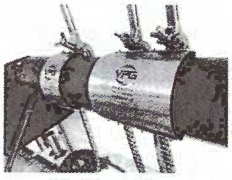
Quickly repair most common leaks in pipes, tanks and drums with a variety of sealing devices and materials. Designed with first responders in mind. The kit has the tools to respond to pipe leaks and surface holes of all shapes, as well as cracks and gashes - includes the following:



No.	Items	Q'ty
1.	Stop It® Pipe Repair System – small/medium/large	1
2.	Epoxy Fix Stix™	5
3.	Assorted wooden plugs	18
4.	Rubber hammer	1
5.	Plug rugs "Plug-N-Dike"	2
6.	Plug patties "Plug-N-Dike"	3
7.	Lead wool filler pack	1
8.	Hot/cold hose repair tape	1

81 23 68	Leak repair kit, First Response™	Set

Emergency Pipe Repair Systems



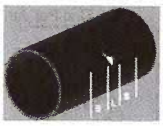
The fastest and easiest way to temporarily repair pipe leaks and bursts. Taking less than 60 seconds to install and featuring a fully self-contained design, which does not require the use of tools. Made from 316 stainless steel and the system features a Nitrile lip-seal, making it suitable for water, gas and most petroleum liquids.

Designed under contract by the Australian Government Defence science and Technology Organisation (DSTO) for use by the Royal Australian Navy, and is suited to a wide range of commercial uses, including: marine, oil and gas, mining, emergency services and plumbing applications.

Selecting the correct clamp length;

When repairing a damaged pipe, it is important to ensure sufficient rubber gasket contact between the edge of the damaged area (refer to "L") and the edge of the clamp. The table below provides a guide to clamp selection, where "B" is the minimum recommended sealing width between the damaged area (L=width) and the end of the clamp.

Nom. Diameter (DN)	Min. Seal Length B (mm)
38 mm - 930 mm	15 mm



Minimum Recommended Clamp Length = L + 2B
Example; If the damaged area measures 20 mm, then a 60 mm Single Clamp should be used.
(L = 20; 20 + [2 x 15] = 50 mm)

How to order: CODE

Emergency Pipe Repair System, SUS 316 Single or Dual or Triple or Quad lever clamp, SIZE OF PIPE OD and PART NO.

CODE	81 24 66	81 24 67	81 24 68	81 24 69
Pipe Diameter	Single Lever Clamp 70mm Wide	Dual Lever Clamp 148mm Wide	Triple Lever Clamp 210mm Wide	Quad Lever Clamp 272mm Wide
Version	Milspec (Up to 20 Bar)			
38-75	VPG-SC-S-4-38-75	VPG-DC-S-4-38-75	VPG-TC-S-4-38-75	VPG-QC-S-4-38-75
75-100	VPG-SC-S-4-75-100	VPG-DC-S-4-75-100	VPG-TC-S-4-75-100	VPG-QC-S-4-75-100
100-220	VPG-SC-S-4-100-220	VPG-DC-S-4-100-220	VPG-TC-S-4-100-220	VPG-QC-S-4-100-220
220-350	VPG-SC-S-4-220-350	VPG-DC-S-4-220-350	VPG-TC-S-4-220-350	VPG-QC-S-4-220-350
350-500	VPG-SC-S-4-350-500	VPG-DC-S-4-350-500	VPG-TC-S-4-350-500	VPG-QC-S-4-350-500
500-650	VPG-SC-S-4-500-650	VPG-DC-S-4-500-650	VPG-TC-S-4-500-650	VPG-QC-S-4-500-650
650-800	VPG-SC-S-4-650-800	VPG-DC-S-4-650-800	VPG-TC-S-4-650-800	VPG-QC-S-4-650-800
800-930	VPG-SC-S-4-800-930	VPG-DC-S-4-800-930	VPG-TC-S-4-800-930	VPG-QC-S-4-800-930

Remark: Commercial Type (Up to 10 bar) is also available on request
Name of Mfr. : Valley Precise Global Pty Ltd.

Metal Repair and Protection Systems

The polymer composites provide the ultimate solution for erosion, corrosion, wear or chemical attack which create problems in fluid flow systems.

The systems exhibit outstanding compressive and flexural strengths as well as phenomenal adhesion, producing the most advanced polymer claddings available for rebuilding, resurfacing and protecting virtually all fluid flow components.

Metalclad Duralloy

Multipurpose paste material, can be drilled, tapped, turned on a lathe, sanded and polished. Can be used to repair worn shafts, cracked casings and engine blocks, etc. Trowelable, requires no heat.

81 23 71	Metalclad Duralloy, 1 kgs	Set
72	" 2 kgs	

Metalclad Speedalloy

The leak stopper paste material. Fast, easy, non-slump ; can be used to repair just about any leak in minutes. Bonds to virtually any rigid surface.

81 23 75	Metalclad Speedalloy, 167 grm x 10's	Set

Metalclad Ceramalloy CP+

Outstanding wear resistant paste material. Trowelable system for repairing and rebuilding metal damaged by erosion and corrosion: pumps, valves, heat exchangers, etc.

81 23 77	Metalclad Ceramalloy CP+, 1 kgs	Set
78	" , 2 kgs	"

Metalclad Ceramalloy CL+

The ultimate resurfacing system for protecting fluid flow equipment. Brushable, self-leveling, castable thixotropic liquid for pumps, valves, water boxes, tube sheets, tanks, propellers, etc. Two colours (blue and grey) are provided.

81 23 81	Metalclad Ceramalloy CL+, Blue,1 kgs	Set
82	" Grey, 1 kgs	"

Flexiclad Dura Tough

These systems provide exceptional protection to equipment prone to cavitation attack and subsequent damage. Also ideal for creating or repairing flexible seals on machinery and equipment such as on heat exchangers, pumps, valves and piping systems.

Dura Tough DP: Epoxy urethane paste
Dura Tough DL: Thixotropic liquid, blue or green

81 23 85	Flexiclad Dura Tough DP, 500 grm	Set
81 23 86	Flexiclad Dura Tough DL, blue, 500 grm	Set
87	" ,green, 500 grm	"

Chemclad XC

Epoxy system liquid resistant to a very wide variety of organic and inorganic acids, alcohol, alkalis, ester, ether, hydrocarbon, ketone, oil, salt, etc. Can be easily and safely applied by brush, roller, squeegee or airless spray. Two colours (light grey and dark grey) are provided.

81 23 91	Chemclad XC, light grey, 5 kgs	Set
92	" , dark grey, 5 kgs	"

Eneseal HR

To provide maintenance and facilities engineers to protect insulation from water and oil impregnation, impact and chemical attack ; to seal and protect concrete containment walls ; to provide a heat refractive surface to reduce the heat envelope around the equipment and structures -–especially metal decks, increasing energy efficiency ; and to waterproof just about any porous surface. Can be easily and safely applied by roller, brush or spray.

81 23 95	Eneseal HR, 15 ltr	Can

Ultrametal Ceramic Steel Putty

Ultrametal ceramic steel is suitable for extreme loads when maintaining industries and crafts. The highly wear resistant polymer provides an extended pot life in combination with a shortened curing time (< 2 hours) which allows best results on medium as well as large-scale repairs e.g. pipe coatings, wear protection coatings, pump repairs, slides, shafts etc.

Product Benefits:
- Increased wear resistance.
- High chemical resistance.
- General purpose compound in engineering.
- Short curing epoxy (2 hours).

81 23 88	Diamant Ultrametal ceramic steel putty 1kgs/set	Set

DIAMANT Ship Repair Set

The "must have" solution kit for general maintenance as well as emergency repairs. The ship repair set provides solutions from simple leak repairs up to emergency repairs of pipes, pumps, tanks and other equipment in the open sea.

The set consist of :

1 x 500 grm	Plasticmetal cast-iron WF 0062
2 x 500 grm	RR-Metal 0316
1 x 500 grm	Ultrametal ceramic rapid 1685
1 x 500 grm	Ultrametal ceramic-steel 1683
1 x 500 grm	Diagum putty 0373
1 x 200 ml	DIAMANT cleaner liquid 1417
div.	Application and mixing tools, reinforcement materials, clamps and technical documentation

81 23 89	DIAMANT ship repair set	Set

DIAMANT Diagum

Cold-curing 2-component elastomer for reliable repairs which cures to a tough medium-hard rubber (Shore A85). After curing the product is extremely elastic and resistant against chemical and physical loads up to 160°C. The elastomer perfectly adheres to all metals, natural and synthetic rubbers, nitrile, butyl, concrete, fiberglass and wood. Diagum is commonly used on pipes, pipe bends, clutch parts, polishing drums, rubber hoses, rubber rolls, rubber wheels, surface seals, conveyor belts and many other parts. Diagum is available in putty and liquid viscosity.

CODE	Description	Unit
81 23 93	DIAMANT diagum liquid, 500 grm/set	Set
94	DIAMANT diagum putty, 500 grm/set	"

DIAMANT RR Metal

Quick and reliable repair material for metal parts even on WET SURFACES or UNDERWATER. Two component type rapid repair system for voids, cracks, dents and holes in all kind of machine elements, castings, pipes, tanks, pumps and engines. It adheres to nearly all surfaces and offers a wide range of protection against corrosion, erosion, chemical, thermal and physical attacks. Permanent temperature resistant up to 160 °C / 320 °F and a free mixing ratio gives you the possibility to adjust the viscosity from liquid to putty to fulfill your needs during the application.

Product Benefits :
- Applicable on wet surfaces.
- Fast curing (Even underwater).
- Resistant up to 160°C.
- Free mixing ratio (Liquid & putty in one product).

Unit Per Set

CODE	Description	Contents	
		Powder	Hardener
81 23 98	Industrial Pack	650 grm	350 grm

DIAMANT Plasticmetal WF

Quick and reliable repair material for metal parts even at HIGH TEMPERATURES. Two component type rapid repair system for voids, cracks, dents and holes in all kind of machine elements, castings, pipes, tanks, pumps and engines. It adheres to nearly all surfaces and offers a wide range of protection against corrosion, erosion, chemical, thermal and physical loads. Permanent temperature resistant up to 250 °C / 480 °F and a free mixing ratio provides you the possibility to adjust the viscosity from liquid to putty to fulfill your needs during the application. Plasticmetal has been developed for an outstanding ease of use compatible with superior technical properties.

Product Benefits:
- Temperature resistant up to 250 °C.
- Very high proportion of metallic fillers.
- Excellent technical characteristics.
- Fast curing.
- Machinable like metal.
- Variable viscosity.

Unit Per Set

CODE	Description	Contents	
		Powder	Hardener
81 23 99	Industrial Pack	650 grm	350 grm

DIAMANT Ultrametal Putty

The general purpose compound in engineering. The polymer metal is highly resistant against chemical and physical loads and is machinable like metal: file, mill, turn, and bore, thread cutting and polishing. Up to 90% metallic filters allow best metal properties and guarantee a long-lasting repair. Ultrametal has been developed especially for large-scale repairs with an ineffectual shrinkage.

Product Benefits:
- General purpose compound in engineering.
- Preferred choice for large-scale repairs.
- Deliverable in service boxes.
- Mixing ratio 1:1 eases the application.

81 23 96	DIAMANT Ultrametal putty, 1,000 grm	Set

DIAMANT UM1250

The quick repair solution for emergency situations. Very good adhesion to any kind of metal even on OILY SURFACES. Short curing times make DIAMANT UM1250 the first choice to repair parts at sea. Whether housings, pumps, containers, engine blocks, cylinder heads, gear boxes, bearing seats, coolers, propellers, impellers, tubes or pipes, UM1250 is your solution to fix the problem within a couple of minutes. Suitable for small areas with good resistance to wear, abrasion and extremely resistant to aggressive chemicals. Machinable like metal. Mixing ratio 1:1 by volume, delivered in a complete box with all needed tools in one set.

Product Benefits:
- Applicable on oily surfaces.
- Emergency repairs / first curing.
- Perfect adhesion on metal parts.

81 23 97	DIAMANT UM1250, 500 grm	Set

Weicon Emergency Repair Kit

For emergency repairs and maintenance works on board of ships, equipped with many different products that support you in various cases, cover most cases of offshore emergency repairs and maintenance works during long ways.

Repair Kit 1 covers the most common emergency and maintenance cases, Repair Kit 2 and 3 covers a lot of different applications on board. The Repair Kits are suitable for all ships, where repairs and maintenance have to be done frequently.

The 3 standard repair kit contains:	Kit 1 (812907)	Kit 2 (812908)	Kit 3 (812909)
Weicon A, 0.5 kgss	2 set	2 set	2 set
Weicon SF, 0.5 kgs	2 set	2 set	2 set
Weicon BR, 0.5 kgs	-	-	1 set
Weicon WR, 0.5 kgs	-	-	1 set
Weicon HB 300, 1.0 kgs	-	1 set	2 set
Weicon Ceramik BL, 0.5 kgs	-	-	1 set
Weicon UW, 0.5 kgs	2 set	2 set	2 set
Repair Stick Aqua 115 g	2 set	3 set	4 set
Repair Stick Steel 115 g	2 set	3 set	4 set
Urethan 80, 0.5 kgs	-	-	1 set
AN 302-43, 50 ml	-	1 set	1 set
AN 302-60, 50 ml	-	1 set	1 set
AN 305-77, 50 ml	-	-	1 set
AN 306-38, 50 ml	-	-	1 set
Thread Sealing Cord DF 175	-	-	1 set
Plast-o-Seal, 90 ml	-	-	1 set
VA 8312, 30 g	-	1 set	1 set
VM 120, 30 g	-	1 set	1 set

(to be continued)

The 3 standard repair kit contains:	Kit 1 (812907)	Kit 2 (812908)	Kit 3 (812909)
GMK 2410, 700 g	-	1 set	2 set
Black-Seal, 310 ml	-	1 set	2 set
Cleaner Spray S, 500ml	-	2 set	2 set
Gasket Remover, 400 ml	-	-	1 set
W 44 T, 400 ml	-	1 set	2 set
Rust Shock, 400 ml	-	1 set	2 set
Mould Release Agent, 400 ml	-	-	1 set
Starter-Spray, 400 ml	-	1 set	1 set
Contact Spray, 400 ml	-	1 set	1 set
AS 500, 500 g	-	-	2 set
Application Kit	1 set	1 set	2 set

CODE	Description	Model	Unit
81 29 07	Weicon Emergency Repair Kit 1	10851001	Set
81 29 08	Weicon Emergency Repair Kit 2	10851002	"
81 29 09	Weicon Emergency Repair Kit 3	10851003	"

Name of Mfr.: Weicon GmbH & Co. KG

WEICON Plastic Metals

High-quality, two-component epoxy resin systems for fast, cost-effective and durable repairs of many types of material. Ideal for rebuilding of shafts, repairing leaking pipes and tanks, repair of pumps and valves damaged by erosion and/or corrosion and many other cases. Temperature resistant from –35°C to +120°C. After curing, the material is machinable with normal working tools and equipment.

Unit Per Set

CODE	Product	Content	Description
81 29 01 02	WEICON A	0.5 kgs 2.0 kgs	Putty, steel-filled. Temperature resistant from -35°C(-31°F) up to +120°C(+248°F). Especially suitable for the elimination of corrosion damages and pitting on tanks, repairs on pipes and castings, housings and machine parts. Also for the making of moulds and models, tools and fixtures. Certified by German Lloyd.
81 29 05 06	WEICON B	0.5 kgs 2.0 kgs	Viscous, steel-filled. Temperature resistant from -35°C(-31°F) up to +120°C(+248°F). Making of moulds and models, tools, templates, gauges and fixtures. Also for filling blowholes and microporosities on castings as well as for general repair works where a castable compound is advantageous.
81 29 10 11	WEICON BR	0.5 kgs 2.0 kgs	Putty, bronze-filled. Temperature resistant from -35°C(-31°F) up to +120°C(+248°F). For filling blowholes and rebuilding bronze equipment parts (e.g. propellers of ships).
81 29 03 04	WEICON C	0.5 kgs 2.0 kgs	Liquid , aluminium-filled. High temperature resistant from -35°C (-31°F) up to +220°C (+428°F). Suitable for pouring out moulds (e.g. vacuum and foam moulds), making fixing devices and tools, (e.g. injection dies) which are exposed to high temperatures.
81 29 21 22	WEICON F	0.5 kgs 2.0 kgs	Putty, aluminium-filled. Temperature resistant from -35°C(-31°F) up to +120°C(+248°F). Filling blowholes and reconditioning of parts (e.g. injection moulded parts, holding devices).
81 29 33 34	WEICON F2	0.5 kgs 2.0 kgs	Viscous, aluminium-filled. Temperature resistant from -35°C(-31°F) up to +120°C(+248°F). Making of castings, moulds and templates, predotypes and fixing devices. Ideal for pouring out swages to test their exactness or for pouring out fixing devices in ultrasonic welding machines.
81 29 51	WEICON HB 300	1.0 kgs	Putty, steel-filled. High temperature resistant from -35°C (-31°F) up to +200°C (+392°F), briefly up to +280°C (+536°F). Mixing ratio 1:1.
81 29 37 38	WEICON Ceramic BL	0.5 kgs 2.0 kgs	Liquid, brushable, mineral (carborundum and zircon)-filled , extremely wear resistant. Temperature resistant from -35°C (-31°F) up to +180°C (+356°F). Brushable surface prediction with extremely high wear and abrasion resistance. As a preventive coating or applied after repair , it reduces abrasion on castings, valves, blower vans and in many other applications.
81 29 41 42	WEICON Ceramic W	0.5 kgs 2.0 kgs	Putty, mineral-filled. Temperature resistant from -35°C (-31°F) up to +150°C (+302°F), briefly up to +260°C (+500°F). Brushable surface prediction with extremely high wear and abrasion resistance. As a preventive coating or applied after repair , it reduces abrasion on castings, valves, blower vans and in many other applications.

(to be continued)

(to be continued)

Unit Per Set

CODE	Product	Content	Description
81 29 31 32	WEICON SF	0.5 kgs 2.0 kgs	Putty, steel-filled, fast curing. Temperature resistant from -35°C (-31°F) up to +90°C (+194°F). For quick repairs and bondings (e.g. on leaky pipes, housings and gears) as well as for making anchorages and fixing devices. Certified by German Lloyd.
81 29 43 44	WEICON ST	0.5 kgs 2.0 kgs	Putty, metallic-filled. Temperature resistant from -35°C (-31°F) up to +120°C (+248°F).
81 29 45 46	WEICON TI	0.5 kgs 2.0 kgs	Putty, titanium-filled. Temperature resistant from -35°C (-31°F) up to +150°C (+302°F), briefly up to +260°C (+500°F). Repair of pumps, valves, wearing plates, ball bearing seats, shafts, centrifugal pumps and propellers.
81 29 35 36	WEICON UW	0,5 kgs 2,0 kgs	Putty, steel-filled, cures even under water. Temperature resistant from -35°C (-31°F) up to +120°C (+248°F). Particularly suitable for repair and maintenance work at marine and off-shore sector, wherever dampness and wetness lead to bonding problems.
81 29 57 58	WEICON WP	2.0 kgs 10.0 kgs	Putty, mineral-filled, extremely wear resistant. Temperature resistant from -35°C (-31°F) up to +120°C (+248°F). For the protection of surfaces exposed to extreme abrasion and wear. Ideal for the lining of highly stressed spiral conveyors, friction plates, transport blowers, pulverization plants, chutes, and many other parts.
81 29 47 48	WEICON WR	0.5 kgs 2.0 kgs	Liquid, steel-filled, wear resistant. Temperature resistant from -35°C (-31°F) up to +120°C (+248°F). Repair of shafts, pouring out bearings, cutting and punching tools, making of castings, drawing moulds, underpouring machines and foundations.
81 29 49 50	WEICON WR2	0.5 kgs 2.0 kgs	Putty, mineral-filled, wear resistant. Temperature resistant from -35°C (-31°F) up to +120°C (+248°F). For repairs on conveyors, guides and sliding ways where rolling or sliding movements cause wear. Also for lining pump housings and extruders and for the repair of worn-out flanges.
81 29 55 56	WEICON CBC	3.0 kgs 10.0 kgs	Liquid, self-levelling, long pot life of 30 minutes, almost no shrinkage, permanent high static strength, high resistance to ageing, chemical-resistant, vibration-proof.
81 29 85	Casting Resin MS 1000	1.0 kgs	Liquid, unfilled. Temperature resistant from -35°C (-31°F) up to +120°C (+248°F). Universal casting and laminating resin system. May be filled with a variety of different fillers. Can also be used as back-filling material.
81 29 52 53 54	Epoxy Resin Putty	0.1 kgs 0.4 kgs 0.8 kgs	Putty (kneadable), mineral-filled. Temperature resistant from -35°C (-31°F) up to +200°C (+392°F). Mixing ratio 1:1. Used for fast repairs and maintenance works such as fixing screws, anchors and plugs, repairing leaky tanks and pipes, reconditioning castings, repairing shafts, bearings, pumps and housings, reconditioning defective threads.
81 29 59 60	Mould Release Agent Liquid F 1000	250 ml 1 ltr	Liquid, solvent-containing release agent on a waxy basis for epoxy resins and polyurethanes. It is especially suitable for release processes from smooth and non-absorbing surfaces.
81 29 64 79	Mould Release Agent Wax P500	150 g 0.5 kgs	Putty, solvent-containing release agent on a waxy basis for epoxy resins and polyurethanes. It is especially suitable for release processes from smooth and/or porous surfaces.

(to be continued)

Name of Mfr. : Weicon GmbH & Co. KG

Liquid Polyurethane

Flexible casting and coating resin with high impact strength and abrasion resistance.

Unit Per Pc.

CODE	Name	Description	Content
81 29 61	Weicon Urethane 45 (Shore hardness 45)	Liquid Polyurethane, Temperature resistant from -60°C (-76°F) up to +90°C (+194°F). For making vibration dampers, assembling jigs, flexible seals, rubber-like predotypes, etc.	0.5 kgs
62	Weicon Urethane 60 (Shore Hardness 60)		0.5 kgs
63	Weicon Urethane 80 (Shore Hardness 80)		0.5 kgs

(to be continued)

Unit Per Pc.

CODE	Name	Description	Content
81 29 82	Primer M 100	For pretreating of not absorbing surfaces e.g. metals, plastics, lacquered faces, enamel, ceramic, coated glass etc.	250 ml
81 29 83	Primer S 300	For pretreating of porous and absorbing backgrounds.	250ml
81 29 84	Colour Paste – black -	Special colour paste on the basis of finely dispersed pigments for colouring WEICON Urethanes and WEICON Casting Resin MS 1000.	250 g
81 29 86	Easy-Mix PU-90	Basis Polyurethane. Extremely fast curing and high-strength construction adhesive with very good adhesion on plastics, fibre-reinforced materials, metal and many other materials. High viscosity, suitable for vertical surfaces. Pot life: approx. 90 seconds.	50 ml
81 29 87	Easy-Mix PU-240	Basis Polyurethane. Very fast curing and high-strength construction adhesive with very good adhesion on plastics, fibre-reinforced materials, metal and many other materials. High viscosity, suitable for vertical surfaces. Pot life: approx. 4 minutes.	50ml

Name of Mfr.: Weicon GmbH & Co. KG

Accessories

Unit Per Set

81 29 88	Processing Kit	Includes: Glass fibre cloth tape, Processing spatula, Empty can, Gloves, Wire mesh, Tape(Butyltape), Bush and Cuter

Name of Mfr. : Weicon GmbH & Co. KG

Repair Sticks

The easy solution for all repair and maintenance works. Temperature resistant from -50°C (-58°F) up to +120°C (+248°F), briefly up to +150°C (+302°F).

Unit Per Pc.

CODE	Product	Content	Description
81 29 65 66	Repair Stick Aluminium	57 grm 115 grm	Putty (kneadable), aluminium-filled. For quick non-rusting repairs and bonds of metal parts. Patches and seals cracks, holes, leakages and surface damages.
81 29 23 24	Repair Stick Aqua	57 grm 115 grm	Putty (kneadable), ceramic-filled. Ideal for quick repairs on damp and wet surfaces and for underwater applications.
81 29 67 68	Repair Stick Concrete	57 grm 115 grm	Putty (kneadable), ceramic-filled. Especially for quick repairs and reconditioning of all concrete, stone and ceramic surfaces.
81 29 69 70	Repair Stick Stainless-Steel NSF	57 grm 115 grm	Putty (kneadable), stainless steel-filled. For non-corroding repairs and reconditioning of stainless steel and other rust-proof metals.
81 29 71 72	Repair Stick Wood	28 grm 56 grm	Putty (kneadable), mineral-filled. For permanent and elastic, non-shrink repairs of wooden parts.
81 29 73 74	Repair Stick Plastic NSF	57 grm 115 grm	Putty (kneadable), plastic-filled. Especially for durable repairs of plastic parts (except for plastics such as PE, PP, PTFE, etc.).
81 29 75 76	Repair Plastic Copper NSF	57 grm 115 grm	Putty (kneadable), copper-filled. For very quick repairs of cracks, holes and leakages even on damp and wet surfaces.
81 29 25 26	Repair Stick Steel NSF	57 grm 115 grm	Putty (kneadable), steel-filled. Preferably used for quick and high strength repairs and bonds of metal parts.
81 29 77 78	Repair Stick Titanium	57 grm 115 grm	Putty (kneadable), titanium-filled. Temperature resistant from -50°C (-58°F) up to +280°C (+536°F), briefly up to +300°C (+572°F). For permanent, high temperature and wear resistant repairs and bonds of metal parts.

Name of Mfr. : Weicon GmbH & Co. KG

Comparison Table of the Resin Based Maintenance Products

Description	Thistlebond (U.K.)	Devcon (U.K.)	Weicon (Germany)	DIAMANT (Germany)	Wencon (Denmark)	Cordobond (U.S.A.)	Amcon (U.S.A.)	Neptune Research Inc. (U.S.A.)	RedDot (Singapore)	Kansai Putty Mfg. (Japan)
CODE	**81 22 16**	**81 22 47**	**81 29 85**			**81 23 01, 02**				
Liquid Epoxide Resin & Hardener	UPS 19000 RH Standard Resin & Hardener (Formally TRK 19000) 225gm Unit	5 Minutes Epoxy 500 grm	Casting Resin MS 1000, 1 kg(Set)	Ultrametal Steel FL 1kg & 0.5kg (Set)		Resin & Activator 453 grm, 906 grm (Set)			GlobalBond 201 A/B	
CODE	**81 22 02**	**81 22 51, 52**	**81 29 01, 02**		**81 23 35 / 47**	**81 23 10**				
Steel Filled Epoxy Putty	UPS 19060 SG Stick Grade Metal (Formally TRK 19060) 125gm Unit	Plastic steel A, 500 grm, 1 kg, (Set)	Plastic Metal A 500grm, 2kg (Set)	Ultrametal Steel P 1kg & 0.5kg (Set)	Cream / Rapid 1 kg (Set)	Strong Back Steel Putty, 453 grm (Set)	Paste – 1 kg Reinforced Repair Putty 5 × 114 grm tube	Syntho-Steel Epoxy Putty 7.5" and 2.5" tube	Global Bond Plastic Steel Putty A/B	MS-Iron Steel Epoxy Putty 500 gm & 1kg (Set)
CODE		**81 22 90**	**81 29 10, 11**							
Bronze Filled Epoxy Putty		Bronze Putty BR, 500 grm (Set)	Plastic Metal BR 500grm, 2kg (Set)	Ultrametal Bronze P 1kg & 0.5kg (Set)	Rapid 1kg (set)					
CODE		**81 22 66, 67**	**81 29 21, 22**	**81 23 96**						
Aluminium Filled Epoxy Putty		Aluminium Putty F 500 grm 1kg (Set)	Plastic Metal F 500grm, 2kg (Set)	Ultrametal Putty 1kg (Set) Mixing Ratio 1:1	Rapid 1kg (set)				GlobalBond 633 A/B	MS-Aluminium Epoxy Putty 500 gm & 1kg (Set)
CODE	**81 22 11**	**81 22 56**	**81 29 05, 06**		**81 23 37 / 38**					
Steel Filled Epoxy Liquid	UPS 105 EG Metal Repair Paste (Formally TR 105, TRK 19063) 1kg Unit	Plastic steel B, 500 grm (Set)	Plastic Metal B 500grm, 2kg (Set)	Ultrametal Steel FL 1kg & 0.5kg (Set)	Coating white + blue 0.5kg. (set)		Kav Coat – 1kg			MS-Iron Steel Epoxy Liquid 1kg (Set)
CODE										
Bronze Filled Epoxy Liquid				Ultrametal Bronze FL 1kg & 0.5kg(Set)	Coating white + blue 0.5kg (set)					
CODE	**81 22 20**					**81 23 08**				
Non-asbestos Filler in Powder Form	Sealer filler (Formally TRK 19043), 50gm Unit					Strong Back Sealer, 113 grm(Set)				
CODE	**81 22 23, 25**				**81 23 39**	**81 23 23, 24, 25**		**81 24 51-59**		
Glass Fiber Fabric	UPS 19007 GT 50mm x 50m Glass Tape (Formally TRK 19007) Each UPS 19009 GT 100mm x 50m Glass Tape (Formally TRK 19009) Each				Reinforce-ment Tape, W: 5cm x10m + W: 10cm x 20m (Rol)	Glass Tape, W:38mm, 76mm, 100mm (Rol)	Pipe Tape 50mm ×1.5mtr 100 mm ×4.6mtr	Syntho-Glass Fiberglass Cloth		
CODE	**81 22 30, 31**			**81 23 96**						
Epoxide Compound	UPS 19003 A&B Cement (Formally TRK 19002/3) 200gm Unit 1kg Unit			Ultrametal Putty 1kg (Set) Mixing Ratio 1:1						
CODE	**81 22 35, 37**	**81 22 98**		**81 23 89**	**81 23 41, 31, 32, 33, 26**	**81 23 30**				
Repair Kit	UPS 11000 A Kit (Formally TRK 11000) Each UPS 13000 C Top Up Kit (Formally TRK 13000) Each	Zip Patch (Set)		Ship Repair Set (1150 / 1744)	Repair Kits 1,2,3,4 & for Tanker Vessels	Repair Kit (Set)	Repair Kit (Set)			

(to be continued)

PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

Description	Thistlebond (U.K.)	Devcon (U.K.)	Weicon (Germany)	DIAMANT (Germany)	Wencon (Denmark)	Cordobond (U.S.A.)	Amcon (U.S.A.)	Neptune Research Inc. (U.S.A.)	RedDot (Singapore)	Kansai Putty Mfg. (Japan)
CODE		**81 22 62 / 93**	**81 29 31, 32 / 81**	**81 23 97**	**81 23 42 / 29 / 28 / 44 / 48**					
Quick Curing	UPS 125 XFP Fast Curing Metal Paste 200gm Unit 500gm Unit	Plastic steel 5-minute putty SF 500 grm (Set) / Magic Bond 114 grm Stick	Plastic Metal SF 500grm, 2kg (Set) Fast Metal 24 ml	Ultrametal 1250 0.5kg (Set) Mixing Ratio 1:1 Also usable for oily surfaces	Putty: 5-minutes curing 8 x 125 grm + 4 x 125grm (Rol) Rapid: 8 x 125grm (set) Pipe tape, water activated pipe repair tape – 3 sizes (Set)		Fast Paste 500 grm	Syntho-Quickset Epoxy 1 lb / 4 lbs	GlobalBond 202 A/B	MS-Iron Steel Ultra Curability Epoxy Putty 300 gm (Set) Mixing Ratio 1:1 MS-IRON STEEL FAST CURABILITY EPOXY PUTTY 500 gm (Set) Mixing Ratio 7:2
CODE		**81 22 43**	**81 29 51**	**81 23 99**	**812592 / 93 /94 812345 / 46**					
High Temperature	UPS 225 HT High Temperature Ceramic 1kg Unit 3kg Unit	HR-Super -3000, 500 grm (Set)	Plastic Metal HB 300 1kg (Set) Mixing Ratio 1:1	Plasticmetal WF 1 kg (Set) Free Mixing Ratio Liquid & Putty	Ceramic Cream 1kg (set) Ceramic Coating grey + green 0.5kg (set) Hi-temp yellow + green 0.5kg (set)		High temp 1000C Putty 500 grm		GlobalBond 203 A/B	MS-Heat & Wear Resistant Metal Epoxy Putty 500 gm (Set)
CODE		**81 22 46**	**81 29 35, 36**	**81 23 98**	**81 23 34 / 36 / 27**	**81 23 15**				
Under Water	UPS 250 UW UnderWater Ceramic 4ltr Unit	UW, 500 grm (set)	UW, 0.5 kg, 2 kg (Set)	RR Metal 1 kg (Set) FREE Mixing Ratio Liquid & Putty	UW Cream 0.5kg (set) UW Coating Orange + brown 0.5kg (set)	Underwater, 454 grm (Set)	Underwater Putty 5 x 114 grm tube	Syntho-Subsea epoxy	GlobalBond 207 A/B	

Graphite Powder

Powdered graphite-mir-floated. Extra finely powdered graphite for precision equipment, etc. It is more adhesive than ordinary flake graphite.

81 24 01	Graphite powder, 0.5 kgs	Tin
02	" " 2.0 "	"
03	" " 5.0 "	"

Graphite Flakes

A standard lubricating graphite, particularly useful for engines, compressors, etc. Graphited surfaces improve lubrication and help oil and grease to last longer. These graphite flakes are also used as paint pigment for heat resistant and protective coats. Furnished in tins of 1, 2.5 and 5 kgs.

81 24 06	Graphite flake, 1.0 kgs	Tin
07	" " 2.5 "	"
08	" " 5.0 "	"

Graphite Paste

An outstanding product for high temperature application such as on cylinder head studs, face plate studs, boiler and manhead gaskets, gas burner connections, studded and threaded connections, etc. Will keep joints leakproof against oil, acids and gases which might penetrate ordinary oil mixed compounds.

81 24 11	Graphite paste, 0.5 kgs	Tin
12	" " 2.0 "	"
13	" " 5.0 "	"

Pipe Joint Compounds

For sealing threaded joints in iron, stainless steel, brass, copper and plastic pipes used for gas, water, steam, compressed air, etc. Withstands most corrosive liquids and gases. This filler also acts as a lubricant. Furnished in a 2.5 kgs tin only.

81 24 20	Compound, pipe joint, 2.5 kgs	Tin

Rock Wool
(Mineral Glass Fiber)

For building insulation, ovens, ducts, etc. of temperatures up to 600°C (1,112°F). Furnished 25 kgs per bag.

Unit Per Bag

Sheet		Granulated	
CODE	Size mm	CODE	Weight
81 24 32	25 × 605 × 1,820	**81 24 34**	25 kgs
33	50 × 605 × 1,820		

Fire Clay Powder

Dry milled powder for boiler brick work, anti-fire walls, etc. Will withstand up to 1,200°C. 30 kgs in a sack.

81 24 35	Fire clay powder, 30 kgs	Bag

Refractory Products

Plastic refractories are firebricks in plastic putty-like form which can be installed by ramming the plastics with a wooden hammer or air rammer into any shapes required. After installation, it is baked with operation temperature of the furnace itself (over 1,000°C) to form the tough walls.

Castables are refractory cements which are mixed with the proper amount of water for installation. May be poured into frames or trowelled as is the case with ordinary cement, or gunned by gunning machines. After installation by whichever method, it hardens to a sufficient strength.

From among various types of products, the most common products are listed below and other products such as "Pliram" (ramming mix) or "Pligun" (gunning mix) are also available if required.

Unit Per C/T

CODE	Product Name	Type	Packaged in
81 24 41	PLIBRICO Super ALX AB	High Alumina Plastic Refractories	25 kgs/Ctn
81 24 42	PLIBRICO Super AB	Fireclay Plastic Refractories	
81 24 45	PLICAST # 40	Dense Castable Refactories	25 kgs/Bag
81 24 46	PLICAST # 36		
81 24 47	PLICAST # 34		
81 24 48	PLICAST # 31		
81 24 49	PLICAST KLMIX		

Name of Mtr.: AGC Plibrico Co.,Ltd.

7TH
81

Anticorrosive Tapes

Uses:
For protection against corrosion and the water-proofing of pipes, flanges and valves for marine use.

Compound:
A neutral compound based on saturated petroleum hydro carbons (petrolatum) with inert fillers.

Fabric:
Fabric carrier free from chemical impurities, fully impregnated and coated on both sides.

Characteristics:
Unalterable in composition and plasticity over a wide range of temperatures. Slight superficial oxidation occurs in atmospheric application and renders the surface less tacky. Has a very high degree of impermeability to water. Won't crack or harden. Unaffected by vibration and highly resistant to mineral acids, alkalis and salt. Basically no VOC's (Volatile Organic Compounds) contains so it is friendly to the environment.

Specifications

Thickness	1.2 mm
Weight	1.4 kgs/m²
Elongation	20%
Temperature	For applicable 5°C to 55°C

Unit Per Rol.

CODE	Width	Length	CODE	Width	Length
81 24 71	50 mm	10 mtr	**81 24 73**	150 mm	10 mtr
77	75 mm		**74**	200 mm	
72	100 mm		**75**	300 mm	

Sub-Materials for Anticorrosive Tape

Paste
A primer for increasing the adhesion of anticorrosive tapes.

Mastic
Filler or sealer on the uneven surfaces (same composition as anticorrosive tapes).

Unit Per Box

CODE	Brand	Contents	Per Box	Weight kgs
81 24 81	Paste	3 kgs/can	3 cans	9
81 24 83	Mastic	0.88 kgs/bar	25 bar	22

Anti-corrosive Tapes
SeaSeal™ Sealants

SeaSeal™ products utilize the latest viscous-elastic technology to gain superior performance in anti-corrosion or water proofing situations such as pipe, pipe joint and flange corrosion protection as well as hatch sealing, and conduit box packing. Since it has no VOC's (Volatile Organic Compounds) it is friendlier to the environment.

Properties
Impermeable to moisture and gases
Immediate adhesion to substrates
Never will crack or become brittle
Non-carcinogenic, no VOCs
Non-toxic, nonflammable
Inert material, no deterioration
NO primer needed

SeaSeal™ Tape

It is available as a quick wrap or paintable product. In the quick wrap from it has a removable backing and a clear overlay on the topside for sealing, pipe spans, coating transitions, elbows & tees or pipe coating rehabilitation in salty and humid environments.

The paintable version has all the qualities of the quick wrap and it has a white polymer topcoat that can be painted after application.

Unit Per Rol.

CODE	Size Width x Length	CODE	Size Width x Length
Quik Wrap		**Paintable**	
81 24 85	100 mm x 7.2 mtr	**81 24 87**	100 mm x 10 mtr
86	150 mm x 7.2 mtr	**88**	150 mm x 10 mtr

Name of Mfr.: InduMar Products, Inc.

SeaSeal™ Overwrap Tape

Overwraps provide additional mechanical protection to the SeaSeal tape and paste in environments where physical damage from impact or abrasion can occur. They can be PE, Vinyl or Urethane tapes.

81 24 89	Tape, Overwrap, SeaSeal™, 100 mm x 30mtr	Rol
90	Tape, Overwrap,Yellow/Black Non-Skid 100mm x 18mtr	

Usage Guide for SeaSeal Tape and Overwrap Tape

Nom. Pipe Dia	SeaSeal Quick Wrap Tape	Over Wrap Tape	Nom. Pipe Dia	SeaSeal Quick Wrap Tape	Over Wrap Tape
2	100mmx7.2mtr	100mmx30mtr	16	150mmx7.2mtr	100mmx30mtr
4	100mmx7.2mtr	100mmx30mtr	20	150mmx7.2mtr	100mmx30mtr
6	100mmx7.2mtr	100mmx30mtr	24	150mmx7.2mtr	100mmx30mtr
8	100mmx7.2mtr	100mmx30mtr	26	150mmx7.2mtr	100mmx30mtr
10	100mmx7.2mtr	100mmx30mtr	28	150mmx7.2mtr	100mmx30mtr
12	100mmx7.2mtr	100mmx30mtr			

SeaSeal™ Paste

Anti-corrosion paste ideal for submerged items such as nuts or any situations requiring an extra measure of protection.

81 24 95	Paste, anti-corrosive, SeaSeal™, 30mm x 30mm x 2.7mtr	Pc.

SeaSeal™ Sealant

Available in 30 oz tube, and allows SeaSeal to be pumped into void spaces.

- Fills voids and spaces for corrosion prevention.
- Flange and valve protection.
- Waterproofs conduits and junction boxes.

81 24 96	Sealant, anti-corrosive, SeaSeal™, 30 oz	Tub

Flat Patch Leak Sealant Kits
STOP IT® Flat Patch

A leak sealant product designed for applications where localized repair is needed or full pipe wraps are impractical. The carbon fiber composite repair system safely and quickly restores operations up to 1,000 psi, and provides localized corrosion inhibition.

Applications can be made regardless of surface orientation (i.e., vertical or horizontal) and will result in a durable repair that will not shatter or crack, even under extreme operating conditions. Operations may resume in as little as 4 hours following application and cure under ambient conditions.

Supplied in a kit with all the necessary components for field installation*.

* Installation requires no special training and involves minimal surface preparation.

Applications:
Tanks • Vessels • Large Diameter Pipes • Valve and Pump Casings • Welded Seams Rail Cars • Roofs • Drums • and More

Shelf Life:
6 months from date of purchase when stored at 40° to 83°F (5° to 28°C).

Unit Per Set

CODE	Kit Size	CODE	Kit Size
81 24 65	4 Inch x 4 Inch (100 mm x 100 mm) Kit, yield for 2 Repairs	**81 24 70**	6 Inch x 6 Inch (150 mm x 150 mm) Kit, yield for 1 Repair

Dispensing Guns for Leak Repair Kit STOPIT® HP/Flat Patch

Dispensing gun is not included in leak repair kit and available separately on request.

81 24 76	Dispensing Gun, 200 ml for STOPIT HP/Flat Patch	Pc.

Tapes for Prevention of Leakage and Corrosion, and for Insulation

Leak None Tape #117

Excellent workability and fitting many kinds of piping or winding materials. High close-adhesiveness and self-adhesiveness.

- Good Workability

  Since Leak none tape is self-adhesiveness type, it has good workability without sticking to the hands or any goods surrounding the working space. The tape, slightly tensed while taping, will adhere within 20 to 30 minutes by overlapping about every half width of tape to the material. It is not necessary to fasten by any hose band over the wrapped tape.

- Applicable of Underwater Taping

  Able to stop the liquid leaking (about 2 to 3 kgf/cm²) and also able to tape even in water. In this case the tape must be winded, pressing over by hand, to the material to avoid the water and trash permeating between the layer of tapes.

- Applicable to Various Materials/Uses

  This tape is applicable not only for protecting the leakage but also preventing the damage by salt and for electric insulation. This tape can be applied to various kinds of material, such as metal, gum, plastic resin including PVC, piping stick materials or line materials, etc.

Specification and Characteristic

Thickness and Colour	0.5 mm, Black
Expansion (%)	450
Peel Adhesion (N)	30 (20mm width)
Pressure Resistance (kgf/cm²)	1 – 5 (4 ply) 5 – 10 (7 ply)
Weatherability	No extraordinary in 200h. by Weathermeter
Water Resistance	No extraordinary in no leak, no swelling
Tracking Resistance OA	Liquid of Stain

* Data in the above table is actual test data, not guaranteed data

CODE	Width x Length	Unit
81 24 91	25 mm x 10 mtr	Rol
92	38 mm x 10 mtr	"
93	50 mm x 10 mtr	"

Name of Mfr. : Tokyo Nisshin Jabara

High-Adhesive Butyl Sealing Tapes

A self-adhesive sealing tape made of a butyl rubber compound, protected by a reinforced aluminium film, making it highly resistant to ageing and oxidizing caused by atmospheric and chemical agents. Highly adhesive to all materials and especially to plastic, glass, steel, polycarbonate and wood. Especially used to repair small leaks and water infiltrations, for example around windows.

Characteristics:
Cold applied / Waterproof and self-sealing / Resistant to ageing and UV-rays / Excellent adhesion at low temperatures.

Compound color: Grey

Application temperature: 0°C / +40°C

Service temperature: -30°C / +90°C. up to 160°C for max. 24h.

Unit Per Rol.

CODE	Width x Th mm	Length mtr	CODE	Width x Th mm	Length mtr
81 28 81	50 x 0.6		**81 28 91**	50 x 1.0	
82	100 x 0.6		**92**	100 x 1.0	
83	200 x 0.6		**93**	200 x 1.0	
84	300 x 0.6	10	**94**	300 x 1.0	10
85	450 x 0.6		**95**	450 x 1.0	
81 28 86	500 x 0.6		**81 28 96**	500 x 1.0	
87	600 x 0.6		**97**	600 x 1.0	

Name of Mfr. : Isoltema s.p.a.

7TH
81

Aluminium Tapes

Suitable for taping flexible duct and for jointing insulation board.

Thickness : 0.28 mm.
Tensile strength : 4. Elongation: 15%.
Temperature : –20 to+80°C.

Unit Per Rol.

CODE	Width x Length	CODE	Width x Length
81 25 04	50 mm x 25 mtr	**81 25 05**	100 mm x 25 mtr

Teflon Seal Tapes
(PTFE Tape)

A teflon made tasteless, odourless ribbon which effectively seals a joint. Ribbon dope will withstand temperature from –100°C to +260°C. Unaffected by acids, solvents, steam, etc.

Unit Per Pc.

CODE	Width mm	Thick mm	mtr per roll	Packed in box
81 25 03	12	0.75	10	10
01	13	0.1	5	10
02	20	0.1	10	10

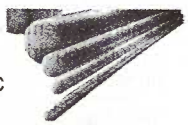
Teflon Rounds

Processing material for teflon rounds. Standard length is 1,000 mm, up to 50 mm in diameter, and 300 mm from 60 mm to 200 mm diameter.

Unit Per Lgh.

CODE	Diam mm	CODE	Diam mm	CODE	Diam mm
81 25 06	2	**81 25 18**	15	**81 25 30**	70
07	3	**19**	18	**40**	75
08	4	**20**	20	**50**	80
09	5	**21**	22	**55**	90
10	6	**22**	25	**60**	100
81 25 11	7	**81 25 23**	30	**81 25 79**	120
12	8	**24**	35	**80**	125
13	9	**25**	40	**90**	130
14	10	**26**	45	**98**	150
15	11	**27**	50	**99**	180
81 25 16	12	**81 25 28**	60	**81 26 00**	200
17	13	**29**	65		

Nylon Round Bars



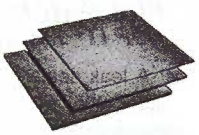
Made of extruded Polyamide.

Maximum temperature : –70°C to 140°C
Specific gravity : 1
Length : 1 mtr

Unit Per Lgh.

CODE	Diam mm	CODE	Diam mm
81 26 06	10	**81 26 17**	60
07	15	**18**	70
08	20	**19**	80
09	25	**20**	90
10	30	**33**	100
81 26 15	40	**81 26 34**	150
16	50		

Teflon Sheets



Gasket material which will withstand temperature from –100°C to +260°C and is unaffected by acids, solvents, etc. and provides excellent electrical insulation. When ordering, specify the sheet thickness required.

Unit Per Sht

CODE	Thick mm	Size mm	CODE	Thick mm	Size mm
81 25 31	1.0		**81 25 41**	1.0	
38	1.5		**48**	1.5	
32	2.0	300 x 300	**42**	2.0	1,000 x 1,000
33	3.0		**43**	3.0	
39	4.0		**49**	4.0	
81 25 34	5.0		**81 25 44**	5.0	
35	6.0		**45**	6.0	
36	8.0	300 x 300	**46**	8.0	1,000 x 1,000
37	10.0		**47**	10.0	

Teflon Cords

100 % teflon material sealing which never adheres and hardens. Can be used as a free-size packing for all sizes of valve stems and tightening down glands, pipe flanges, cover gaskets and other similar applications.

81 25 51	Teflon cord, 2.4 mmø	x 12 mtr	Spl
52	" " 4.0 "	x 6 "	"
53	" " 6.0 "	x 2.5 "	"
54	" " 8.0 "	x 3 "	"

Gore Joint Sealants

Pillar No.3300

A rope-shaped gasket made of stretched 100% PTFE with double-sided tape attached to one side. Its shape and the marshmallow-like structure make this sealant a great choice for use with flanged that have large surface areas, complex shapes, or rough surfaces.

Features & Performance:
- Inert to almost all chemicals.
- Reliable sealing performance (max 3.3 MPaG).
- Thermally resistant.

Applications
Extremely flexible and compressible, and can not only be used as a gasket but for numerous other purposes.

Unit Per Rol.

CODE	Nominal Size	Size W x Th x Length
81 25 61	3	1.9 x 3.6 mm x 30 mtr
62	5	2.4 x 5.0 mm x 15 mtr
81 26 37	7	2.5 x 6.6 mm x 15 mtr
81 25 63	10	2.9 x 10.4 mm x 8 mtr
64	14	5.8 x 13.9 mm x 5 mtr
65	17	7.2 x 17.2 mm x 5 mtr
66	20	4.6 x 18.8 mm x 5 mtr

PTFE Joint Sealant Tapes

CORDSEAL™ <Soft>

A marshmallow-shaped free-size sealing material, which has been modified to be flexible and very tough, while maintaining the PTFE's excellent chemical resistance and heat resistance properties.

These are for the temporary repairs.

Features:
- Excellent chemical resistance.
- Heat resistance.
- Good workability.

Temperature	Pressure (MPa)
-240 to 260°C/-400 to 500°F	Max 2.0 (gas), Max 5.0 (liquid)

Suitable fluids: General fluids (water, steam, oil, etc.), solvents, corrosive liquids

Applications: Large diameter equipment (rough finished flange, strained flange, insufficient tightening force), tanks, heat exchangers, pressure vessels, duct flanges, pipe flanges, gland packing for valves

Oval type

VALQUA® No. 7GS66A

String shaped product with an oval cross-section [string type] and adhesive to improve workability.

Cross section

Unit Per Rol.

CODE	Size (mm)		Length (m)
	Width	Thickness	
81 25 71	3	1.5	30
72	6	3.0	15
73	9	4.0	8
81 25 74	12	5.0	5
81 25 75	16	6.0	
76	20		

Tape type

VALQUA® No. 7GS62A

Adhesive belt-shaped product (1 to 3 mm thick) with a flat cross-section (tape type).

Cross section

Unit Per Rol.

CODE	Size (mm)		Length (m)
	Width	Thickness	
81 25 81	20	1	15
82		2	5
83		3	5
81 25 84	30	1	15
85		2	5
86		3	5
81 25 87	50	1	15
88		2	5
89		3	5

Rope type

VALQUA® No. 7GS64N

Non-adhesive rope-shaped products with a round cross-section (rope type).

Cross section

Unit Per Rol.

CODE	Diam. mm	Length (mtr)	CODE	Diam. mm	Length (mtr)
81 25 67	2	40	**81 25 70**	8	7
68	4	20	**77**	10	5
69	6	10	**78**	12	5

Silicone Sealants

When extruded, reacts with humidity in the air, curing inwards from the surface and becoming silicone rubber. Has outstanding adhesion to glass, ceramic, aluminium, and many plastics. Resists sunlight, weathering, water, and most chemicals. An excellent insulator, its dielectric strength is unaffected by electrical cycling or stress. Uses include potting electronic components, insulating electrical boxes, fabricating and repairing gaskets, and making expansion and contraction seals in bridges and tunnels. It is also used for general maintenance, caulking and sealing, and for production bonding. Available in 100 grm and 350 grm weight tubes.

CODE	Colour	Contents grm	Unit
81 26 01	Clear	100	Tube
02		350	
81 26 04	White (or Coloured)	100	Tube
05		350	
81 26 03	Gun for silicone sealant, 350 grm		Pc.

Sealing Agents

Permatex Form-a-Gasket

Available in many types of gaskets, but the 3 most common types are described below:

1. Form-a-Gasket No. 1
   Hard-setting sealant. A fast-drying, hard-setting, heavy bodied sealant ideal for repairing gaskets, etc.
2. Form-a-Gasket No. 2
   Pliable-setting sealant. A non-hardening, heavy bodied pliable sealant for semi

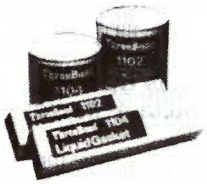
permanent assemblies.

3. Aviation Form-a-Gasket No. 3
   A non-hardening, liquid, brushable sealant.

Unit Per Tub or Can

CODE	No.	Size	Container
81 26 11	1	11 oz	Tube
81 26 12	2	11 oz	Tube
14	2	1.5 oz	Tube
81 26 13	3	1 pt	Brush-top Can

Sealing Agents
ThreeBond 1100 Series



These are series of liquid gaskets that have been developed based on a new concept and leak prevention theory that differs drastically from the ones from which conventional solid sheet gaskets have been developed. It is incorporated by being applied to the seal surfaces of the machine to prevent leaks.

CODE	No.	Feature	Size	Unit
81 26 21	1101	Non-solvent and harmless	200 grm	Tub
22			1 kgs	Can
81 26 23	1102	All round use, non-drying, easy application	200 grm	Tub
24			1 kgs	Can
81 26 25	1103B	For small precision parts	150 grm	Tub
26			1 kgs	Can
81 26 27	1184	All round use, for large clearance application	200 grm	Tub
28			1 kgs	Can
81 26 29	1105	Vibration resistance	150 grm	Tub
30			1 kgs	Can
81 26 31	1141G	Water soluble and harmless	1 kgs	Can
81 26 32	1107D	For high temperature application	1 kgs	Can

High Temperature Resistance Inorganic Adhesives
ThreeBond No.3732

Made of alumina, and high temperature resistance inorganic adhesive for temperature up to 1,400°C. Suitable for use as adhesives for ceramic, glass and other metals. Also used as the putty for electrical parts where possibly exposed to extreme high temperature.

Unit Per Pkt.

CODE	Contents	CODE	Contents
81 26 35	200 grm / pkt	**81 26 36**	1 kgs / pkt

Pipe-Seals

Compounded with teflon to lubricate joint assemblies. Resistant to chemicals and can be used on pipes larger than 3/4" diam. to seal kerosenes, LP gas, oils, water, weak caustics, mild acids and low pressure steam. Performs to 500°F at moderately high pressure, will not run, drip or separate. Service temperature up to 500°F.

Unit Per Btl.

CODE	Type	Contents
81 26 51	PSBT-8	8 oz / btl with brush top
52	PSBT-16	16 oz / btl with brush top

Name of Mfr. : SAF-T-LOK Corporation.

Ferryl Pipe Sealants

A multi-purpose pipe sealant designed for marine use.

Unit Per Tub.

CODE	Product No./ Unit	Application
45 04 19	Ferryl Armacit Pipe Sealant 150 grm/tube	Paste-like packing that dries hard for permanent sealing of threaded pipes and flanges. Resistant to oil, petrol, most gases. Temperature and pressure-resistant.

Name of Mfr.: Ferryl Sales Limited.

Flange-Seals

Polymer gel developed to seal flanges with or without gaskets. For use on threaded fasteners, on machined flanges, or with gaskets. Resists fuels and other fluids. Fills gaps to .010" and withstands severe shock and vibration. Non-hardening, removable, reusable. Service temperature up to 600°F.

Unit Per Tub.

CODE	Type	Contents
81 26 56	FST-3	3 oz / tube
57	FSBT-8	8 oz / tube with brush top

Name of Mfr. : SAF-T-LOK Corporation.

Liquid-Rubber Kits

Formulated for on-the-spot rubber part repair, Available in liquid or paste. Dries in 2 hours at room temperature. Provides excellent flexibility, wear and abrasion resistance.

Unit Per Pkt.

CODE	Type	Contents
81 26 61	LR-5 Liquid	5 oz / pkt
62	LR-5 Paste	5 oz / pkt

Name of Mfr. : SAF-T-LOK Corporation.

Silicone Gaskets

Paste type sealing gaskets to apply to any shape of flanges, casing or cover. Due to oil resistance and anti-freeze performance, it can be applied to Oil pump, Water pump, Valve cover, Crankshaft end, Transmission case, etc. Will be tack-free within 15 minutes.

Unit Per Tub.

CODE	Contents	CODE	Contents
81 26 71	70 cc	**81 26 72**	300 cc

Gasket Paste

Gasket Paste is an agent employed to enhance the sealing effect of gasket contact surfaces and to facilitate peeling off gaskets when disassembling joints. Please select the optimum type from the variety of products listed below.

Unit Per Can/Tube

CODE	Product Name	Applicable Temperature	Description
81 26 91	No. 5 2.5 kgs/can	-200 to 200°C (-328 to 392°F)	Black paste containing special oil-soluble adhesive compounded with fine graphite particles. Suitable fluids: Water-based fluids (steam, hot water, water, seawater, acid, alkali, salt solutions and alcohol).
81 26 92	No. 5M 2.5 kgs/can	-200 to 200°C (-328 to 392°F)	White paste containing special oil-soluble adhesive compounded with fine mica particles. Suitable fluids: Water-based fluids (hot water, water, seawater, acid, alkali and salt solutions), where white paste is specifically required.
81 26 93	No. 6 2.5 kgs/can	-200 to 900°C (-328 to 1,652°F)	Black paste containing special water-soluble adhesive, with high oil and solvent resistance, compounded with fine graphite particles. Suitable fluids: Hydrocarbon-based fluids (petroleum-based oil, oil gas, solvents, solvent vapor, animal & vegetable oil, LNG and general gases).
81 26 94	No. 6M 2.5 kgs/can	-200 to 900°C (-328 to 1,652°F)	White paste containing special water-soluble adhesive, with high oil and solvent resistance, compounded with fine mica particles. Suitable fluids : Hydrocarbon-based fluids (petroleum-based oil, oil gas, solvents, solvent vapor, animal & vegetable oil, LNG and general gases) where white paste is specifically required.
81 26 95	Sealpaste™ 800 grm/can with brush	-50 to 300°C (-58 to 572°F)	Light brown paste containing a special non-drying oil adhesive, compounded with inorganic filler material and a small amount of solvent. Suitable fluids: When handling water, air and hydrocarbons (gasoline, kerosene, lubricating oil, natural gas, LPG, refrigerants, hydrogen sulfide, ethylene, butane, and thane), and also when it is necessary to prevent crevice corrosion on the flange surface.
81 26 96 **97**	New Valflon™ Paste 100 grm/ Tube 1 kgs/can	-200 to 300°C (-328 to 572°F)	Fluororesin powder that is water-dispersed using surfactant agents. Suitable fluids: When handling highly corrosive fluids (strong acids, alkalis, or halogens and when handling oxygen) when noncombustible materials are required.

Applicable Valqua® Gasket Type

Gasket Paste	Valqua® GF300	Valqua® 6500/6509	Valqua® N7030	Valqua® Metallic
No. 5	△	△	×	△
No. 5M	△	△	×	△
No. 6	×	△	×	△
No. 6M	×	△	×	◎
New Valflon™ Paste	◎	△	◎	△
Sealpaste™	○	◎	×	△

General Purpose Glues

A general purpose adhesive of the synthetic rubber type used for bonding all sorts of materials including metals, concrete, glass, wood, plastics, paper, leather, rubber and sail cloth.

CODE	Contents	Unit
81 27 01	100 grm	Tub
02	150 grm	"
81 27 03	1.0 kgs	Can
04	1.5 kgs	"
05	3.0 kgs	"

Wood Glues

Has superior adhesion and is designed exclusively for use in general wood working. Available in many sizes, but the 1 kgs tin is coded as below :

81 27 11	Glue for wood, 1 kgs	Tin

Quick Bonding Adhesives

A unique adhesive which forms a strong bond instantly with almost all materials such as rubber, plastic, and metal to metal. Does not require solvents or any other special treatment. Mainly composed of alpha cyanoacrylate monomer. Harmful to the skin.

Unit Per Tub.

CODE	Grade No.	Cont. Tube Size	Remark	Apply For
81 27 21	101	20 g	Low Viscosity & Ultra Quick Setting	Metal to Metal
22		50 g		
81 27 23	102	20 g	Medium Viscosity & Quick Setting	"
24		50 g		
81 27 25	201	10 g (2g×5)	Low Viscosity & Ultra Quick Setting	Rubber, Plastic Metals
26		20 g		
27		50 g		
81 27 28	202	10 g (2g×5)	Medium Viscosity & Quick Setting	"
29		20 g		
30		50 g		

Glue Araldite

Epoxy type, strong adhesive, liquid glue for use with almost all materials such as metal, ceramic, glass, wood, stone, paper, leather, rubber, plastic and styro-foam, etc. This is an epoxy resin. When cured, it becomes a firm,

clear, transparent gel. 10 minutes quick hardening type and 12 hours hardening standard type are available. This glue is supplied with the hardener.

Unit Per Set

CODE	Description
81 27 41	Glue Araldite, quick, 30 cc w/hardener
42	" " " 180 cc "
43	" " standard, 30 cc "
44	" " " 180 cc "

Loctite® Engineering Adhesives

Loctite® technology strengthens the assembly of two or more parts by filling all the space between mating surfaces with a single-component liquid which chemically self-hardens at room temperature into a tough heat-and-solvent-resistant structural solid. From among the various types of products, the most common products are listed below.

Unit Per Btl.

CODE	Type No.	Size	Characteristics
		Threadlocker	
81 27 51 81	222	50 ml 250 ml	**Low Strength/Small Screw** Ideal for fastener diameters of 1/4"(6 mm) and smaller. Controlled lubricity for accurate clamp loads. Parts can be separated using hand tools.
81 27 52	242	50 ml	**Medium Strength** A general-purpose, removable threadlocker for fasteners between 1/4" and 3/4"(M6 to M20) diameters. Controlled lubricity for accurate clamp loads. Parts can be separated using hand tools.
81 28 44 45	243 (Thread locker, Blue)	50 ml 250 ml	**Medium Strength/Primerless** A general-purpose, medium strength threadlocker with improved temperature resistance and oil tolerance. Does not require most fasteners to be pre-cleaned or primed before use. Suitable for fasteners up to 1 1/2" (M36).
81 28 11	248 (Thread locker, Blue)	19 ml	**Semi-Solid - Medium Strength** General-purpose threadlocker for all nut and bolt applications, especially fasteners up to 2" (M50). Removal with handtools. The semisolid formula also means it won't spill or leak.
81 28 46 47	263 (Thread locker, Red)	50 ml 250 ml	**High Strength/Primerless** A general-purpose, high strength threadlocker with improved temperature resistance and oil tolerance. Does not require most fasteners to be pre-cleaned or primed before use. Locks fasteners up to 3/4" (M20).
81 28 12	268	19 ml	**Semi-Solid - High Strength** Semi-solid stick is high strength prevents loosening of threaded fasteners. Well suited for fasteners up to 3/4" (M20) and is removable with heat and hand tools. Red colour is available.
81 27 46 64	270 (Thread locker, Green)	50 ml 250 ml	**High Strength/Primerless** A general-purpose, high strength threadlocker with improved temperature resistance. Does not require most fasteners to be pre-cleaned or primed before use. Locks fasteners up to 3/4" (M20).
81 27 56 86	290	50 ml 250 ml	**Wicking Grade** A medium to high-strength threadlocker for pre-assembled bolts up to 1/2"(M12). Penetrates threads by capillary action. Secures set screws and other assemblies after settings are completed. Seals welds and porous metal parts. Protects threads from rust and corrosion. Localized heating and hand tools are needed for disassembly.
		Thread Sealant	
81 28 48 49	55	50 ml 150 ml	**Thread sealing cord for metal and plastic pipes** Non curing, immediate, full pressure seal for a quick, easy and reliable seal. For pipes up to 4 in. and temperatures up to 150°C.
81 27 48	542	50 ml	**Fine Threads** A liquid sealant recommended for sealing the fine threads of hydraulic and pneumatic connectors.
81 28.21 22	545	50 ml 250 ml	**Hydraulic/ Pneumatic Fittings** Contains no fillers of particles that could contaminate system fluids, foul valves, or clog fine filters and screens. Suitable for fittings up to 2" (M50) in diameter. Excellent solvent resistance.
81 28 23 24 25	567	50 ml 250 ml 350 ml	**PST Thread Sealants High Temperature** Excellent solvent resistance, allows easy assembly, prevents galling, and can withstand temperatures up to 400°F (200°C). Excellent for high pressure applications, it locks and seals tapered metal, pipe threads and fittings. Ideal for stainless steel, aluminium, galvanized metal, and other inert metals. Disassembles with hand tools.
81 27 62 94	572	50 ml 250 ml	**Low Strength** Low strength sealant with moderate fixture speed for use on coarse threads.
81 27 49 95	577	50 ml 250 ml	**Coarse Threads** Medium strength, general-purpose sealant for use on coarse, threaded components.
		Flange Sealant	
81 27 61	504	250 ml	**Gasket Eliminator Gap Filing Flange Sealant** A single-component, instant, low-pressure seal that fills gaps to 0.762mm (0.030").

(to be continued)

(to be continued)

Unit Per Btl.

CODE	Type No.	Size	Characteristics
81 27 90 91	515	50 ml 300 ml	**Gasket Eliminator Flange Sealant** Makers flexible gaskets for rigid machined flanges with less than .1.27mm (0.050" gap). Flexes with flanges that move in service.
81 28 13 14 19	518	25 ml 50 ml 300 ml	Semi-flexible gasketing product for machined metal flanges. Ideal for use on rigid iron, steel and aluminium flanges.
81 28 35 81 27 47	574	50 ml 250 ml	**Rigid Assembly Gasketing Products** Anaerobic, fast curing (unprimed 1-12hrs, primed 15min. to 2hrs), thixotropic, can fill gap until 0.254mm (0.01") without prime and 0.508mm (0.02") with prime. Suitable for gasket sealing within temperature range –54°C to 150°C (–65°F to 300°F). The products cures when confined in the absence of air between close fitting metal surfaces. Orange colour is available.
81 28 20 34	5188	50 ml 300 ml	Gasketing product for sealing rigid flanges, especially aluminium flanges; excellent chemical resistance; superior adhesion, can tolerate slight oil contamination on the flange surface.
81 28 37 38 39	587	70 ml 190 ml 300 ml	**Blue, High Performance RTV Silicone Gasket Maker** Forms tough, flexible gaskets directly on the flange. Offers excellent adhesion to oily surfaces. Low odor, non-corrosive, low volatility. Withstands temperatures to 260°C (500°F) intermittent. Resistant to most chemicals and solvents. Fill gaps to 6.35mm (0.25"). Typical applications include valve covers, rocker covers, oil pans, water pumps, end seals, intake manifolds, and rear axle housings. Excellent adhesive for bonding and repairing fabricated silicone gaskets.
81 28 41 42 43	598	70 ml 190 ml 300 ml	**Black, High Performance RTV Silicone Gasket Maker** Retains high flexibility and oil resistance for longer gasket life. Temperature range is –59°C to 329°C (–75°F to 625°F) intermittent. Low odor, non-corrosive, low volatility. Resistant to most chemicals and solvents. Fill gaps to 6.35mm (0.25"). Typical applications include oil pans, transmission pans, valve covers, valves and guides, timing gear covers, and differential covers.

(to be continued)

81 27 92 93	5699	95 grm 300 ml	**Grey High Performance RTV Silicone Gasket Maker** For flexible flange assemblies. Excellent fluid resistance. Easy to dispense, non-corrosive. Low odor, low volatility.
			Retaining Compound
81 27 96 97	603	50 ml 250 ml	**Press Fit/Oil Tolerant** A retaining compound tolerant of oil and other contamination. Seals and secures cylindrical assemblies up to 0.127mm (0.005") radial clearance. Fixtures in 10 minutes. Prevents fretting and corrosion of metal assemblies. Good for close-fitting parts.
81 28 26 27	620	50 ml 250 ml	**Slip Fit/High Temperature** A high temperature (450°F), high viscosity liquid retaining compound. Provides shear strength of over 3,800psi on steel. Locks and secures metal cylindrical assemblies up to 0.381mm (0.015") diametral clearance. Prevents metal fretting and corrosion. Seals against leakage. Typical applications include locating pins in radiator assemblies, sleeves into pump housings and bearings in auto transmissions.
81 28 28 29	638	50 ml 250 ml	**Slip Fit/Maximum Strength** A maximum strength retaining compound for use where high dynamic force or cyclic loading is expected. Locks cylindrical assemblies up to 0.010 in. Diametral clearance. Fixtures in 5 minutes.
81 27 50 98	648	50 ml 250 ml	**High Strength/Rapid Cure** A retaining compound recommended for continuous working temperatures up to 149°C (300°F). Fills gaps up to 0.1524 mm (0.006") diameter clearance. Fixtures in 5 minutes. Good for close-fitting parts.
81 28 30	660	50 ml	**Quick Metal Retaining Compound** A creamy, non-running gel that is applied onto cylindrical parts to fill surface imperfections and repair worn areas. It contains no metal, but once assembled hardens to a strength that often doubles that of a press fit. Used for repairing worn coaxial parts without remachining; enables reuse of worn bearing seats, keys, splines, tapers or for retaining shims.
81 28 31 32	680	50 ml 250 ml	**Slip Fit/ High Strength** A high strength, high viscosity room-temperature- curing adhesive used to join fitted cylindrical parts. It fixtures in 10 minutes and provides a shear strength of 4,000 psi after 24 hours. Capable of filling diametral gaps up to 0.27mm (0.015"). Allows relaxed machining tolerances and replaces clamp rings, set screws, and snap rings.

(to be continued)

Unit Per Btl.

CODE	Type No.	Size	Characteristics
Toolboxes & Specialty Kits			
81 28 33	-	12.9 ml	**Form-A-Thread Stripped Thread Repair Kit** Permanently repairs stripped threads and fasteners in 5 minutes (up to SAE Grade 5 English and 8.8 metric). Allows up to 1.538 in. lbs. torque (on M25 bolt) and 300°F. Resists most shop fluids. Grey colour is available.

Loctite® Marine Maintenance & Emergency Repair Kits

A "must have" solution kit for general maintenance and emergency repair for every vessel. The Marine Maintenance & Emergency Repair Kit provides solutions from simple vibration-proof bolt fastening to emergency pipe repair in open sea. Applications include thread locking, thread sealing, retaining, flange sealing & gasketing, emergency metal rebuilding & pipe repair, anti seize and bonding. The kit contains the following products.

Contents

1 btl	Thread locker	, No.222, 50 ml
1 btl	Same	, No.242, 50 mll
1 btl	Same	, No.243, 50 ml
1 btl	Same	, No.262, 50 ml
1 btl	Same	, No.271, 50 ml
1 btl	Same	, No.277, 50 ml
1 btl	Same	, No.290, 50 ml
1 btl	Cyanoacrylate adhesive	, No.401, 20 grm
1 tub	Same	, No.454, 20 grm
1 btl	Same	, No.495, 20 grm
1 pc	Metal Magic (Stick)	, 4 oz
1 pc	Underwater repair (Stick)	, 4 oz
1 set	Pipe repair kit (Tape), W50mm x L1800mm/W100mm x L3600mm	
1 set	Foam A Thread	, 4.8 ml
1 tub	Flange sealant	, No.515, 50 ml
1 tub	Same	, No.574, 50 ml
1 tub	Same	, No.5699, 70 ml
1 btl	Thread sealant	, No.542, 50 ml
1 tub	Same	, No.577, 50 ml
1 can	Marine anti seize	, 8 oz
1 btl	Retaining compound	, No.603, 50 ml
1 btl	Same	, No.648, 50 ml

81 21 71	Marine maintenance & emergency repair kit, Loctite® 1068255	Set

Instant Adhesives (Cyanoacrylates) Loctite®

Loctite® instant adhesives cure very quickly when confined between surfaces, triggered by the humidity on the surfaces. Cyanoacrylates are chosen for bonding small parts to achieve extremely fast fixturing. They are clean and easy to apply and join a wide variety of dissimilar materials. From among the various types of products, the most common products are listed below.

Unit Per Btl.

CODE	Type No.	Size	Characteristics
81 27 87 88	401	20 grm 50 grm	**PRISM Surface Insensitive Instant Adhesive** A general-purpose surface insensitive adhesive for difficult-to-bond surfaces.
81 28 15 16	404	4 oz 1 lb	**Quick Set Instant Adhesive** For general maintenance and repair. Designed for bonding of plastics and elastomeric materials where very fast fixturing is required.
81 28 17 40	406	20 grm 50 grm	**Wicking Grade** Designed for bonding plastics and electrometric materials where very fast fixturing is required.
81 27 79 89	454	3 grm 20 grm	**PRISM Surface Insensitive Instant Adhesive Gel** Designed for the assembly of difficult-to-bond materials that require uniform stress distribution. Particularly suited for bonding porous or absorbent materials. Also formulated for faster cure speeds on dry or acidic surfaces and substrates.
81 28 18	480	20 grm	**Rubber-toughened Instant Adhesive** Low viscosity, elastomer-modified instant adhesive. Bonds metals and rubbers. Excellent peel, impact and shear strength. NSF/ANSI 61 certified for potable water.
81 27 58	495	20 grm	**Super Bonder Instant Adhesive** A general purpose adhesive designed to bond rubber, metal, and plastic parts with gaps to 0.1016mm (0.004").
81 27 59	496	20 grm	General Purpose Rubber Bonding
81 28 00	3090	10 grm	Gap filling general purpose 2K instant adhesive; for gaps up to 5mm.
81 28 02	HY4060GY	25 grm	**Repair Structural Hybrid Adhesives** Excellent environmental and temperature resistance. Outstanding substrate versatility. Simple hand mix solution

Cleaner and Activators Loctite

Before bonding surface cleaners.

Unit Per Can

CODE	Contents	Description
Loctite® 7063 Universal Cleaner & Degreaser Before Bonding		
81 27 36 37	400 ml 10 ltr	General Purpose Cleaner & Degreaser Solvent-based, removes most greases, oils and lubrication fluids from all surfaces, leaves no residues; ideal for use prior to bonding and sealing applications.
Loctite® 7649 Activator		
81 27 38 39	150 ml 500 ml	Activator to speed up cure on passive and inactive surfaces; suitable for threadlocking, pipe and threadsealing, gasketing and retaining applications; solvent-based; on-part life of up to 30 days.

Adhesives SAF-T-LOK

SAF-T-LOK anaerobic adhesive/ sealants reliably lock, retain and seal metal assemblies in a wide range of applications. By eliminating the loosening of assembled components, costly breakdown is prevented and damage to equipment from vibration and shock is avoided. From among the various types of products, the most common products are listed below.

Unit Per Btl.

CODE	Type No.	Size cc	Characteristics
81 27 65	T22	50	Low strength, holds screws, but allows adjustment
81 27 66	T42	50	Medium strength, locking & sealing screws & bolts
81 27 67	T70	50	High strength, locking & sealing screws & studs to 1/2" diameter
81 27 68	T77	50	High strength, locking & sealing studs over 1/2" diameter, sealing flanges
81 27 69	S90	50	Medium strength, sealing porosity (Weld beads / Castings)
81 27 70	SA5	50	Bonds metal, plastic & wood
81 27 71	IB45	20	Bonds in second, bonding rubber or plastic parts
81 27 72	IBM100	20	Bonds in second, bonding metal parts. Excellent for nameplating
81 27 73 74	PFS	50 250	Sealing metal flanges. Any size or shape gaskets
81 27 75 76	TPS	50 250	Instantly seals tapered threads hydraulic pipe, etc.
81 27 77	R01	50	Retaining bearing / bushing, gears and pulleys, sealing porosity
81 27 78	Primer	6 pz	Primer to accelerate, cure, or cure at temperature below 0°C

WEICON Epoxy Adhesives

WEICON Epoxy Adhesives are cold-curing, solvent-free two-component systems with extremely strong bonding properties. They enable material bonds with high tensile and impact strength and are thus ideal for assembly, repairs and production.

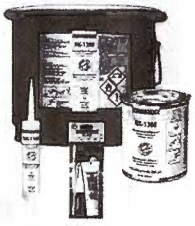
Unit Per Pc.

CODE	Product	Content	Description
81 29 80	Epoxy Minute-Adhesive	24 ml	Fast-curing, transparent 2-component epoxy adhesive, in a handy double syringe. Liquid, extremely high bonding strength. Produces residually elastic bonds with high impact strength on materials like metal, glass, ceramic, wood and many hard plastics.
81 29 81	Fast-Metal Minute-Adhesive	24 ml	Fast-curing, steel-filled 2-component epoxy adhesive with extremely high bonding strength, also suitable for the application on vertical surfaces. Enables material bonds with high tensile and impact strength. Machinable.

Name of Mfr.: WEICON GmbH & Co. KG

WEICON RK-Construction-Adhesives

Methacrylate-based Adhesives



Used in many bonding applications in the marine industry – especially in environments where epoxy adhesive are not strong enough (for example due to high temperature, vibration, shocks and structural demands).

- Quick and high initial bonding strength (mechanical durability after 8 – 9 min.).
- Residual elasticity and impact resistance.

Typical Applications;

- Bonding name plates, controls, instruments, consoles for machines.
- Bonding galvanized profile sheets for cabins
- Magnet bonding.
- Bonding metal and plastic laminates, sandwich elements for ship construction.

Unit Per Pc.

CODE	Product	Content	Description
81 29 91	RK-1300	60 g	2-component adhesive, temperature resistant from -50°C (- 58°F) up to +130°C (+ 266°F), briefly (30 minutes) up to +180°C (+356 °F), no mixing, handling strength after 2-4 minutes, high shear and peel strength.

(to be continued)

Unit Per Pc.

CODE	Product	Content	Description
81 29 92	RK-1500	60 g	2-component adhesive, liquid temperature resistant from -50°C (- 58°F) up to +130°C (+ 266°F), briefly (30 minutes) up to 180°C (+356°F), no mixing, handling strength after 2-4 minutes, high shear and peel strength.
81 29 93 **94**	RK-7000	24 g 50 g	Fast-curing, high-strength construction adhesive (initial strength after 10 – 15 minutes) for bonding different materials. This high-viscosity type allows application even on vertical surfaces. Colour after curing; light beige, opaque. Available both in a practical double syringe or in the modern Easy-Mix mixing and dosing system.
81 29 95	Easy-Mix Hand Dispenser D 50	-	Suitable for RK-7000
81 29 96	Mixing Nozzles	-	Suitable for RK-7000

Name of Mfr.: WEICON GmbH & Co. KG

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WEICONLOCK®
Anaerobic Adhesives and Sealants

The ideal solution for construction, production and maintenance: WEICONLOCK® products are high quality anaerobic adhesives and sealants on the basis of special methacrylate resins, especially made for economical threadlocking, retaining and sealing of threaded, cylindrical and pipe assemblies. The Pen-System packaging offers easy dosing and application.

Unit Per Pc.

CODE	Product	Content	Description
81 52 01 **02** **03**	AN 302-22	20 ml 50 ml 200 ml	Threadlocking, vibration-proof, medium viscosity, low strength, easy to disassemble.
81 29 12 **13** **14**	AN 302-43 DVGW TZW	20 ml 50 ml 200 ml	Threadlocking, approved to DVGW2 and KTW1, higher viscosity, medium strength, normal to disassemble.

(to be continued)

81 52 04 **05** **06**	AN 302-60	20 ml 50 ml 200 ml	Threadlocking for passive materials medium viscosity, high strength, hard to disassemble.
81 29 15 **16** **17**	AN 302-70 DVGW	20 ml 50 ml 200 ml	Threadlocking, medium viscosity, high strength, hard to disassemble.
81 52 07 **08** **09**	AN 302-90	20 ml 50 ml 200 m	Threadlocking, for locking after mounting and sealing of hair cracks, extremely low viscosity, high strength, hard to disassemble.
81 29 18 **19** **20**	AN 305-42 DVGW	20 ml 50 ml 200 ml	Sealing of hydraulic and pneumatic systems. DVGW2 certified, medium viscosity, medium strength, Gap filling capacity max. 0.15 mm.
81 52 10 **11**	AN 305-72 DVGW TZW	50ml 200 ml	Pipe and flange sealing (with PTFE), DVGW2 certified, high viscosity • medium strength.
81 52 12 **13**	AN 305-74	50 ml 200 ml	Gasketing of flanges, gear boxes and motor housings high viscosity, hard to disassemble.
81 52 14 **15**	AN 305-77 BAM	50 ml 200 ml	Universal type for pipes and fittings, DVGW2 certified, high viscosity, medium strength. Gap filling capacity max. 0.50 mm.
81 52 16 **17** **18**	AN 306-01	20 ml 50 ml 200 m	Retaining cylindrical assemblies low viscosity • high strength • hard to disassemble.
81 52 19 **20** **21**	AN 306-30 BAM	20 ml 50 ml 200 ml	Retaining cylindrical assemblies for passive materials, BAM3 certified, higher viscosity, high strength, hard to disassemble.
81 52 22 **23** **24**	AN 306-38	20 ml 50 ml 200 ml	Retaining cylindrical assemblies, under high dynamical stress, fast curing, medium viscosity, high strength.
81 52 25 **26** **27**	AN 306-41	20 ml 50 ml 200 ml	Retaining cylindrical assemblies, medium viscosity, medium strength, Gap filling capacity max. 0.50 mm.

Name of Mfr.: WEICON GmbH & Co. KG

WEICON Plast-o-Seal®
Silicone Free Universal Sealant

Permanently plastic, non-dripping and silicone-free universal sealant (max. gap filling capacity up to 0.1 mm). For bigger gaps in combination with a mechanical seal.

Solvent-free.

Unit Per Pc.

CODE	Product	Content	Container	Colour
81 52 31 **32** **33**	Plast-o-Seal®	90 g 120 g 300 g	Tube Brush Top Can Cartridge	Blue

Name of Mfr.: WEICON GmbH & Co. KG

WEICON Contact Adhesives

Unit Per Can

CODE	Product	Content	Description
81 52 37	GMK 2410	350 g Brush top can	A solvent-based Polychloroprene (CR) contact adhesive. Used for strong and flexible full-surface bonding of rubber to rubber and rubber to metal. It also bonds cellular rubber (e. g. neoprene), leather, felt, insulating material, textiles, wood, and many plastics. After curing, the joint is resistant to humidity.
38		700 g	
81 52 39	GMK 2510	324 g	2-component adhesive based on polychloroprene for full-surface and permanently elastic bonding of parts which are continuously exposed to dynamic loads. It bonds rubber, metal, textiles, leather, sponge rubber (neoprene), CSM (Hypalon), insulating materials, PU materials with an adhesive coating, wood and many plastics, to themselves and among each other. After curing the bonding is moisture-proof.
40		690 g	

Name of Mfr.: WEICON GmbH & Co. KG

WEICON Contact Cyanoacrylate Adhesives

Cold-curing one-component adhesives, free of solvents. They quickly polymerize by reacting with moisture and cure under light pressure. They will bond within seconds almost all materials to and among each other, such as: metals, plastics, glass, ceramics, wood, leather, natural and synthetic rubber.

Unit Per Pc.

CODE	Product	Content	Description
81 52 41	VA 8312	20 g	Low viscosity, very fast curing, especially suitable for bonding EPDM elastomers and plastics.
42		30 g	
43		60 g	
44		500 g	
81 29 27	VA 100	20 g	Medium viscosity, fast curing universal type for bonding plastics, rubber and metals to themselves or in combination.
28		30 g	
29		60 g	
30		500 g	
81 52 45	VA 1401	20 g	Medium viscosity, fast curing, good cure also on tissue, paper and carton as well as on other macropore elastomers.
46		30 g	
47		60 g	
48		500 g	
81 52 49	VA 2500 HT	20 g	High viscosity, slow curing, residual elasticity after curing, high temperature resistant up to +135°C (+275°F).
50		30 g	
51		60 g	
52		500 g	
81 52 53	VA 30 Black	20 g	Medium viscosity, slow curing, residual elasticity after curing, high temperature resistant from up to +135°C (+275°F). Especially suitable for rubber-bondings.
54		30 g	
55		60 g	
56		500 g	
81 52 57	VA 250 Black	20 g	High viscosity, slow curing, residual elasticity after curing, high temperature resistant up to +135°C (+275°F). Especially suitable for rubber-bondings.
58		30 g	
59		60 g	
60		500 g	
81 52 61	Contact GEL	30 g	Thixotropic (pasty), slow curing, for application on vertical surfaces. Allows re-alignment of the parts after contact.

Name of Mfr.: WEICON GmbH & Co. KG

WEICON One-component Adhesives and Sealants

Elastic adhesives and sealants are used in many areas of industrial production and assembly. They combine the advantages of adhesive bonding and sealing technology and are used wherever the elasticity and the sealing of a joint are the most important requirements.

Unit Per Pc.

CODE	Product	Colour	Content	Description
81 52 71	Flex 310 M Classic MS-Polymer base	White Black Grey	310 ml	For versatile use. Very good adhesion without primer on aluminium, stainless steel and many other surfaces. Immediately overpaintable (wet in wet). Excellent aging and UV stability. Sandable after curing.
72				
73				
81 52 74	Flex 310 M Stainless Steel MS-Polymer base	Stainless steel	310 ml	Suitable for various applications. Especially for applications where the colour of the sealant should be close to the colour of material(e.g. stainless steel, aluminium, etc.) Non-corrosive.

(to be continued)

(to be continued)

Unit Per Pc.

CODE	Product	Colour	Content	Description
81 52 75 **76**	Flex 310 M Super-Tack MS-Polymer base	White Grey	290 ml	Very high initial strength. For metals, plastics and many other materials. In particular suitable for bonding on vertical surfaces, indoor and outdoor. Replaces screws, pegs, rivets, and other traditional fixings.
81 52 77 **78**	Flex 310 M HT 200 MS-Polymer base	White Grey	290 ml	High temperature resistant. Very good adhesion on metal and most plastics. Allows bonding and sealing of parts before thermal coating (e.g. powder coating).
81 52 79 **80** **81**	Aqua-Flex SIKA MS-Polymer base	White Black Grey	310 ml	Special adhesive and sealant for a variety of applications, also on wet and humid surfaces. Free of isocyanate and solvents.
81 52 82 **83**	Silicone HT 300	Red	85 ml 310 ml	Temperature resistant up to +230°C (+446°F), briefly up to 300°C (+572°F).
81 52 84 **85** **86**	Black Seal Special Silicone	Black	85 ml 200 ml* 310 ml *Pressure-pack	Solvent-free special silicone sealant. Temperature resistant from -60°C (-76°F) up to +280°C (+536°F) (briefly up to +300°C (+572°F)).
81 52 87	Flex + Bond SIKA	Grey	85 ml	Silicon-free, strong and overpaintable adhesive and sealant on POP basis. Free of isocyanate and solvents.

Name of Mfr.: WEICON GmbH & Co. KG

Gasket Removers

Removes gaskets from any type of assembly in 10 to 15 minutes. Prepares metal parts for new gaskets, eliminating scraping and sanding.

Works on wood; non-corrosive on aluminium.

Not for use on plastics, linoleum or synthetic fibers.

81 28 01	Gasket remover spray, 420 ml	Tin

"O" Rings

Made from synthetic or natural rubber or teflon. When ordering, specify the material, outer and inner diameter as well as thickness. Since there are thousands of sizes available, only a basic illustration is given here.

81 30 01	"O" ring, material, outer diam x inner diam x thickness	Pc.

Rubber Strings

Synthetic rubber made round string for forming "O" rings with glue, etc. Any length is furnishable upon request.

Unit Per Mtr.

CODE	Diam mm	CODE	Diam mm	CODE	Diam mm
81 30 51	1.5	**81 30 56**	4.0	**81 30 61**	6.5
52	2.0	**57**	4.5	**62**	7.0
53	2.5	**58**	5.0	**63**	8.0
54	3.0	**59**	5.5	**64**	9.0
55	3.5	**60**	6.0	**65**	10.0

O-Ring Splicing Kits

Saves the need for complete disassembly. Eliminates the need for an inventory of different sized O-rings. Joints resist water/oil and are as strong as the rubber itself.

Kit contains :

1. 5.48 meter (3ft.) lengths of common diameters of Buna N cord.
2. 1 of Loctite 404 Quick Set Instant Adhesive.
3. 1 of o-ring fixture.
4. 1 of blade.
5. 1 each of water-proofing solution and cleanup solution.

81 30 70	O-Ring splicing kit	Set

Loctite Product No.00112 (480166 for U.K.)

O-Ring Kits

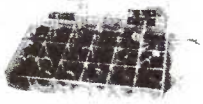
Specially designed for marine use, containing 17 sizes/222 pieces. Packed in a transparent sturdy- hinged acrylic case. Details of the sizes are as follows :

Width x I.D. x O.D. inch

1/16x5/32 9/32	1/16x7/32x11/32	1/16x5/16x7/16
3/32x3/8x9/16	3/32x7/16x5/8	3/32x1/2x11/16
3/32x9/16x3/4	3/32x5/8x13/16	3/32x11/16x7/8
3/32x3/4x15/16	1/8x3/4x1	1/8x13/16x1-1/16
1/8x7/8x1-1/8	1/8x15/16x1-3/1	1/8x1-1/16x1-5/16
1/8x1-3/16x1-7/16	1/8x1-3/8x1-5/8	

81 30 72	O-Ring kit, 17 sizes / 222 pcs with acryl case	Set

Copper Ring Kits



Specially designed for marine use. Contains 30 sizes/568 pieces packed in a transparent sturdy-hinged acrylic case. Details of the sizes are as follows :

I.D. x O.D. x TH mm

5x9x1	6x10x1	6x12x1	8x12x1	8x14x1
8x14x1.5	9x14x1	10x14x1	10x14x1.5	10x16x1
12x16x1	12x16x1.5	12x18x1.5	13x18x1	14x18x1.5
14x20x1.5	14x20x2	16x20x1.5	16x22x1.5	18x22x1.5
18x24x1.5	20x24.5x1.5	20x24.5x0.8	19x26x2	22x27x1.5
22x29x1.5	24x29x1.5	24x32x2	26x34x2	28x36x2

81 30 80	Copper ring kit, 30 sizes / 568 pcs with acryl case	Set

Raised Face PTFE Rings

Made of PTFE (Polytetrafluoroethylene), and used for gasket ring with chemical resistance property.

PO 850 - PN 16

Unit Per Pc.

CODE	Nominal Size	Size mm OD x ID x TH	Article No.
81 34 01	10	45 x 18 x 2	PO850010
02	15	50 x 22 x 2	PO850015
03	20	60 x 28 x 2	PO850020
04	25	70 x 35 x 2	PO850025
05	32	82 x 43 x 2	PO850032
81 34 06	40	92 x 49 x 2	PO850040
07	50	107 x 61 x 2	PO850050
08	65	127 x 77 x 2	PO850065
09	80	142 x 90 x 2	PO850080
10	100	162 x 115 x 2	PO850100
81 34 11	125	192 x 141 x 2	PO850125
12	150	218 x 169 x 2	PO850150
13	200	273 x 220 x 2	PO850200
14	250	330 x 274 x 2	PO850250
15	300	385 x 325 x 2	PO850300
81 34 16	350	438 x 368 x 2	PO850350
17	400	490 x 420 x 2	PO850400
18	600	775 x 645 x 2	PO850600

PO 860 - PN 16

Unit Per Pc.

CODE	Nominal Size	Size mm OD x ID x TH	Article No.
81 34 21	10	45 x 18 x 3	PO860010
22	15	50 x 22 x 3	PO860015
23	20	60 x 28 x 3	PO860020
24	25	70 x 35 x 3	PO860025
25	32	82 x 43 x 3	PO860032
81 34 26	40	92 x 49 x 3	PO860040
27	50	107 x 61 x 3	PO860050
28	65	127 x 77 x 3	PO860065
29	80	142 x 90 x 3	PO860080
30	100	162 x 115 x 3	PO860100

(to be continued)

81 34 31	125	192 x 141 x 3	PO860125
32	150	218 x 169 x 3	PO860150
33	200	273 x 220 x 3	PO860200
34	250	330 x 274 x 3	PO860250
35	300	385 x 325 x 3	PO860300
81 34 36	350	438 x 368 x 3	PO860350
37	400	490 x 420 x 3	PO860400
38	600	775 x 645 x 3	PO860600

PO 870 – ASA 150 lbs

Unit Per Pc.

CODE	Nominal Size	Size mm OD x ID x TH	Article No.
81 34 41	15	47 x 21 x 2	PO870015
42	20	57 x 27 x 2	PO870020
43	25	66 x 33 x 2	PO870025
44	32	76 x 42 x 2	PO870032
45	40	85 x 48 x 2	PO870040
81 34 46	50	104 x 60 x 2	PO870050
47	65	123 x 73 x 2	PO870065
48	80	136 x 89 x 2	PO870080
49	100	174 x 114 x 2	PO870100
50	125	196 x 141 x 2	PO870125
81 34 51	150	222 x 168 x 2	PO870150
52	200	279 x 219 x 2	PO870200
53	250	339 x 273 x 2	PO870250
54	300	409 x 324 x 2	PO870300

PO 880 – ASA 150 lbs

Unit Per Pc.

CODE	Nominal Size	Size mm OD x ID x TH	Article No.
81 34 61	15	47 x 21 x 3	PO880015
62	20	57 x 27 x 3	PO880020
63	25	66 x 33 x 3	PO880025
64	32	76 x 42 x 3	PO880032
65	40	85 x 48 x 3	PO880040
81 34 66	50	104 x 60 x 3	PO880050
67	65	123 x 73 x 3	PO880065
68	80	136 x 89 x 3	PO880080
69	100	174 x 114 x 3	PO880100
70	125	196 x 141 x 3	PO880125
81 34 71	150	222 x 168 x 3	PO880150
72	200	279 x 219 x 3	PO880200
73	250	339 x 273 x 3	PO880250
74	300	409 x 324 x 3	PO880300

Air Filters

So called vileoon filter made by combining tetoron and nylon into filter form. Usually used as an air conditioning intake filter. Will be furnished in sizes 10 to 20 mm thick.

Unit Per Mtr

CODE	Size mm T	Size mm W	CODE	Size mm T	Size mm W
81 31 01	10	1,600	**81 31 03**	20	2,000
02	15	1,600			

Terry Cloth

For straining or filtering water, oil, etc. Specify the width and type required, towel or brown filter cloth, when ordering. Furnished in rolls.

Brown Cloth

Towel Cloth

How to order: CODE

KIND of CLOTH, WIDTH mm x LENGTH mtr

Unit Per Rol.

CODE	Description	Size	
		W mm	L mtrs
81 31 11	Brown Cloth	760	20
12	Towel Cloth	760	33
13	"	910	33

Vinyl Acetate Sponge Water Sheet Filters

Wet Type

Synthetic made sponge filter ideal for immersion in any cascade tank or sump for filtering of hydraulic systems, coolant fluids, etc. Size is 1,000 x 1,000 mm and 10 mm thick. Colour is milky white.

81 31 20	Filter, water, vinyl acetate sponge sheet, 10 x 1,000 x 1,000 mm	Sht

Vinyl Acetate Sponge Piece Filters

Wet Type

Same as the above filter but in pieces packed 1 kgs in polythene bag.

81 31 22	Filter, water, vinyl acetate sponge piece, 1 kgs	Bag

Vinyl Acetate Sponge Oil Filters

Dry Type

Specially designed for filtering lubricating oil, etc. Size furnished 2 mm thickness, 1,000 x 1,000 mm (39" x 39") of width and length.

81 31 24	Filter, oil, vinyl acetate sponge , 2 mm x 1,000 x 1,000 mm	Sht

Coco Fiber

For filtering water, oil, etc. Made from coco and packed 30 kgs in a carton.

81 31 26	Coco filber	Kgs

Loofah Sponges

Used for oil straining or filtering. Each sponge is approximately 40 cm in length. Furnished in pieces only.

81 31 28	Loofah sponge	Pc.

Copper Wool Filters (Copper Net Filters)

Made of wool-like fine copper and woven into flat tubes. Finely meshed net can strain out and refine lubricating oil or any other liquid. Furnished in a width of 100 mm and coiled approximately 5 kgs per roll.

81 31 30	Filter, copper wool	Kgs

Reflex Flat Gauge Glasses

"Klinger" type boiler gauge glasses. Available in pressure capacity of 2.0 MPa (20 kgs/cm²) and 3.9 MPa (40 kgf/cm²).

Reflex Type

How to order: CODE

Reflex flat gauge glass, PRESSURE CAPACITY, OVERALL SIZE mm

Unit Per Pc.

CODE	No.	Overall Size mm	CODE	No.	Overall Size mm
Pressure Capacity 20 kgf/cm²			Pressure Capacity 40 kgf/cm²		
81 32 01	1	34x17x115	81 32 11	1	34x17x115
02	2	34x17x140	12	2	34x17x140
03	3	34x17x165	13	3	34x17x165
04	4	34x17x190	14	4	34x17x190
05	5	34x17x220	15	5	34x17x220
81 32 06	6	34x17x250	81 32 16	6	34x17x250
07	7	34x17x280	17	7	34x17x280
08	300	34x17x300	18	300	34x17x300
09	8	34x17x320	19	8	34x17x320
10	9	34x17x340	20	9	34x17x340

Plain Flat Gauge Glasses

Plain type gauge glasses for boiler use. Available in pressure capacity of 2.0 MPa (20 kgf/cm²) or 7.8 MPa (80 kgf/cm²). Specify pressure when ordering and if mica sheet or non-asbestos packing is required.

Plain Type

How to order: CODE

Plain flat gauge glass, PRESSURE CAPACITY, OVERALL SIZE mm

Unit Per Pc.

CODE	No.	Overall Size mm	CODE	No.	Flow Rate
Pressure Capacity 20 kgf/cm²			Pressure Capacity 80 kgf/cm²		
81 32 31	1	34x17x115	81 32 41	1	34x17x115
32	2	34x17x140	42	2	34x17x140
33	3	34x17x165	43	3	34x17x165
34	4	34x17x190	44	4	34x17x190
35	5	34x17x220	45	5	34x17x220
81 32 36	6	34x17x250	81 32 46	6	34x17x250
37	7	34x17x280	47	7	34x17x280
38	300	34x17x300	48	300	34x17x300
39	8	34x17x320	49	8	34x17x320
40	9	34x17x340	50	9	34x17x340

Gauge Glass Mica & Packing

For the heat insulation and protection of glass. Mica is generally used. The mica is generally furnished in a thickness of 0.2 mm. The packing and mica are furnished separately.

Mica

Non-asbestos Packing

Fibre Packing

Unit Per Set

CODE	No.	Overall Size mm	CODE	No.	Overall Size mm
Mica			Non-asbestos & Fibre Packing Set		
81 32 61	1	0.2×34×115	**81 32 81**	1	34×115
62	2	0.2×34×140	**82**	2	34×140
63	3	0.2×34×165	**83**	3	34×165
64	4	0.2×34×190	**84**	4	34×190
65	5	0.2×34×220	**85**	5	34×220
81 32 66	6	0.2×34×250	**81 32 86**	6	34×250
67	7	0.2×34×280	**87**	7	34×280
68	300	0.2×34×300	**88**	300	34×300
69	8	0.2×34×320	**89**	8	34×320
70	9	0.2×34×340	**90**	9	34×340

Round Gauge Glasses

For moderate pressure service on boilers, vats and tanks. Furnishable in round gauge glass or acrylic gauge "Plexy" glass supplied on request. Specify whether glass or acrylic is required when ordering. Standard length for both in 1,000 mm but it is furnishable in up to 2,000 mm if required.

How to order: CODE

Gauge glass, round, KIND of MATERIAL, OUTER DIAM × THICKNESS × LENGTH mm

Unit Per Lgh.

CODE	Outer Diam. mm	Thickness × Lgths mm	CODE	Outer Diam. mm	Thickness × Lgths mm
Glass			Acrylic		
81 33 01	9	2 × 1,000	**81 33 10**	9	2 × 1,000
02	12	2 × 1,000	**11**	12	3 × 1,000
03	14	2 × 1,000	**12**	16	4 × 1,000
04	16	2 × 1,000	**13**	19	4 × 1,000
05	17	2.5 × 1,000	**14**	22	4 × 1,000
81 33 06	19	2.5 × 1,000	**81 33 15**	25	5 × 1,000
07	20	2.5 × 1,000	**16**	60	6 × 1,000
08	22	2.5 × 1,000	**17**	70	6 × 1,000
09	25	2.5 × 1,000	**18**	95	7 × 1,000

Rubber Gauge Glass Washers

Rubber ring washer packing for round gauge glasses. A square pattern is also available if required.

Unit Per Pc.

CODE	Size OD inch x Thick mm	CODE	Size OD inch x Thick mm
81 33 31	1/2 x 3	**81 33 33**	3/4 x 3
32	5/8 x 3	**34**	1 x 3

Oil Seals

The Oil Seal stops oil leakage and prevents water, dust and other harmful particles from getting into the workings of bearings. It keeps the bearing clean and lubricated for smooth rotation. Besides stopping leakage effectively, the oil seal is of compact size and is easy to install and remove.

Made of highly flexible synthetic rubber to match the motion of the shafts and act as an efficient sealant in simultaneous motion with the springs.

There are so many types of materials and sizes of oil seals, it is impossible to code them all. For this reason, the items described below are only the standard seal designs commonly used for a variety of applications and they are not coded.

Lip materials of the synthetic rubber are :
- Nitrile Rubber
- Polyacrylate Rubber
- Silicone Rubber
- Fluoroelast Rubber

When ordering, please specify the following points:
1. Name of the machine and place of application.
2. Detailed information of the lubricating oil used and the ambient temperature.
3. R.P.M. of shaft.
4. Oil Seal Type /Name / No.

Size: Shaft diameter × Outer diameter × Width

Type	Features
S Type	General non-pressure fluid sealing applications and severe grease sealing conditions. It is a single lip oil seal with a garter spring to provide a consistent radial load against the shaft. General limited working capacity : SMPS 12 m/sec. Temperature 120°C Pressure 0.3 kgf/cm²G.
T Type	General non-pressure fluid sealing applications with light duty exclusion of foreign materials. This design uses the primary lip configuration, with an auxiliary dust lip to provide effective light duty dust exclusion. General limited working capacity : SMPS 10 m/sec. Temperature 120°C Pressure 0.3 kgf/cm²G.
V Type	Economical design for grease retention or sealing viscous fluid. It is a single lip seal. General limited working capacity : SMPS 8 m/sec. Temperature 120°C Pressure 0 kgf/cm²G.
K Type	Economical design for grease retention or sealing viscous fluid with light duty exclusion of foreign materials. This type has an auxiliary lip for light dust exclusion. General limited working capacity : SMPS 5 m/sec. Temperature 120°C Pressure 0 kgf/cm²G.
D Type	The application which requires separating two fluids from each other should use two garter spring loaded lips. The "D" style incorporates the two lips into one design. General limited working capacity : SMPS 5 m/sec. Temperature 120°C Pressure 0.3 kgf/cm²G.

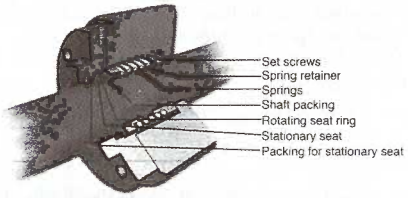
* SMPS denotes Surface Meter Per Second.

81 35 01	Oil seal, TYPE INNER DIAM or SHAFT DIAM, OUTER DIAM, WIDTH	Pc.

Mechanical Seals

The Mechanical Seal has two flat seal faces at right angles to the axis of the rotating shaft, preventing shaft wear. One is the seal face of the rotating seal ring and the other is the seal face of the stationary seal ring (stationary, seat or floating seat). One seal face (rotating seal ring) is allowed axial motion to permit the seal faces to remain in contact with each other despite endplay of the shaft, wear or runout of the seal faces. The seal ring is flexibly mounted on the shaft and rotates against the stationary seal ring.

The seal ring has a resilient packing, called shaft packing (O-ring or V-ring assembly) that allows the seal ring to slide back and forth along the shaft and at the same time prevent leakage between it and the shaft or sleeve as a secondary seal. The stationary seat is backed against the gaskets (mostly O-rings) to prevent leakage around its back.



Standard for Marine Pump Mechanical Seals

1. Scope of application

This standard is applied to the mechanical seal of the unbalanced single spring type (hereinafter referred to as mechanical seals). The mechanical seals are among those used for marine centrifugal pumps, gear pumps, and screw pumps, driven by electric motors, for pumping fresh water, seawater, fuel oil and lubricating oil, with shaft diameters in the range from 20 to 140 mm. However, special seals are excluded with operating conditions which exceed values stipulated in Section 2 "Criteria for Application" of this standard.

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2. Criteria for application

2-1. Limited temperature

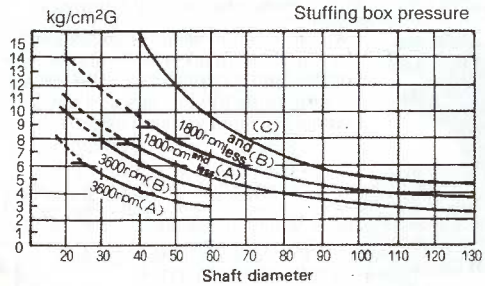
In using the mechanical seals, liquid temperature is restricted within values shown in the table.

Kind of Liquid	Temperature Limit (max.)
Fresh water	90°C
Sea water	40°C
Fuel oil and lubricating oil	100°C

Use cooler with the mechanical seal when the working temperature is higher than the recommended one.

2-2. Limit of pressure and peripheral speed

Pressure for the mechanical seal (stuffing box pressure) and peripheral speed are limited differently depending upon the face material combination. As a rule, the lines in the figure below show the upper limits.



(A) Ceramic vs Carbon
(B) Tungsten Carbide vs Carbon
(C) Silicone Carbide vs Carbon

1. For a pressure and peripheral speed located in the ranges shown by the dotted lines, use balance type mechanical seals.
2. If stuffing box pressure should be negative, please consult us beforehand.

3. Restriction of face materials against rust inhibiter

When the concentration of rust inhibiter exceeds 1,000 ppm, its effect on the seal materials often appears rapidly. Therefore, consult with a dealer before using a mechanical seal with concentrations of rust inhibiter of 1,000 ppm and over.

4. Cooling of the seal face

The normal practice is to require sufficient flushing shown in Fig. A near the seal face for the purpose of cooling, washing, and lubrication. Examples of flushing are shown in Fig. B and Fig. C.

Flow rate for flushing

Fig. A

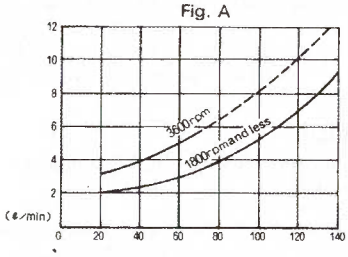


Fig. B

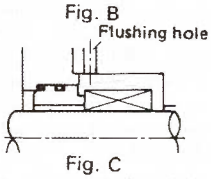
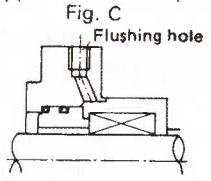


Fig. C



5. Axial movement, run out and squareness of shaft

Table

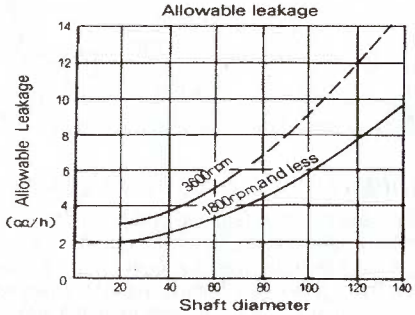
Unit. mm

	Allowable limits
Axial movement	0.5 and under
Shaft run out Squareness	From 20 to 80 include. in shaft diameter "d" not more than $\frac{\sqrt{d}}{120}$ Over 80 to 140 include. not more than 0.075

* d : Shaft or shaft sleeve diameter at the part where the mechanical seal is fixed.

6. Allowable leakage

In using mechanical seals, the allowable leakage during initial operation is shown in the figure in the next page.



Application of Mechanical Seals

Appli-caton	Service	Machine	(MAX) Operating Condition		
			°C Temper-ature	kgf/cm² G Pressure	m/S Velocity
Pump	Sea water	Main cooling sea water pump Ballast pump Sanitary pump Fire & G.S. pump Sea water service pump	Nitrile -20 - 80 Viton 0 - 150	10	20
	Fresh water	Drinking water pump Drain pump Condensate pump Piston cooling fresh water pump Auxiliary machinery cooling fresh water pump Jacket cooling fresh water pump	Nitrile -20 - 80 Viton 0 - 150	10	20
	Hot water	Boiler feed pump Boiler water circulating pump	220 with cooler	25	20
	Oil	Lubricating oil pump Fuel oil transfer pump Fuel oil booster pump Fuel oil burning pump Cargo oil pump	Nitrile -20 - 80 Viton 0 - 150	10	20
	Chemi-cal	Chemical cargo & transfer pump	90	5	14
Rudder Post	Sea water	Rudder Post	-10 - 60	2	6
Stern Tube		Stern Tube	-10 - 60	2	6

Guide of how to order

When ordering, please specify the following points:

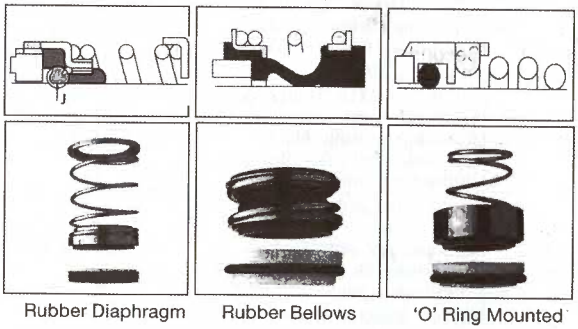
1. Name of Manufacturer
2. Manufacturer's Model No. & Type
3. Application A. Machine
   B. Service point
4. Size A. Shaft diameter
   B. Outside diameter
   C. Overall length
5. Operating Condition
   A. Temperature
   B. Working pressure
   C. Velocity
6. Matting Face Material
7. etc.

81 36 01	Mechanical Seal Model × type × size × mating material	Set

Mechanical Seals
Vulcan Single Spring Seal

The Vulcan single spring seal rage is divided into three main products groups, mainly Rubber Diaphragm, Rubber Bellows and O' Ring Mounted Seals. These single spring mechanical seals have been designed to service the European pump market and are totally inter-changeable, with all other manufacturer's equivalent seals, without any modification to the existing seal housings and gland plates.

Typical design of each of the three product group are:



Rubber Diaphragm | Rubber Bellows | 'O' Ring Mounted

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Diaphragm Sealing Operation

The shaft seal is provided by the rubber diaphragm which is squeezed onto the shaft by the drive ring. Once fitted, the rubber diaphragm will grip the shaft giving a strong static seal and very positive drive, via the drive ring, to the seal face.

As there is no relative movement between the shaft and the rubber diaphragm, shaft fretting, wear and hang up hysteresis are eliminated and the seal can immediately accommodate some shaft run-out and misalignment. Shaft axial movement and the movement required during the working life of the seal is handled by the elastomer rubber flexing at its junction point (J on diagram). The seal head automatically adjusts to compensate for face misalignment caused by shaft end float/pump body misalignment.

The spring force and the seal pumping pressure force maintain the faces in full contact whilst the rubber diaphragm acts as a bellows providing sustained flexibility. Positive drive of the seal face is transmitted via the drive ring and retaining housing and not via the spring, which merely provides some closing force to the seal faces. These seals can therefore be used to seal shafts rotating in either direction and in vacuum applications.

Rubber Bellows Sealing Operation

The bellow's high strength and flexibility is the key to the very reliable performance of this seal type as it readily accommodates misalignment, end-float and seal face wear. The convoluted bellows profile makes these seals ideal for media prone to clogging or for hygenic applications. Designed for confined spaces and limited gland depths, Rubber Bellow Seals are bi-directional in operation and provide secure bellows sealing for longer life in a wide range of applications.

'O' Ring Mounted Sealing Operation

These conical spring, 'O' ring mounted, mechanical seals have been designed to have a small cross-section and a complete recessed 'O' ring housing. A narrow seal head width allows the seals to easily fit confined DIN 24960 housings, whilst also providing the benefits of reduced face surface running speed with increased circulation around the seal faces.

The machined recessed 'O' ring groove helps prevent the seal from clogging due to build up of produce around the shaft 'O' ring. Since the spring does not load directly onto the 'O' ring, over-compression of the ring is eliminated. The seal can also accommodate wear by movement along the clean groove area.

Seal drive is provided by the conical spring tightly gripping the shaft at its base. Stock seals are supplied as standard with right-hand drive springs for clockwise shafts. Left-hand springs for anti-clockwise shaft rotation should be specified on order.

The resilient 'O' ring mounted seal design is technically efficient (readily accommodating misalignment and vibration) and is highly versatile. There are a wide range of face material combinations and spring/seal sizes to suit most applications, as well as an extensive range of seals to suit individual pump, mixer, agitator and compressor applications, please contact with your local distributor for further information.

The following table summarize major product's type of Vulcan single spring seal rings for your easy selection.

Vulcan Mechanical Seals

Type	Standard Materials	Shaft Size mm	Shaft Size Inch	Pressure	Speed	Temperature	Application
Rubber Diaphragm							
10 & 20	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-100	0.375 -4.000	200 psi	15 m/s	-40 to 200°C	General duties, the industry standard singlespring seal, to UK dimensions.
11 & 22	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-100	0.375 -4.000	200 psi	15 m/s	-40 to 200°C	General duties, the industry standard singlespring seal, to USA dimensions.
24	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-100	N/A	200 psi	15 m/s	-40 to 200°C	General duties, the industry standard singlespring seal, to DIN24960 dimensions.
Rubber Bellows							
19	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-100	N/A	200 psi	12 m/s	-40 to 200°C	General & arduous duties, standard bellows seal to DIN L1 working length.
192	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-100	N/A	200 psi	12 m/s	-40 to 200°C	General & arduous duties, standard bellows seal to DIN L1K working length.
193	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-100	N/A	200 psi	12 m/s	-40 to 200°C	General & arduous duties, standard bellows seal to DIN L1N working length.
17/24	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	12-100	N/A	up to 40 bar	13 m/s	-40 to 200°C	General & arduous duties, enclosed bellows seal to DIN24960 L1K working length.
18	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	8-70	N/A	90 psi	10 m/s	-20 to 160°C	Compact, enclosed bellows seals for light duties such as water pumps.
'O' Ring Mounted							
8	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-80	N/A	150 psi	25 m/s	-40 to 230°C	General and arduous duties. The standard tapered-spring, directional dependant seal.
8 DIN	Body : 304/316 Stainless Steel. Face : Carbon. Secondary Seal : Nitrile. Secondary Spring : 304/316 Stainless steel	10-80	N/A	150 psi	25 m/s	-40 to 230°C	General and arduous duties. The standard tapered-spring, directional dependant seal to DIN24960.
21/31 Seat	Face : 316 stainless. Secondard seal : Nitrile	10-100	0.375 -4.000	-	-	-	General and arduous duties. The UK standard o-ring mounted seal, to provide an o-ring alternative for the type 10,11,20,22 seals. Type 31 is to USA standard.
95	Rotary : Inserted Silicon Carbide in 316SS holder. Stationary : Carbon. Metal parts : SS316. Elastomer : Nitrile	21-120	0.625 -4.000	Vacuum to 10 bar	20 m/s	-50 to 200°C	All duties. The marine standard o-ring mounted seal, to suit the most common marine industry pumps.
96	Rotary : Inserted Silicon Carbide in 316SS holder. Stationary : Carbon. Metal parts : SS316. Elastomer : Nitrile	20-120	0.625 -4.000	Vacuum to 10 bar	20 m/s	-50 to 200°C	All duties. Similar to the type 95 but with additional sleeve in the tail of the rotary spring.

(to be continued)

Type	Standard Materials	Shaft Size mm	Shaft Size Inch	Pressure	Speed	Temperature	Application
97	Rotary : Inserted Silicon Carbide in 316SS holder. Stationary : Carbon. Metal parts : SS316. Elastomer : Nitrile	20-120	0.625 -4.000	Vacuum to 10 bar	20 m/s	-50 to 200°C	Type 95 but with additional grub-screw collar at the bass of the coil.
98	Rotary : Inserted Silicon Carbide in 316SS holder. Stationary : Carbon. Metal parts : SS316. Elastomer : Nitrile	20-130	N/A	Vacuum to 10 bar	20 m/s	-50 to 200°C	All duties. Similar to type 97 but with Japan standard twin o-ring mounted carbon seat.
1677/ 1678	Body : 316 Stainless Steel. Face : Carbon. Stationary : Sintered Silicon Carbide. Secondary Seal : Viton. Secondary Spring : 17-7PH Stainless Steel	18-100	N/A	up to 16 bar	20 m/s	-50 to 220°C	Used on pumps. agitators, mixers and compressors. Standard double wavespring type seal, to DIN24960. Type 1678 is balancad type.
40	Body : 316 Stainless Steel. Face : Carbon. Stationary : Silicon Carbide. Secondary Seal : Viton. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	18-90	0.750 -3.625	up to 30 bar	25 m/s	-30 to 200°C	Industry standard multispring balanced seal for arduous duties. Does not clog due to protected springs and protected dynamic o-ring.
1609	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : PTFE. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	14-100	0.625 -5.500	up to 24 bar	25 m/s	-100 to 200°C	Multi-spring seal with PTFE secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.
1609S	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : Viton. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	14-100	0.625 -5.500	up to 24 bar	25 m/s	-100 to 200°C	Multi-spring seal with o-ring secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.
1609B	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : PTFE. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	14-100	0.625 -5.500	up to 52 bar	25 m/s	-100 to 200°C	Multi-spring balanced seal with PTFE secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.
1609BS	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : Viton. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	14-100	0.625 -5.500	up to 52 bar	25 m/s	-100 to 200°C	Multi-spring balanced seal with o-ring secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.
1659	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : PTFE. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	20-100	N/A	up to 17 bar	25 m/s	-50 to 200oC	Multi-spring seal to DIN24960 with PTFE secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.
1659S	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : Viton. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	20-100	N/A	up to 17 bar	25 m/s	-50 to 200°C	Multi-spring balanced seal to DIN24960 with o-ring secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.
1659B	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : PTFE. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	20-100	N/A	up to 62 bar	25 m/s	-50 to 200°C	Multi-spring balanced seal to DIN24960 with PTFE secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.
1659BS	Body : 316 Stainless Steel. Face : Carbon. Secondary Seal : Viton. Secondary Spring : Hastelloy C. For use with wide variety of seat styles.	20-100	N/A	up to 62 bar	25 m/s	-60 to 200°C	Multi-spring balanced seal to DIN24960 with o-ring secondary seal for arduous duties. Widely used on pumps, agitators, mixers and compressors.

Non-combustible Divisions

Non-combustible divisions are a material made from silicic acid calcium which neither burns or gives off flammable vapors in sufficient quantity for ignition when heated up to 750°C. All exposed surfaces of a ships bulkheads, linings, and ceilings are required to be covered with this material. The material listed below has a density of 0.65 gm/cm³, which satisfies the requirements for class B divisions according to the 1983 SOLAS regulations.

Unit Per Sht

CODE	Thickness	Width x Length
81 39 11	16 mm	910 x 2,420
12	19	
13	22	
14	25	

Heat Insulation Pipe Covers

Rockwool

Rockwool material for insulating pipes from heat and moisture. It is easy to install with slit tube form, and durable with robust molded structure.

Please choice size corresponding to nominal pipe size to be applied and preferable thickness of insulation cover. Service temperature reaches up to 650°C. Standard length is 1,000 mm.

7TH
81

How to order: CODE

Heat insulation pipe cover,rockwool NOMINAL PIPE SIZE, WALL THICKNESS mm

Unit Per Pc.

CODE	Nom. Pipe Size		Inner Diam. mm	Thickness mm
	A (mm)	B (Inch)		
81 38 01	15	1/2	22	20
02	20	3/4	27	
03	25	1	34	
04	32	1-1/4	43	
05	40	1-1/2	49	
81 38 06	50	2	61	
07	65	2-1/2	76	
08	80	3	89	
81 38 11	15	1/2	22	25
12	20	3/4	27	
13	25	1	34	
14	32	1-1/4	43	
15	40	1-1/2	49	
81 38 16	50	2	61	
17	65	2-1/2	76	
18	80	3	89	
19	100	4	114	
20	125	5	140	
81 38 21	150	6	165	
81 38 25	15	1/2	22	30
26	20	3/4	27	
27	25	1	34	
28	32	1-1/4	43	
29	40	1-1/2	49	
81 38 30	50	2	61	
31	65	2-1/2	76	
32	80	3	89	
33	100	4	114	
34	125	5	140	
81 38 35	150	6	165	
81 38 41	32	1-1/4	43	40
42	40	1-1/2	49	
43	50	2	61	
44	65	2-1/2	76	
45	80	3	89	
81 38 46	100	4	114	
47	125	5	140	
48	150	6	165	
49	200	8	216	
50	250	10	267	
81 38 51	300	12	319	
52	350	14	356	
81 38 55	100	4	114	50
56	125	5	140	
57	150	6	165	
58	200	8	216	
59	250	10	267	
81 38 60	300	12	319	
61	350	14	356	
62	400	16	406	

(to be continued)

Calcium Silicate

These are non-asbestos calcium silicate heat insulators reinforced by fiber. They feature high heat insulation with extremely low thermal conductivity and high heat resistance. Lightweight and easy to install. Service temperature reaches up to 650°C. Standard length is 610 mm split in 2 pieces.

How to order: CODE

Heat insulation pipe cover, calcium silicate NOMINAL PIPE SIZE, WALL THICKNESS mm

Unit Per Pc.

CODE	Applicable Pipe Nominal Size		Wall Thickness mm	Length mm
81 39 51	15A	1/2	25	610
52	20A	3/4		
53	25A	1		
81 39 54	32A	1-1/4	30	
55	40A	1-1/2		
56	50A	2		
81 39 57	65A	2-1/2	40	
58	80A	3		
59	90A	3-1/2		
81 39 60	100A	4	50	
61	125A	5		
62	150A	6		

Armaflex Insulation Tubes

A closed cell elastomeric nitrile rubber foam designed to provide a highly efficient method of insulating pipework, ducting and vessels. It is CFC (Chlorofluorocarbon) free and ideal for both hot and cold water services. Heat resistance temperature : -40°C to 105°C. Standard coil length: 2 mtr.

Unit Per Lgh

CODE	Size mm		Item No.	CODE	Size mm		Item No.
	O.D.	Thick			O.D.	Thick	
81 38 09	10	13	IS81001013	**81 38 79**	54	13	IS81005413
81 38 10	12	13	IS81001213	**81 38 80**	57	9	IS8090579
81 38 22	15	9	IS8090159	**81**		13	IS81005713
23		13	IS81001513	**81 38 82**	60	13	IS81006013
24		19	IS81101519	**83**		19	IS81106019

(to be continued)

Unit Per Lgh

CODE	Size mm O.D.	Thick	Item No.	CODE	Size mm O.D.	Thick	Item No.
81 38 36	18	9	IS8090189	**81 38 84**	64	13	IS81006313
37		13	IS81001813	**85**	70	13	IS81007013
81 38 38	22	9	IS8090229	**81 38 86**	76	9.5	IS8090769
39		13	IS81002213	**87**		13	IS81007613
40		19	IS81102219	**88**		19	IS81107619
81 38 53	25	13	IS81002513	**81 38 89**	80	9.5	IS8090809
54		19	IS81102519	**90**		13	IS81008013
81 38 63	28	9	IS8090289	**81 38 91**	88	19	IS81108819
64		13	IS81002813	**81 38 92**	89	9.5	IS8090899
65		19	IS81102819	**93**		13	IS81008813
81 38 66	30	13	IS81003013	**81 38 94**	102	13	IS81010113
81 38 67	35	9	IS8090359	**81 38 95**	108	13	IS81010813
68		13	IS81003513	**96**		19	IS81110819
69		19	IS81103519	**81 38 97**	114	9.5	IS8091149
81 38 70	42	13	IS81004213	**98**		13	IS81011413
75		19	IS81104219	**99**		19	IS81111519
81 38 76	45	9	IS8090459	**81 39 00**	140	10	IS8091409
81 38 77	48	13	IS81004813	**15**		13	IS81013913
78		19	IS81104819	**16**		19	IS81113919

Name of Mfr.: Alligator

Adhesive Glues for Armaflex Insulation Tube

For gluing Armaflex insulation tubes.

81 39 17	Glue adhesive for Armaflex insulation tube, 1,000 grm, item no. UN 1133 510	Pc.

Name of Mfr.: Alligator

Armaflex Insulation Sheets

A closed cell elastomeric nitrile rubber foam designed to provide a highly efficient method of insulating pipework, ducting and vessels. It is CFC (Chlorofluorocarbon) free and ideal for both hot and cold water services. Heat resistance temperature : -40°C to 105°C. Standard size : 500 x 2,000 mm.

Unit Per Sht

CODE	Thickness mm	Item No.	CODE	Thickness mm	Item No.
81 39 18	6	IS817006	**81 39 22**	19	IS817019
19	10	IS817010	**23**	25	IS817025
20	13	IS817013	**24**	32	IS817032
21	16	IS817016	**25**	50	IS817050

NName of Mfr.: Alligator

Armaflex Insulation Tapes

To be used between gaps for Armaflex sheet. Heat resistance temperature: -40°C to 105°C.

81 39 26	Tape, Armaflex, Thick:3mm x Width: 50mm, length: 15mtr	Rol.

Name of Mfr.: Alligator

Central Heating Pipe Sections

The central heating pipe sections have a special reinforced aluminium sandwich foil facing. The self sealing tape allows installation under conditions of high relative humidity and temperatures down to -15°C. Length of a section is 1 metre. Maximum service temperature: 250°C . Limiting temperature of outer facing: 80°C.

Unit Per Sht

CODE	Inner Diam x Thick mm	Length mtr	Pruduct No.
81 39 27	17 x 25	30	IS84501725
28	17 x 30	25	IS84501730
29	21 x 25	30	IS84502125
30	21 x 40	13	IS84502140
31	27 x 25	25	IS84502725
81 39 32	27 x 40	12	IS84502740
33	33 x 25	20	IS84503325
34	33 x 40	9	IS84503340
35	42 x 25	16	IS84504225
36	42 x 40	9	IS84504240
81 39 37	48 x 25	15	IS84504825
38	48 x 40	9	IS84504840
39	57 x 25	12	IS84505725
40	57 x 40	6	IS84505740
41	60 x 25	11	IS84506025
81 39 42	60 x 40	6	IS84506040
43	60 x 60	4	IS84506060
44	64 x 25	9	IS84506425
45	64 x 40	6	IS84506440
46	70 x 25	9	IS84507025
81 39 47	70 x 40	5	IS84507040
48	76 x 25	9	IS84507625
49	76 x 40	5	IS84507640
50	83 x 25	7	IS84508325
63	83 x 40	4	IS84508340
81 39 64	89 x 25	6	IS84508925
65	89 x 40	4	IS84508940
66	89 x 60	1	IS84508960
67	102 x 25	5	IS84510225
68	102 x 40	4	IS84510240
81 39 69	108 x 25	5	IS84510825
70	108 x 40	1	IS84510840
71	114 x 25	4	IS84511425
72	114 x 40	1	IS84511440
73	114 x 60	1	IS84511460
81 39 74	121 x 30	1	IS84512130
75	121 x 50	1	IS84512150
76	127 x 25	4	IS84512725
77	127 x 50	1	IS84512750
78	133 x 30	1	IS84513330
81 39 79	133 x 50	1	IS84513350
80	140 x 30	1	IS84514030
81	140 x 50	1	IS84514050
82	159 x 30	1	IS84515930
83	159 x 50	1	IS84515950
81 39 84	169 x 30	1	IS84516930
85	169 x 50	1	IS84516950
86	194 x 30	1	IS84519430
87	194 x 50	1	IS84519450
88	219 x 30	1	IS84521930
81 39 89	219 x 50	1	IS84521950

Name of Mfr. : Alligator

Wired Insulation Mats

Suitable for the thermal and acoustic insulation of pipework. Service temperature: 750°C.

Unit Per Sht

CODE	T x W x L mm	CODE	T x W x L mm
81 39 90	60 x 500 x 4,000	**81 39 92**	80 x 500 x 3,000
91	70 x 500 x 3,500	**93**	100 x 500 x 2,500

Lamella Blankets
Covered with Aluminium Foil

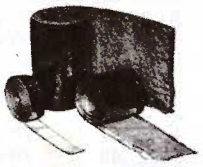
A glass wool blankets made of lamellas with an aluminium facing which acts as vapor barrier.

Temperature: 250°C.

Unit Per Sht

CODE	T × W × L mm	CODE	T × W ×. L mm
81 39 94	30 × 1,000 × 8,000	**81 39 97**	80 × 1,000 × 3,000
95	50 × 1,000 × 5,000	**98**	100 × 1,000 × 2,500
96	60 × 1,000 × 4,000		

Pipe Insulation Tapes
for High Temperature



Quick and easy way to insulate high temperature surfaces of pipes or valves in vessel engine rooms. For use on bent and flanged pipes in areas where maintenance is not a consideration and/or space is limited. Made from biosoluble vitreous silicate fibre which is reinforced with an outer jacket of heat sealed aliminium foil. Rated for use to 1,000°C max.

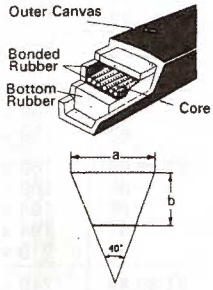
Unit Per Rol.

CODE	Width mm (inch)	Thickness mm (inch)	Length mm (inch)	Rolls/Box
81 38 71	50 (2")	3 (1/8")	7.7 (25')	24
72	100 (4")	12 (1/2")	3.3 (10')	6
73	300 (12")	25 (1")	7.7 (25')	2
74	600 (24")	25 (1")	7.7 (25')	1

7TH
81

V-Belts
for Power Transmission
(Ref. JIS K 6323 ISO-/R608)

The outstanding properties of the single line cord V-belt are that it has great strength and flexibility while stretching only a minimum amount.



Standard V-Belts

The standard sizes are classified into 6 types : M, A, B, C, D, E with the sizes as shown in the table below.

The length M type is measured by an outside circle, while types A~E are measured by the inside circles of the belt.

Standard V-Belt Section

CODE	JIS		RMA (USA)		BS	
	a	b	a	b	a	b
M	10.0	5.5			9.5	6
A	12.5	9.0	12.7	8.0	13.0	8
B	16.5	11.0	16.7	10.3	17.0	10.5
C	22.0	14.0	22.2	13.5	22.0	13.5
D	31.5	19.0	31.7	19.0	32.0	19.0
E	38.0	25.5	38.0	23.0		

Note: Type D and E are seldom requested for supply and not coded here.

Section M

Unit Per Pc.

Section M
10 x 5.5 mm

CODE	Belt No.	Outer Circle of Belts mm	CODE	Belt No.	Outer Circle of Belts mm
81 40 01	M-15	381	**81 40 19**	M-33	838
02	-16	406	**20**	-34	864
03	-17	432	**21**	-35	889
04	-18	457	**22**	-36	914
05	-19	483	**23**	-37	940
81 40 06	M-20	508	**81 40 24**	M-38	965
07	-21	533	**25**	-39	991
08	-22	559	**26**	-40	1,016
09	-23	584	**27**	-41	1,041
10	-24	610	**28**	-42	1,067
81 40 11	M-25	635	**81 40 29**	M-43	1,092
12	-26	660	**30**	-44	1,118
13	-27	686	**31**	-45	1,143
14	-28	711	**32**	-46	1,168
15	-29	737	**33**	-47	1,194
81 40 16	M-30	762	**81 40 34**	M-48	1,219
17	-31	787	**35**	-49	1,245
18	-32	813	**36**	-50	1,270

Remark: Belt number, for instance M-15 × (25.4) is the same length of the belt outer circle.

Section A

Unit Per Pc.

Section A
12.5 x 9 mm

CODE	Belt No.	Center Circle of Belts mm	CODE	Belt No.	Center Circle of Belts mm
81 41 01	A-17	432	**81 41 41**	A-57	1,448
02	-18	457	**42**	-58	1,473
03	-19	483	**43**	-59	1,499
04	-20	508	**44**	-60	1,524
05	-21	533	**45**	-61	1,550
81 41 06	A-22	559	**81 41 46**	A-62	1,575
07	-23	584	**47**	-63	1,600
08	-24	610	**48**	-64	1,626
09	-25	635	**49**	-65	1,651
10	-26	660	**50**	-66	1,676
81 41 11	A-27	686	**81 41 51**	A-67	1,702
12	-28	711	**52**	-68	1,727
13	-29	737	**53**	-69	1,753
14	-30	762	**54**	-70	1,778
15	-31	787	**55**	-71	1,803
81 41 16	A-32	813	**81 41 56**	A-72	1,829
17	-33	838	**57**	-73	1,854
18	-34	864	**58**	-74	1,880
19	-35	889	**59**	-75	1,905
20	-36	914	**60**	-76	1,930
81 41 21	A-37	940	**81 41 61**	A-77	1,956
22	-38	965	**62**	-78	1,981
23	-39	991	**63**	-79	2,007
24	-40	1,016	**64**	-80	2,032
25	-41	1,041	**65**	-81	2,057
81 41 26	A-42	1,067	**81 41 66**	A-82	2,083
27	-43	1,092	**67**	-83	2,108
28	-44	1,118	**68**	-84	2,134
29	-45	1,143	**69**	-85	2,159
30	-46	1,168	**70**	-86	2,184

(to be continued)

Unit Per Pc.

Section A
12.5 x 9 mm

CODE	Belt No.	Center Circle of Belts mm	CODE	Belt No.	Center Circle of Belts mm
81 41 31	A-47	1,194	**81 41 71**	A-87	2,210
32	-48	1,219	**72**	-88	2,235
33	-49	1,245	**73**	-89	2,261
34	-50	1,270	**74**	-90	2,286
35	-51	1,295	**75**	-91	2,311
81 41 36	A-52	1,321	**81 41 76**	A-92	2,337
37	-53	1,346	**77**	-93	2,362
38	-54	1,372	**78**	-94	2,388
39	-55	1,397	**79**	-95	2,413
40	-56	1,422	**80**	-96	2,438

Remark: Belt number, for instance A-17 x (25.4) is the same length of the belt center circle.

Section B

Unit Per Pc.

Section B
16.5 x 11 mm

CODE	Belt No.	Center Circle of Belts mm	CODE	Belt No.	Center Circle of Belts mm
81 42 01	B-30	762	**81 42 41**	B-70	1,778
02	-31	787	**42**	-71	1,803
03	-32	813	**43**	-72	1,829
04	-33	838	**44**	-73	1,854
05	-34	864	**45**	-74	1,880
81 42 06	B-35	889	**81 42 46**	B-75	1,905
07	-36	914	**47**	-76	1,930
08	-37	940	**48**	-77	1,956
09	-38	965	**49**	-78	1,981
10	-39	991	**50**	-79	2,007
81 42 11	B-40	1,016	**81 42 51**	B-80	2,032
12	-41	1,041	**52**	-81	2,057
13	-42	1,067	**53**	-82	2,083
14	-43	1,092	**54**	-83	2,108
15	-44	1,118	**55**	-84	2,134
81 42 16	B-45	1,143	**81 42 56**	B-85	2,159
17	-46	1,168	**57**	-86	2,184
18	-47	1,194	**58**	-87	2,210
19	-48	1,219	**59**	-88	2,235
20	-49	1,245	**60**	-89	2,261
81 42 21	B-50	1,270	**81 42 61**	B-90	2,286
22	-51	1,295	**62**	-91	2,311
23	-52	1,321	**63**	-92	2,337
24	-53	1,346	**64**	-93	2,362
25	-54	1,372	**65**	-94	2,388
81 42 26	B-55	1,397	**81 42 66**	B-95	2,413
27	-56	1,422	**67**	-96	2,438
28	-57	1,448	**68**	-97	2,464
29	-58	1,473	**69**	-98	2,489
30	-59	1,499	**70**	-99	2,515
81 42 31	B-60	1,524	**81 42 71**	B-100	2,540
32	-61	1,550	**72**	-102	2,591
33	-62	1,575	**73**	-105	2,667
34	-63	1,600	**74**	-108	2,743
35	-64	1,626	**75**	-110	2,794
81 42 36	B-65	1,651	**81 42 76**	B-112	2,845
37	-66	1,676	**77**	-115	2,921
38	-67	1,702	**78**	-118	2,997
39	-68	1,727	**79**	-120	3,048
40	-69	1,753	**80**	-122	3,099

Remark: Belt number, for instance B-30 x (25.4) is the same length of the belt center circle.

Section C

Unit Per Pc.

Section C
22 x 14 mm

CODE	Belt No.	Center Circle of Belts mm	CODE	Belt No.	Center Circle of Belts mm
81 43 01	C-40	1,016	**81 43 21**	C-88	2,845
02	-42	1,067	**22**	-90	2,921
03	-45	1,143	**23**	-92	2,997
04	-48	1,219	**24**	-95	3,048
05	-50	1,270	**25**	-98	3,099
81 43 06	C-52	1,321	**81 43 26**	C-100	2,540
07	-54	1,372	**27**	-102	2,591
08	-55	1,397	**28**	-105	2,667
09	-58	1,473	**29**	-108	2,743
10	-60	1,524	**30**	-110	2,794
81 43 11	C-62	1,575	**81 43 31**	C-112	2,845
12	-65	1,651	**32**	-115	2,921
13	-68	1,727	**33**	-118	2,997
14	-70	1,778	**34**	-120	3,048
15	-72	1,829	**35**	-122	3,099
81 43 16	C-75	1,905	**81 43 36**	C-125	3,175
17	-78	1,981	**37**	-128	3,251
18	-80	2,032	**38**	-130	3,302
19	-82	2,083			
20	-85	2,159			

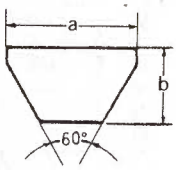
Remark: Belt number, for instance C-40 x (25.4) is the same length of the belt center circle.

Besides above standard types, the following types of V-Belts are also available on request.

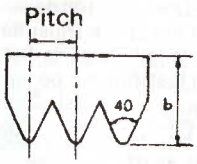
Wide Angle V-Belts

mm

No.	a	b	α°
3 M	3.0	2.0	60
5 M	5.0	3.0	60
7 M	7.0	5.0	60
11 M	11.0	7.0	60



Jointed V-Belts



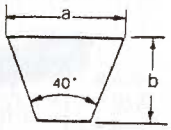
mm

	No.	Pitch		No.	Pitch
Narrow	3V	10.3	Standard	B	19.0
	5V	17.5		C	25.5
	8V	28.6		D	37.0

Light-Duty V-Belts

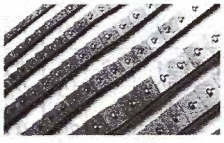
mm

No.	a	b	α°
MB	6.0	4.0	40
J			
K	8.0	6.0	40



Link V-Belts

By utilising a composite polyurethane and polyester material ensures an extended operational life over rubber based V-belts with high resistance to oil, chemicals, extremes of temperature and abrasive. Ease of fitting, and eliminate routine maintenance. With the unique detachable link construction, the belt can be joined without dismantling. Link V-Belts is available in most standard sections (Z/10, A/13, B/17, C/22, S/25, D/32, E/40 and F/50) on convenient 20 meter boxed reels. Belt to any length can be conveniently made up as required due to the metal stud system. To unfasten, turn stud heads 90°, insert tool and twist. To fasten, snap last link over stud heads and turn heads 90°. Wedge link belt offers significant increase in power on the majority of wedge belt drives.



Traditional Link Belt

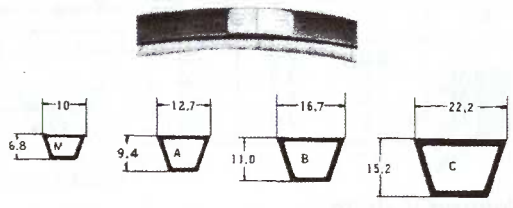
Wedge Link Belt

Unit Per Box

CODE	Traditional Link Belt	CODE	Wedge Link Belt
81 44 01	Z/10	**81 44 11**	Z/10
02	A/13	**12**	A/13
03	B/17	**13**	B/17
04	C/22	**14**	C/22
05	S/25	**15**	S/25
81 44 06	D/32	**81 44 16**	D/32
07	E/40	**17**	E/40
08	F/50	**18**	F/50

7TH 81

Perforated V-Belts



Designed for drives where ordinary V-belts would not fit and the splice must be arranged on the spot. Supplied in any length, easy to cut and splice. The belt splicing device and fastener will be furnished separately if required.

CODE	Belt Section	Size mm
81 46 01	A	12.7 x 9.4
02	B	16.7 x 11
03	C	22.2 x 15.2
04	M	10 x 6.8

Perforated V-Belt Fasteners

Specially designed for perforated V-belts which operate at low and medium speeds.

G-164

G-166

How to order: CODE

Perforated V-belt fastener, TYPE, TYPE of V-BELT SECTION

Unit Per Pc.

Type G-164 Fasteners		Type G-166 Fasteners	
CODE	For V Belt Section	CODE	For V Belt Section
81 46 11	A	**81 46 14**	A
12	B	**15**	B
13	C	**16**	C
		17	M

Rubber Flat Belts

An all purpose rubber belting which gives long, reliable service over a wide range of drives.

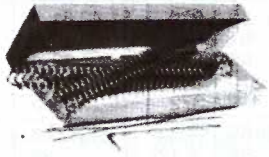
Note: Most of the flat belt failures are traceable to pulleys which are too small or belts which are too narrow. A large pully increases the arc of contact and transmits the power more easily. The use of wider belts and larger pulleys, rather than a great number of plies is the best practice to increase power.

Unit Per Mtr

CODE	Belt size Width x Thick	CODE	Belt size Width x Thick
81 46 31	25 x 3 mm	**81 46 40**	90 x 4 mm
32	30 x 3	**41**	100 x 4
33	38 x 3	**42**	125 x 5
34	50 x 3	**43**	150 x 6
35	50 x 4	**44**	175 x 6
81 46 36	63 x 3 mm	**81 46 45**	200 x 7 mm
37	63 x 4	**46**	250 x 7
38	75 x 3	**47**	250 x 8
39	75 x 4	**48**	300 x 8

Steel Belt Lacings

These belt lacings are made from special steel which is tough and durable yet very easy to fit. Only a hammer is required to install the lacing.



Unit Per Box

CODE	No. & Symbol	Length	Pcs. Per Box	Belt Width	Belt Thickness
81 46 51	# 15	200	16	25	3 ~ 4.5
52	# 20	200	15	50	4
53	F25	200	12	75	5 ~ 6.5
54	G25	300	16	75	5 ~ 6.5
55	K27	300	8	100	6 ~ 7
81 46 56	L27	300	16	100	6 ~ 7
57	N35	300	8	125	6 ~ 8.5
58	U45	300	8	200	8 ~ 10
59	W55	300	8	250	9 ~ 12
60	X65	300	8	250	10 ~ 14
81 46 61	#75	300	8	300	13 ~ 20

Belt Wax

It prevents slipping of V-belt and flat-belts. Available as solid cake or liquid spray type.

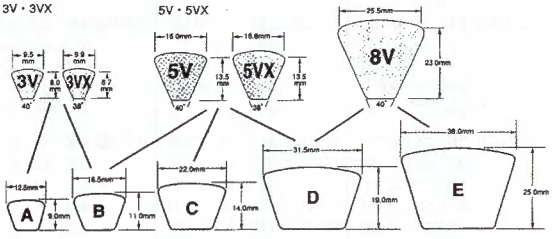
CODE	Wax Contents	Unit
81 46 81	Solid app. 420 grm	Pc.
82	Spray Liquid of 230 cc	Tin

Wedge V-Belts

Compact designed for wedge sheave, and suitable for higher speed and horsepower than standard sheave permit. It is excellent for heat resistance and anti-static property. Available in normal wrapped type or more flexible energy saving "notched type", so please specify the type of wedge V-belt when ordering.

Normal Wrapped Type

Notched Type



How to order: CODE

Wedge V-Belt, Normal or Notch shape, Size and Model Number

Unit Per Pc.

Section 3V
9.5 x 8 mm

CODE	Belt No.	Effective Circle Length mm	CODE	Belt No.	Effective Circle Length mm
81 48 01	3V 250	635	81 48 17	3V 630	1,600
02	3V 265	673	18	3V 670	1,702
03	3V 280	711	19	3V 710	1,803
04	3V 300	762	20	3V 750	1,905
05	3V 315	800	21	3V 800	2,032
81 48 06	3V 335	851	81 48 22	3V 850	2,159
07	3V 355	902	23	3V 900	2,286
08	3V 375	953	24	3V 950	2,413
09	3V 400	1,016	25	3V 1000	2,540
10	3V 425	1,080	26	3V 1060	2,692
81 48 11	3V 450	1,143	81 48 27	3V 1120	2,845
12	3V 475	1,207	28	3V 1180	2,997
13	3V 500	1,270	29	3V 1250	3,175
14	3V 530	1,346	30	3V 1320	3,353
15	3V 560	1,422	31	3V 1400	3,556
81 48 16	3V 600	1,524			

Unit Per Pc.

Section 3VX
9.9 x 8.7 mm

CODE	Belt No.	Effective Circle Length mm	CODE	Belt No.	Effective Circle Length mm
81 48 41	3VX 250	635	81 48 57	3VX 630	1,600
42	3VX 265	673	58	3VX 670	1,702
43	3VX 280	711	59	3VX 710	1,803
44	3VX 300	762	60	3VX 750	1,905
45	3VX 315	800	61	3VX 800	2,032
81 48 46	3VX 335	851	81 48 62	3VX 850	2,159
47	3VX 355	902	63	3VX 900	2,286
48	3VX 375	953	64	3VX 950	2,413
49	3VX 400	1,016	65	3VX 1000	2,540
50	3VX 425	1,080	66	3VX 1060	2,692
81 48 51	3VX 450	1,143	81 48 67	3VX 1120	2,845
52	3VX 475	1,207	68	3VX 1180	2,997
53	3VX 500	1,270	69	3VX 1250	3,175
54	3VX 530	1,346	70	3VX 1320	3,353
55	3VX 560	1,422	71	3VX 1400	3,556
81 48 56	3VX 600	1,524			

Unit Per Pc.

Section 5V
16 x 13.5 mm

CODE	Belt No.	Effective Circle Length mm	CODE	Belt No.	Effective Circle Length mm
81 49 01	5V 500	1,270	81 49 19	5V 1400	3,556
02	5V 530	1,346	20	5V 1500	3,810
03	5V 560	1,422	21	5V 1600	4,064
04	5V 600	1,524	22	5V 1700	4,318
05	5V 630	1,600	23	5V 1800	4,572
81 49 06	5V 670	1,702	81 49 24	5V 1900	4,826
07	5V 710	1,803	25	5V 2000	5,080
08	5V 750	1,905	26	5V 2120	5,385
09	5V 800	2,032	27	5V 2240	5,690
10	5V 850	2,159	28	5V 2360	5,994
81 49 11	5V 900	2,286	81 49 29	5V 2500	6,350
12	5V 950	2,413	30	5V 2650	6,731
13	5V 1000	2,540	31	5V 2800	7,112
14	5V 1060	2,692	32	5V 3000	7,620
15	5V 1120	2,845	33	5V 3150	8,001
81 49 16	5V 1180	2,997	81 49 34	5V 3350	8,509
17	5V 1250	3,175	35	5V 3550	9,017
18	5V 1320	3,353			

Unit Per Pc.

Section 5VX
16.6 x 13.5 mm

CODE	Belt No.	Effective Circle Length mm	CODE	Belt No.	Effective Circle Length mm
81 49 41	5VX 500	1,270	81 49 59	5VX 1400	3,556
42	5VX 530	1,346	60	5VX 1500	3,810
43	5VX 560	1,422	61	5VX 1600	4,064
44	5VX 600	1,524	62	5VX 1700	4,318
45	5VX 630	1,600	63	5VX 1800	4,572
81 49 46	5VX 670	1,702	81 49 64	5VX 1900	4,826
47	5VX 710	1,803	65	5VX 2000	5,080
48	5VX 750	1,905	66	5VX 2120	5,385
49	5VX 800	2,032	67	5VX 2240	5,690
50	5VX 850	2,159	68	5VX 2360	5,994
81 49 51	5VX 900	2,286	81 49 69	5VX 2500	6,350
52	5VX 950	2,413	70	5VX 2650	6,731
53	5VX 1000	2,540	71	5VX 2800	7,112
54	5VX 1060	2,692	72	5VX 3000	7,620
55	5VX 1120	2,845	73	5VX 3150	8,001
81 49 56	5VX 1180	2,997	81 49 74	5VX 3350	8,509
57	5VX 1250	3,175	75	5VX 3550	9,017
58	5VX 1320	3,353			

Porthole Glasses

Made of strengthened glass, with polished edges. When ordering, please specify the nominal size of the porthole and whether clear or frosted glass is required.

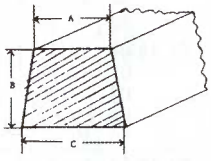
How to order: CODE

Porthole glass, CLEAR or FROST, DIAM x THICKNESS mm

Unit Per Pc.

CODE	Port Hole Nom. Dia	Glass Diam.	Glass Thick	CODE	Port Hole Nom. Dia	Glass Diam.	Glass Thick
Clear				**Frost**			
81 47 01	200	212	8	**81 47 31**	200	212	8
02			10	**32**			10
03			12	**33**			12
81 47 04	250	262	8	**81 47 34**	250	262	8
05			10	**35**			10
06			12	**36**			12
07			15	**37**			15
81 47 08	300	312	8	**81 47 38**	300	312	8
09			10	**39**			10
10			12	**40**			12
11			15	**41**			15
81 47 12	350	362	10	**81 47 42**	350	362	10
13			12	**43**			12
14			15	**44**			15
81 47 15	400	412	10	**81 47 45**	400	412	10
16			12	**46**			12
17			15	**47**			15

Porthole Linings



A rubber trapezoid section used for packing porthole glasses. Any length available upon request. When ordering, please specify the size of the rubber section.

Unit Per Mtr.

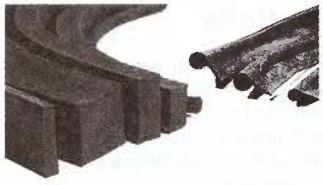
CODE	Size mm.		
	A	B	C
81 47 51	8	8	11
52	9	9	12

Watertight E.P.D.M. Rubber Door Packings

Made of E.P.D.M. (Ethylene Propylene Diene Monomer) rubber and used as watertight door packing. Seawater resistance, and maximum temperature -40°C to + 70°C. Colour is black and Standard length : 10mtr.

Tolerations : 18 – 30mm ±1.0mm.
30 – 50mm ± 1.5mm

The list shows standard size, and please ask your local supplier availability for the sizes other than these standard sizes.



Unit Per Lgh.

CODE	Size mm	CODE	Size mm	CODE	Size mm
81 50 16	10 × 6	**81 50 02**	30 × 15	**81 50 13**	40 × 40
17	10 × 8	**03**	30 × 20	**38**	45 × 10
18	10 × 10	**32**	30 × 25	**39**	45 × 15
19	12 × 8	**33**	30 × 30	**14**	45 × 20
20	12 × 10	**34**	35 × 10	**15**	45 × 25
81 50 21	12 × 12	**81 50 35**	35 × 12	**81 50 40**	45 × 30
22	15 × 10	**04**	35 × 15	**41**	45 × 40
23	15 × 15	**05**	35 × 20	**42**	45 × 45
24	20 × 6	**06**	35 × 25	**43**	50 × 5
25	20 × 10	**07**	35 × 30	**44**	50 × 10
81 50 26	20 × 15	**81 50 36**	35 × 35	**81 50 45**	50 × 15
27	20 × 20	**37**	40 × 10	**46**	50 × 20
28	25 × 10	**08**	40 × 15	**47**	50 × 25
01	25 × 15	**09**	40 × 20	**48**	50 × 30
29	25 × 20	**10**	40 × 25	**49**	50 × 35
81 50 30	25 × 25	**81 50 11**	40 × 30	**81 50 50**	50 × 40
31	30 × 10	**12**	40 × 35		

Vulcan Packing Products

Valcan No.	Name	For	Fluid	Section Size mm
VC5	Non-Asbestos Braided Packing	For marine and boiler feed applications	-	3.0-25.5
VF4	Stern Gland Packing	For pump and valve glands	Fresh water and sea water	5.0-25.0
VG1D	Non-Asbestos Braided Packing	For ductile valves and stainless valves	Steam, water, oils, air, alkalis, mild acids and chemiclas	3.0-25.5
VG1D	Non-Asbestos Braided Packing	For high temperature and high pressure valves	Steam, water, oils, air, alkalis, mild acids and chemicals	3.0-25.5
VGC-106	Super Heat Packing	For high temperature and high pressure valves	Steam, water, solvents, petroleum distillates and hot oils	3.0-25.5
VGC206	General Purpose Graphite Cotton Packing	For sealing stern glands, pump and valves	Water, sewage, solvents, oils fats and abrasive solutions	3.0-25.4
VK4	Special Aramid Fibre Packing	For rotary and reciprocating pumps, stern glands, hydraulic presses, mixers and valves	Abrasive slurries, sewage, effluents, water, oils solvents and all bar the most aggresive chemicals	3.0-25.5
VK4B	Non-Asbestos Aramid Fibre Packing	For pumps(rotary and reciprocating)and valves	Oil, water, alkalis solvent and any acid except for sulfuric acid and nitric acid	3.0-25.5
VK5	Non-Asbestos Hybrid Packing	All rotary reciprocating and static gland applications	Oil, water, alkalis solvent and any acid except for sulfuric acid and nitric acid	6.5-25.0

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Valcan No.	Name	For	Fluid	Section Size mm
VR3	Grapholi Packing	For All uses up to high temperature, high pressure,high speed applications on pumps, valves, mixers, agitators, expansion joints, ball valve seats and other static seals	All acids, alkalis and solvents (except very strong oxidisers), gases, feed water and superheated, or saturated, steam	3.0-25.5
VT2	Universal P.A.N. Fibre Packing	Pumps, valves, mixers, reactor vessels and reciprocation applications	Oil,weak acid and alkalis, general water duties	3.0-25.5
VT5	P.T.F.E Ramie Packing	Multi-purpose pumps and valve	Fresh water, sea water and dirty water	3.0-25.5
VL32	Metallic Packing	High temperature, high pressure water pumps and rotating shafts	Distillates, fuel, crude oil, mineral oil, fresh or sea water and boiler feed applications	5.0-25.5
VP2	Spscial P.T.F.E Fibre Super Packing	Chemical pumps	All chemicals across the entire pH range(except Oleum, Aqua Regia, fuming Nitric Acid and Fluotine),	3.0-25.5
VR1	All Graphite Ribbon Packing	High temperature and high pressure valves	All Acids, alkalis, and solvents (except very strong oxidisers), gases, boiler feed water and superheated, or saturated, steam	6.0-25.4
VT2	Non-Asbestos Packing		General fresh water, sea water and oil duties	3.0-25.5
VT9-L	P.T.F.E.Fibre Packing	Rotating and reciprocating shafts	Solvents and virtually all chemicals with the exceptions of molten and alkali metals and flurine	3.0-25.5
VW31	Tank Lid Packing	Marine cargo tank lid	All chemicals carried aboard ships including all acids and baric fluids compatible with P.T.F.E.	20 x 20-40 x 30

Easy Reference Table of O Ring JIS No.

Reference to JIS B 2401.

Nom. No.	Actual Size mm			Nom. No.	Actual Size mm		
	I.D.	O.D.	Diam.		I.D.	O.D.	Diam.
P 3	2.8	6.6	1.9	P71	70.6	82.0	5.7
P 4	3.8	7.6		P75	74.6	86.0	
P 5	4.8	8.6		P80	79.6	91.0	
P 6	5.8	9.6		P85	84.6	96.0	
P 7	6.8	10.6		P90	89.6	101.0	
P 8	7.8	11.6		P95	94.6	106.0	
P 9	8.8	12.6		P100	99.6	111.0	
P10	9.8	13.6		P102	101.6	113.0	
P10A	9.8	14.6	2.4	P105	104.6	116.0	
P11	10.8	15.6		P110	109.6	121.0	
P11.2	11.0	15.8		P112	111.6	123.0	
P12	11.8	16.6		P115	114.6	126.0	
P12.5	12.3	17.1		P120	119.6	131.0	
P14	13.8	18.6		P125	124.6	136.0	
P15	14.8	19.6		P130	129.6	141.0	
P16	15.8	20.6		P132	131.6	143.0	
P18	17.8	22.6		P135	134.6	146.0	
P20	19.8	24.6		P140	139.6	151.0	
P21	20.8	25.6		P145	144.6	156.0	
P22	21.8	26.6		P150	149.6	161.0	
P22A	21.7	28.7	3.5	P150A	149.5	166.3	8.4
P22.4	22.1	29.1		P155	154.5	171.3	
P24	23.7	30.7		P160	159.5	176.3	
P25	24.7	31.7		P165	164.5	181.3	
P25.5	25.2	32.2		P170	169.5	186.3	
P26	25.7	32.7		P175	174.5	191.3	
P28	27.7	34.7		P180	179.5	196.3	
P29	28.7	35.7		P185	184.5	201.3	
P29.5	29.2	36.2		P190	189.5	206.3	
P30	29.7	36.7		P195	194.5	211.3	
P31	30.7	37.7		P200	199.5	216.3	
P31.5	31.2	38.2		P205	204.5	221.3	
P32	31.7	38.7		P209	208.5	225.3	
P34	33.7	40.7		P210	209.5	226.3	
P35	34.7	41.7		P215	214.5	231.3	
P35.5	35.2	42.2		P220	219.5	236.3	
P36	35.7	42.7		P225	224.5	241.3	
P38	37.7	44.7		P230	229.5	246.3	
P39	38.7	45.7		P235	234.5	251.3	
P40	39.7	46.7	3.5	P240	239.5	256.3	8.4
P41	40.7	47.7		P245	244.5	261.3	
P42	41.7	48.7		P250	249.5	266.3	
P44	43.7	50.7		P255	254.5	271.3	
P45	44.7	51.7		P260	259.5	276.3	
P46	45.7	52.7		P265	264.5	281.3	
P48	47.7	54.7		P270	269.5	286.3	
P49	48.7	55.7		P275	274.5	291.3	
P50	49.7	56.7		P280	279.5	296.3	
P48A	47.6	59.0	5.7	P285	284.5	301.3	
P50A	49.6	61.0		P290	289.5	306.3	
P52	51.6	63.0		P295	294.5	311.3	
P53	52.6	64.0		P300	299.5	316.3	
P55	54.6	66.0		P315	314.5	331.3	
P56	55.6	67.0		P320	319.5	336.3	
P58	57.6	69.0		P335	334.5	351.3	
P60	59.6	71.0		P340	339.5	356.3	
P62	61.6	73.0		P355	354.5	371.3	
P63	62.6	74.0		P360	359.5	376.3	
P65	64.6	76.0		P375	374.5	391.3	
P67	66.6	78.0		P385	384.5	401.3	
P70	69.6	81.0		P400	399.5	416.3	
G 25	24.4	30.6	3.1	G140	139.4	145.6	3.1
G 30	29.4	35.6		G145	144.4	150.6	
G 35	34.4	40.6		G150	149.3	160.7	5.7
G 40	39.4	45.6		G155	154.3	165.7	
G 45	44.4	50.6		G160	159.3	170.7	
G 50	49.4	55.6		G165	164.3	175.7	
G 55	54.4	60.6		G170	169.3	180.7	
G 60	59.4	65.6		G175	174.3	185.7	
G 65	64.4	70.6		G180	179.3	190.7	
G 70	69.4	75.6		G185	184.3	195.7	
G 75	74.4	80.6		G190	189.3	200.7	
G 80	79.4	85.6		G195	194.3	205.7	
G 85	84.4	90.6		G200	199.3	210.7	
G 90	89.4	95.6		G210	209.3	220.7	
G 95	94.4	100.6		G220	219.3	230.7	
G100	99.4	105.6		G230	229.3	240.7	
G105	104.4	110.6		G240	239.3	250.7	
G110	109.4	115.6		G250	249.3	260.7	
G115	114.4	120.6		G260	259.3	270.7	
G120	119.4	125.6		G270	269.3	280.7	
G125	124.4	130.6		G280	279.3	290.7	
G130	129.4	135.6		G290	289.3	300.7	
G135	134.4	140.6		G300	299.3	310.7	

Conversion Table

Length

	m	km	in	ft	yd	mile
m	1	1×10^{-3}	39.37	3.28	1.093	6.214×10^{-4}
km	1×10^{3}	1	3.937×10^{4}	3280	1093	0.621
in	0.0254	2.54×10^{-5}	1	1/12	1/36	1.58×10^{-5}
ft	0.305	3.048×10^{-4}	12	1	1/3	1.894×10^{-4}
yd	0.914	9.144×10^{-4}	36	3	1	5.682×10^{-4}
mile	1,609	1.609	63,360	5,280	1,760	1

Mass (Weight)

	g	kg	t	lb	oz
g	1	1×10^{-3}	1×10^{-6}	2.204×10^{-3}	0.0352
kg	1×10^{3}	1	1×10^{-3}	2.204	35.27
t	1×10^{6}	1×10^{3}	1	2204	35270
lb	453.6	0.4536	4.536×10^{-4}	1	16
oz	28.35	0.02835	2.835×10^{-5}	1/16	1

Volume

	cm^3 (cc or ml)	m^3	l	in^3	qt	pt	fl-oz	ft^3	gal
cm^3 (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m^3	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in^3	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
Ft^3	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

Pressure

	bar	kgf/cm^2	lbf/cm^2	mmHg (0°C)	Pa (SI)
bar	1	1.020	14.50	750.1	100,000
kgf/cm^2	0.9807	1	14.22	753.6	98,066
lbf/cm^2	0.0689	0.0703	1	51.72	6,895
mmHg (0°C)	0.00133	0.0013	0.0193	1	133.3
Pa (SI)	1×10^{-5}	1.02×10^{-5}	1.45×10^{-4}	10.2×10^{-4}	1

Stress

	Pa (SI)	MPa	kgf/mm^2	kgf/cm^2
Pa (SI)	1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
MPa	1×10^{6}	1	1.01972×10^{-1}	1.01972×10
kgf/mm^2	9.80665×10^{6}	9.80665	1	1×10^{2}
kgf/cm^2	9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

Force

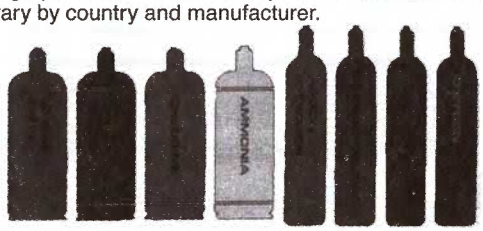
	kW	kgf · m/sec	HP
kW	1	102.0	1.341
kgf · m/sec	0.009807	1	0.01315
HP	0.7457	76.04	1

85
WELDING EQUIPMENT

Gases/Gas Cylinders P. 85-1 ~ 8	Gas Welding and Cutting Equipment P. 85-8 ~ 10	Welding Hose and Couplings P. 85-10 ~ 12
Gas Welding Rods P. 85-12 ~ 13	Electrodes P. 85-13 ~ 18	Electric Welding Equipment P. 85-18 ~ 22
Welder's Chalks P. 85-22	Welders' Protection Items P. 85-22 ~ 24	Welding Gauges P. 85-24

High Pressure Gases

Gases are obtainable packed in cylinders or empty cylinders from a vessel can be refilled for use. The most commonly required gases for marine use are listed below. When ordering, please specify the type of gas required. Charges for cylinder rental or gas refills are applied separately and the guidelines regarding what type of valves are used on the cylinders, how frequently the cylinders must undergo pressure tests, and if cylinders can be exchanged will vary by country and manufacturer.



CODE	Gas Name	Gas Symbol	Unit	Standard Cylinder
85 01 02	Oxygen	O_2	M³	6.7 M³
04	Acetylene	C_2H_{22}	kgs	6.8 ~ 7.8 kgs
09	HFC-134a	CH_2FCF_3	"	10, 20, 100 kgs
10	R-404A	(*)	"	10, 20, 100 kgs
11	R-407C	(**)	"	10, 20, 100 kgs
85 01 12	Propane	C_3H_8	kgs	10, 20, 50 kgs
14	Carbon Dioxide	CO_2	"	30 kgs
16	Helium	He	M³	7 M³
18	Argon	Ar	"	7 M³
20	Hydrogen	H_2	"	7 M³
85 01 22	Nitrogen	N_2	M³	7 M³
24	Ammonia	NH_3	kgs	50 kgs

Remark (*) : R-404A is mixture gas of HFC-125 / 143a / 134a (**): R-407C is mixture gas of R32 / R125 / R134a

Note: The refill of an empty cylinder is under strict control by the high pressure gas control safety law of most countries. Consequently, it takes a long time for the refill procedure. To avoid this slow process, cylinder rental systems are also available in certain countries.

Information regarding the use of refrigerant gases

In accordance with the IMO resolution A. 719 (17) regarding CFCs we would like shipyards and ship owners to take note of the current regulations in place on the design of refrigerant systems and proposals for the future restriction of refrigerant gases.

The resolution states as follows:

1. The use of CFCs whose ozone depleting potential is higher than 5 % of R-11 in installations of fixed refrigeration and air conditioning plants and insulation shall be prohibited on ships of which the keel is laid or which are at a similar stage of construction on or after 6 November, 1992.
2. The use of CFCs in such new installations on other ships shall be prohibited by 6 November, 1992.

In regards to the use of refrigerant gases, CFC refrigerants above grade CFC 11(R-11) has been banned from use from the year 1996. Furthermore, the alternative refrigerant HCFC 22(R-22) has been totally banned in EU since 2015. Starting from 1st January 2020, virgin R-22 will be banned in non-article 5 parties (Montreal Protocol) such as Japan, Australia and USA. The other alternative refrigerants such as R-404A (mixture gas of HFC-125/143a/134a) and R-507 (mixture gas of HFC-125/143a) and R-422D (mixture of R-125/134a/600) will also be banned in EU from 1st January. 2020.

The Montreal Protocol stipulates 100% phaseout of the production of CFCs, which is the most common ozon-depleting refrigerants such as CFC-12, R-502 and HCFC-22, by January 1, 1996.

HFCs are environmentally superior to CFCs because HFC does not contain chlorine.

We also include alternative gases from this edition as environmentally friendly refrigerants which enable to make direct replacement of CFCs.

CFC denotes Chlorofluorocarbon.
HFC denotes Hydro fluorocarbon.
HCFC denotes Hydro chlorofluorocarbon.

Refrigerant Gases

As alternative for CFC Refrigerants

Due to the ozone depleting issues, environmentally friendly maritime refrigerant is required for use in various cooling system. Here is the reference of quality assured refrigerants to the highest purity standards (ARI-700), covers wide range of marine refrigeration requirements.

CODE	Name	Unit	Application
85 01 25	Hycool Marine 45	kgs	A cost efficient and environmentally friendly secondary refrigerant for use in indirect cooling systems. It is based on the organic salt Potassium Formate. Biodegradable and has neither Ozone Depleting Potential nor Global Warming Potential, Non-flammable and non-toxic. and Wide application range +50 ' to -45°C, can be used in freezing, cooling and heating applications.
26	Same, supplied in can (25L)	25 L	
85 01 27	Unicool R-407F	kgs	A synthetic HFC refrigerant, used in a variety of maritime refrigeration applications such as high, medium and low temperature applications. **NOTE: Recommended direct replacement for R-404A (fully compatible).**
28	Same, supplied in 12L cylinder	11 kgs	
29	Same, supplied in 56L cylinder	51 kgs	
85 01 30	Unicool R-410A	kgs	A synthetic HFC refrigerant, used in a variety of maritime refrigeration applications such as high, medium and low temperature applications.
34	Same, supplied in 12L cylinder	9.5 kgs	
38	Same, supplied in 56L cylinder	45 kgs	
85 01 39	Unicool R-417A	kgs	A synthetic HFC refrigerant for replacing R-22 in existing refrigeration systems for low, medium and high temperature applications. **NOTE: Recommended drop-in retrofit replacement for R-22.**
40	Same, supplied in 12L cylinder	11 kgs	
47	Same, supplied in 56L cylinder	51 kgs	
85 01 48	Unicool R-422D	kgs	A synthetic HFC refrigerant for replacing R-22 in existing refrigeration systems for low and medium temperature application. **NOTE: Virgin R-422D will be banned in EU from 1st Jan 2020.**
49	Same, supplied in 56L cylinder	52 kgs	
85 01 50	Unicool R-507	kgs	A synthetic HFC refrigerant, used in a variety of maritime refrigeration applications such as low and medium temperature applications. **NOTE: Virgin R-507 will be banned in EU from 1st Jan 2020.**
98	Same, supplied in 12L cylinder	9.5 kgs	
99	Same, supplied in 56L cylinder	45 kgs	

Name of Mfr: Wilhelmsen Ships Service

7TH 81

Seamless High Pressure Gas Cylinders

for Oxygen, Nitrogen, Hydrogen, Helium, etc.

Made of seamless mangan steel complete with valve and cap for use with various gases such as Oxygen(O_2), Nitrogen(N_2), Hydrogen(H_2), Helium(He), etc.

When ordering, please specify the name of the gas to be filled for safety's sake. Their specifications are as follows:

How to order: CODE

High pressure gas cylinder, KIND of GAS, GAS CAPACITY

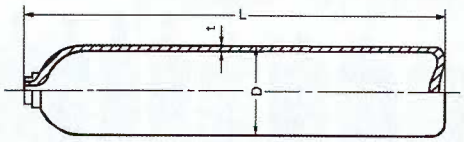
Unit Per Btl

CODE	85 01 41	85 01 42
Gas Capacity m^3	7.0	6.0
Water Capacity ltr	46.7	40.0
Service Pressure	150 kgf/cm^2	
Hydraulic Test Pressure	250 kgf/cm^2	
Out Diam. mm	232.0	
Nominal Wall Thick mm	6.3	
Overall Length mm	1,370	1,190
Weight kgs	53.5	46.5

High Pressure Gas Cylinders

There are a great variety of compressed gas cylinder standards. To avoid dangerous accidents, most countries have their own strict regulations governing the making, refilling and testing procedures of these high pressure gas cylinders. The table in the next page summarizes the abstract details of the popular cylinders of various countries.

In case of refilling, a certain country may require the certificates of the cylinders.



1. American Specifications : DOT 3AA (CTC in Canada)

Ref.No.	Materials	Gas Capacity (ft^3)	Service Pressure (Psi)	Water Capacity (in^3)	Outside Diameter (D) mm	Nominal Wall Thickness (t) mm	Overall Length (L) mm	Nominal Weight kgs
UA-22	Chromium Molybdenum Steel	220	2,015	2,640	232.0	6.3	1,285	50.0
UA-25		250	2,265	2,640	232.0	6.5	1,290	51.5
UA-30		300	2,400	2,990	235.0	6.8	1,400	59.5
UA-34		340	2,845	2,850	232.0	8.1	1,425	71.0
UB- 8	Manganese Steel B	80	2,015	873	177.8	5.5	765	20.5
UB-11		110	2,015	1,318	177.8	5.5	1,110	28.0
UB-12		125	2,265	1,318	177.8	5.5	1,110	28.0
UB-15		150	2,015	1,630	190.7	5.5	1,170	32.5
UB-22		220	2,015	2,680	232.0	6.3	1,300	51.0
UB-23		230	2,015	2,680	232.0	6.3	1,300	51.0
UB-24		240	2,015	2,850	232.0	6.3	1,370	53.5
UB-26		260	2,135	2,850	232.0	6.3	1,370	53.5
UB-25		250	2,265	2,640	232.0	6.5	1,290	51.5
UB-30		300	2,400	2,990	235.0	7.0	1,420	62.0
UB-34		340	2,845	2,850	232.0	8.1	1,425	71.0

2. Germany Specifications : DIN 4664 Blatt 7,9

Ref.No.	Materials	Test Pressure (bar)	Water Capacity (liter)	Outside Diameter (D) mm	Nominal Wall Thickness (t) mm	Overall Length (L) mm	Nominal Weight kgs
G7-40	Blatt 7 Manganese Steel B (38 Mn6)	250	40.2	232.0	6.5	1,220	54.5
G7-47			46.9	232.0	6.5	1,405	62.0
G7-68			67.5	267.4	7.5	1,535	90.5
G9-40	Blatt 9 Chromium Molybdenum Steel (32 CrMo4)	300	40.0	232.0	5.9	1,200	48.5
G9-50			50.0	232.0	5.9	1,470	58.5

3. British Specifications : BS5045 Part 1

Ref.No.	Materials	Water Capacity (liter)	Outside Diameter (D) mm	Nominal Wall Thickness (t) mm	Overall Length (L) mm	Nominal Weight kgs
BA-68	Chromium Molybdenum Steel	68	267.4	7.0	1,515	76.0

4. Japanese Specifications : JIS B8241

For Permanent Gases

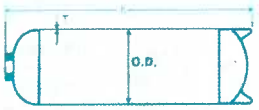
Ref.No.	Materials	Service Pressure	Hydraulic Test Pressure	Water Capacity (liter)	Gas Capacity (m^3)	Outside Diameter (D) mm	Nominal Wall Thickness (t) mm	Overall Length (L) mm	Nominal Weight kgs
JC-7	Chromium Molybdenum Steel	200 kgf/cm²	334 kgf/cm²	35	7.0	216.3	6.2	1,205	43.5
JC-8				40	8.0	216.3	6.2	1,360	48.5
JC-9				45	9.0	216.3	6.2	1,515	53.0
JCT-7				35	7.0	232.0	6.3	1,060	43.0
JCT-8				40	8.0	232.0	6.3	1,190	46.5
JCT-9				45	9.0	232.0	6.3	1,330	52.0
JCT-10				50	10.0	232.0	6.3	1,460	56.5
JHC-10				50	10.0	232.0	7.8	1,500	70.0
JS-6	Manganese Steel B	150 kgf/cm²	250 kgf/cm²	40.0	6.0	232.0	6.3	1,190	46.5
JS-7				46.7	7.0	232.0	6.3	1,370	53.5
JS-10				68.0	10.2	267.4	7.0	1,515	76.0

For High Pressure Liquefied Gases : CO_2 (NO_2, C_2H_4)

Ref.No.	Materials	Hydraustatic Test Pressure	Water Capacity (liter)	Gas Capacity (kgs)	Outside Diameter (D) mm	Nominal Wall Thickness (t) mm	Overall Length (L) mm	Nominal Weight kgs
JL-30	Manganese Steel B	250 kgf/cm²	40.2	30	232.0	6.3	1,190	46.5
JL-35			46.9	35	232.0	6.3	1,370	53.5
JL-50			68.0	50	267.4	7.0	1,515	76.0

Acetylene Gas Cylinders

Made of welded steel with monothetic porous filler (porosity 90 –92%) which is ready to fill with dissolved acetylene gas. Complete with valve and cap.



Unit Per Cyl.

CODE		85 01 51	85 01 52	85 01 53
Gas Weight kgs		7	4	2
Gas Volume m^3		6.3	3.6	1.8
Water Capacity (Ltr)		41	24	12.5
Outside Diam. mm		259	232	220
Wall Thickness mm		4.0	3.2	3.0
Height mm		939	701	432
Weight (kgs)	Net Weight	26.5	16.5	9.0
	Porous Filler	9.2	5.3	2.8
	Aceton	14.0	8.2	4.3
	Saturated Gas	0.5	0.3	0.2
	Valve	0.8	0.8	0.8
	Total	51.0	31.1	17.1
Filling Pressure Kgf/cm²		15.5	15.5	15.5
Test Pressure Kgf/cm²		50.0	50.0	50.0

Spanners for Opening & Closing Oxygen / Acetylene Gas Cylinder

Two square sockets for Oxygen cylinder valve and Acetylene cylinder valve in single spanner.

85 01 56	Spanner, opening & closing, for Oxygen/Acetylene gas cylinder	Pc.

Refrigerant Gas Cylinders

Made of welded steel for use with HFC-134a, R-404A or R-407C complete with valve and head cap.

HFC-134a and R-404A / R-407C

Nom. Gas Capacity			10 ltr	20 ltr	40 ltr	100 ltr
Actual Volume	HFC-134a		10 ltr	21 ltr	41 ltr	107 ltr
	R-404A / R-407C		12 ltr	24 ltr	-	120 ltr
Size	O.D mm	HFC-134a	275	220	220	370
		R-404A / R-407C	250	220	-	370
	Length mm	HFC-134a	271	697	1,247	1,172
		R-404A / R-407C	344	758	-	1,299
	Height mm	HFC-134a	380	810	1,390	1,310
		R-404A / R-407C	454	899	-	1,310
Total Weight kgs	HFC-134a		7	14	24	40
	R-404A / R-407C		8	13.5	-	52
Test Pressure kgs/cm²	HFC-134a		31	31	31	31
	R-404A / R-407C		51	51	-	51

How to order: CODE

Refrigerant gas cylinder, NAME of GAS, TYPE NO., CAPACITY

Unit Per Cyl.

CODE	Name of Gas	Capacity kgs
85 01 57	HFC-134a	10
58		20
60		100
85 01 73	R-404A	10
74		20
65		100
85 01 95	R-407C	10
96		20
70		100

Non Refillable Refrigerant Gas Cylinders

Portable, easy to use and fully recyclable cylinders for refrigerant gases. Supplied in a protective shipping carton.

How to order: CODE

Refrigerant gas cylinder, non refillable, NAME of GAS, TYPE NO., CAPACITY

Unit Per Cyl.

CODE	Name of Gas	Capacity kgs
85 01 78	R-410A	10
85 01 79	R-404A	10
85 01 80	R-407C	10

Nitrogen Gas Cylinders

Specifications

Application	Inerting
Gas capacity mm³	9 - 10
Filling pressure bar	196
Gross weight kgs	92.7
Overall length mm.	1,664
Outside diameter mm.	230
Valve connection	W24.32 x 1/14M

85 01 77	Nitrogen gas cylinder 9 - 10 m³	Cyl.

7TH
85

Propane Gas Cylinders

Made of welded steel for use with liquefied petroleum gas which is mainly used for fuel.

Unit Per Cyl.

CODE		85 01 81	85 01 82	85 01 83
Type No.		5L	10L	20L
Gas Capacity kgs		5	10	20
Actual Volume ltr		11.8	24	47
Size	Outside Diam. mm	250	310	320
	Wall Thickness mm	3	3	3
	Overall Length mm	450	545	823
Total Weight kgs		8.5	12	21
Test Pressure kgf/cm²		31	31	31

Span (Calibration) Gases

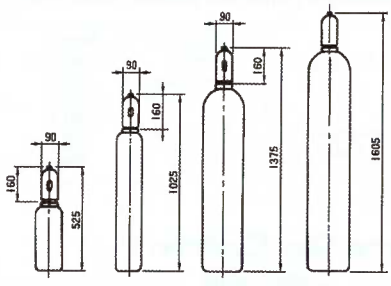
Several kinds of gases are available for calibrating gas analyzers. These gases are called Span Gas or Calibration Gas.

For combustible gas detection, two major methods are widely and commonly used in marine applications, one is the non-dispersive infrared absorption principle (Nitrogen Balance) and the other is the catalytic combustion principle (Air Balance).

The specifications of the gases for use on the calibration of the analyzers utilizing the above two principles are as follows.

No.	Mixing Ratio	Name of Gas Mixed	Main Component
C-0	Zero Gas		
D-0	100%		N_2 (Nitrogen)
C-1	Span Gas		
D-1	Approx. 2%	O_2 (Oxygen)	N_2 (Nitrogen)
D-2	" 3%	CH_4 (Methane)	"
D-3	" 4.3%		"
D-4	" 5%		"
D-5	" 1.5%		Air
D-9	Others ... Please specify the components and concentration.		

For containing the above gases, there are several gas cylinders and regulators. They are as follows:



No.	Volume Ltr	Pressure Kgf/cm²		Size mm		Weight kgs
		Filling	Test	Length	Dia.	
B-0	3.4	100	250	525	140	6.0
1	10	150		1,025	140	14
2	40	150		1,375	232	50
3	47	150		1,605	232	65

When ordering gases and cylinder (if required), please fill the following column.

How to order : 85 - 01 - 84

Span gas, with following information:

Order No. A B C D

(A) With or Without cylinder
0 - Gas only
1 - Gas with cylinder

(B) Cylinder Volume
B - 0, 1, 2, 3

(C) Use
0 - Zero Gas
1 - Span Gas

(D) Kinds of Gas
D-0, 1, 2, 3, 4, 5, 9

Order No. A 1 B 2 C 1 D 3 means

Span gas, 4.3 % CH_4 in N_2 with 40 ltr/cylinder.

Note:
1. In case (A) is 0, the refilling gas cylinder should be attached with the certificate if issued previously.
2. The combustible gas balanced by air which is over 30 % of LEL (Lower Explosive Limit) can't be supplied/refilled.

Span Gases

Span Gas for all types of gas detectors and analyzer. To help comply with standards, various types of calibration gas cylinders are available for your usage.

The most important accessory to any gas detector is a calibration kit, which provides the means to determine if the instrument is working properly. When using gas detection equipment, it is necessary to calibrate the equipment on a regular basis to guarantee accurate results. According to some regulations and standards, one must test the gas detector prior to each use with a suitable test gas.

Can Specifications

Type	20L	34L	58L	110L
Height x Diam	230 x 78 mm	280 x 74 mm	360 x 88 mm	360 x 88 mm
Weight in kgs	0.35	0.7	0.8	0.8
Material	Aluminium Alloy			
Filling Pressure	300 PSI	500 PSI	500 PSI	1,000 PSI
Usable Gas	20 ltr	34 ltr	58 ltr	110 ltr
Connection	7/16"-28NS/ 2 Male	5/8"-18 UNF(C-10)		
Filling Tolerance	5-99PPM±10% >100 PPM±5%	5-49PPM±10%, 50-500PPM±5% > 500PPM±2%		
Transportation	UN 1956 Class 2			
Mixture	Flammable, non reactive and limited range of reactive gases	Flammable, non reactive and reactive gases		

Type of Mixture Gases

A span gas comes in aluminium alloy cylinder. Please specify kind of gas with capacity of cylinder you request selecting from standard ranges in the following table. If other Mixtures are required, please specify Gas Type and Concentration.

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 15 11	0.75% Vol (50%LEL) Iso-Butane (C_4H_{10}) Balance Air	in 20 ltr can
12		in 34 ltr can
13		in 58 ltr can
14		in 110 ltr can
85 15 15	8% Butane (C_4H_{10}) Balance Nitrogen (N_2)	in 20 ltr can
16		in 34 ltr can
17		in 58 ltr can
18		in 110 ltr can
85 15 19	99.5% Pure Butane (C_4H_{10})	in 20 ltr can
20		in 34 ltr can
21		in 58 ltr can
22		in 110 ltr can
85 15 23	50 PPM Carbon Monoxide (CO) Balance Airr	in 20 ltr can
24		in 34 ltr can
25		in 58 ltr can
26		in 110 ltr can

(to be continued)

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 15 27	100 PPM Carbon Monoxide (CO) Balance Air	in 20 ltr can
28		in 34 ltr can
29		in 58 ltr can
30		in 110 ltr can
85 15 31	250 PPM Carbon Monoxide (CO) Balance Air	in 20 ltr can
32		in 34 ltr can
33		in 58 ltr can
34		in 110 ltr can
85 15 35	5% Carbon Dioxide (CO_2) Balance Nitrogen (N_2)	in 20 ltr can
36		in 34 ltr can
37		in 58 ltr can
38		in 110 ltr can
85 15 39	25 PPM Hydrogen Sulphide (H_2S) Balance Nitrogen (N_2)	in 20 ltr can
40		in 34 ltr can
41		in 58 ltr can
42		in 110 ltr can
85 15 43	50 PPM Hydrogen Sulphide (H_2S) Balance Nitrogen (N_2)	in 20 ltr can
44		in 34 ltr can
45		in 58 ltr can
46		in 110 ltr can
85 15 47	2.5% Vol (50%LEL) Methane (CH_4) Balance Air	in 20 ltr can
48		in 34 ltr can
49		in 58 ltr can
50		in 110 ltr can
85 15 51	99.95% Pure Methane (CH_4)	in 20 ltr can
52		in 34 ltr can
53		in 58 ltr can
54		in 110 ltr can
85 15 55	99.995% Pure Nitrogen (N_2)	in 20 ltr can
56		in 34 ltr can
57		in 58 ltr can
58		in 110 ltr can
85 15 59	2.1% Oxygen (O_2) Balance Nitrogen (N_2)	in 20 ltr can
60		in 34 ltr can
61		in 58 ltr can
62		in 110 ltr can
85 15 63	5.5% Oxygen (O_2) Balance Nitrogen (N_2)	in 20 ltr can
64		in 34 ltr can
65		in 58 ltr can
66		in 110 ltr can
85 15 67	0.7% Vol (50%LEL) Pentane (C_5H_{12}) Balance Air	in 20 ltr can
68		in 34 ltr can
69		in 58 ltr can
70		in 110 ltr can
85 15 71	1.1% Vol (50%LEL) Propane (C_3H_8) Balance Air	in 20 ltr can
72		in 34 ltr can
73		in 58 ltr can
74		in 110 ltr can
85 15 75	99.95% Pure Propane (C_3H_8)	in 20 ltr can
76		in 34 ltr can
77		in 58 ltr can
78		in 110 ltr can
85 15 07	100 PPM Isobutylene Balance Air	in 110 ltr can
85 15 08	216ppm Ethanol Balance Nitrogen 0.038% BRAC Equivalent for Alcohol Meter Test Gas	in 110 ltr can
85 15 09	2% Vol (50% LEL) Hydrogen Balance Air	in 110 ltr can

4 Gas Mixtures

Very reactive gas mixture only available in 34, 58, 100 ltr cylinders.

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 15 81 82 83	2.5% Methane (CH_4), 50PPM Carbon Monoxide (CO), 25PPM Hydrogen Sulphide (H_2S), 12% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can
85 15 84 85 86	2.5% Methane (CH_4), 100PPM Carbon Monoxide (CO), 25PPM Hydrogen Sulphide (H_2S), 20.9% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can
85 15 87 88 89	2.5% Methane (CH_4), 100PPM Carbon Monoxide (CO), 40PPM Hydrogen Sulphide (H_2S), 15% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can
85 15 90 91 92	2.5% Methane (CH_4), 100PPM Carbon Monoxide (CO), 25PPM Hydrogen Sulphide (H_2S), 18% Oxygen (O_2) Balance Nitrogen (N_2)	in 34 ltr can in 58 ltr can in 110 ltr can
85 15 10	0.9% (50%LEL) Isobutane, 50PPM Carbon Monoxide, 25PPM Hydrogen Sulphide, 12% Oxygen Balance Nitrogen	in 58 ltr can

Name of Mfr. : Atlas Marine Services Pte. Ltd.

Regulators and Accessories

Fixed Flow Regulators for 34 ltr, 58 ltr, and 110 ltr

Available for portable detectors with no pump or hand pump, also ideal for fixed head detectors. Flow rate 0.3 litres/minute, 0.5 litres/minute or 1.0 litres/minute.

Unit Per Pc

CODE	Flow Rate	CODE	Flow Rate
85 15 93 94	0.3 ltr/min 0.5 ltr/mn	85 15 95	1.0 ltr/min

Demand Flow Regulators for 34 ltr, 58 ltr and 110 ltr

Special designed for gas detectors with built-in electric sample pump. Important gas is supplied at "Sample pump" normal working flow rate, hence ensures testing and calibration are similar to true operation conditions.

85 15 96	Regulator, demand flow, for 34 ltr, 58 ltr and 110 ltr	Pc.

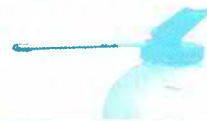
20 ltr Cylinder Regulators

Designed for 20 litre can's of gases to provide varying from 0.25 to 1.5 litre/min

85 15 97	Regulator for 20 ltr cylinder	Pc.

Spray Nozzles for quick testing, bump testing or filling sample bags

For use with 20ltr cans only.



85 15 98	Spray nozzle for quick testing, bump testing or filling sample bags	Pc.

Gas Sample Bags with Clip Valve

Sample bags are available too for use with fixed equipment or pumped instrument.

85 15 99	Gas sample bag with clip valve	Pc.

Mixtures Gases from Fastcalgas

Unit Per Btl

CODE	Gas Description	Fastcalgas No.	Cylinder Size Ltr
Ammonia (NH_3)			
85 17 01	25 ppm NH_3/Air	FCG22000	58
Butane (C_4H_{10})			
85 17 02	0.9% (50% LEL) C_4H_{10} / Air	FCG23000	103
03	0.9% (50% LEL) C_4H_{10} / N_2	FCG23005	103
04	8% C_4H_{10} / N_2	FCG23010	34
05	8% C_4H_{10} / N_2	FCG23015	16
06	8% C_4H_{10} , 13.8% CO_2/N_2	FCG23020	34
07	8% C_4H_{10} , 13.8% CO_2/N_2	FCG23025	16
Iso-Butane (C_4H_{10})			
85 17 08	0.9% (50% LEL) i-C_4H_{10} / Air	FCG24000	34
09	0.9% (50% LEL) i-C_4H_{10} / Air	FCG24010	103
10	10% i-C_4H_{10} / N_2	FCG24005	34
11	10% i-C_4H_{10} / N_2	FCG24060	18
Carbon Dioxide (CO_2)			
85 17 12	1% CO_2/Air	FCG25000	103
13	15% CO_2/Air	FCG25005	103
14	15% CO_2/N_2	FCG25010	103
Carbon Monoxide (CO)			
85 17 15	50 ppm CO/Air	FCG26000	103
16	60 ppm CO/Air	FCG26005	103
17	100 ppm CO/N_2	FCG26010	34
Ethanol (C_2H_5OH)			
85 17 18	191ppm C_2H_5OH/N_2	FCG33000	34
Hydrogen Sulphide (H_2S)			
85 17 19	10 ppm H_2S/N_2	FCG27000	58
20	25 ppm H_2S/N_2	FCG27005	58
21	40 ppm H_2S/N_2	FCG27010	58
22	50 ppm H_2S/N_2	FCG27015	58
Nitrogen (N_2)			
85 17 23	Nitrogen (99.99% v/v)	FCG28000	34
24	Nitrogen (99.99% v/v)	FCG28010	103
Oxygen (O_2)			
85 17 25	2% O_2/N_2	FCG29000	103
26	5% O_2/N_2	FCG29005	103
27	10% O_2/N_2	FCG29010	103
Methane (CH_4)			
85 17 28	2% (40% LEL) CH_4/Air	FCG30000	34
29	2% (40% LEL) CH_4/Air	FCG30110	103
30	2.5% (50% LEL) CH_4/Air	FCG30005	34
31	2.5% (50% LEL) CH_4/Air	FCG30125	103
32	1.45% CH_4, 15% O_2/N_2	FCG30010	103
33	2.5% CH_4, 17% O_2/N_2	FCG30015	34
34	2.5% CH_4, 17% O_2/N_2	FCG30135	103
35	50% CH_4/N_2	FCG30020	34

(to be continued)

Unit Per Btl

CODE	Gas Description	Fastcalgas No.	Cylinder Size Ltr
Pentane (C_5H_{12})			
85 17 36	0.75% (50% LEL) C_5H_{12}/Air	FCG31000	103
37	0.75% C_5H_{12}, 15% O_2/N_2	FCG31005	34
38	0.75% C_5H_{12}, 15% O_2/N_2	FCG31010	103
Propane (C_3H_8)			
85 17 39	0.55% (25% LEL) C_3H_8/Air	FCG32000	103
40	1.1% (50% LEL) C_3H_8/Air	FCG32005	103
Zero Air			
85 17 41	20.8% O_2/N_2	FCG29015	103
Regulators			
85 17 42	For use with 34 ltr steel cylinder	FCG00713	-
43	For use with 34 ltr, 58 ltr Aluminium cylinder and 103 ltr steel cylinder	FCG00715	-

4 Gas Mixtures for Calibration from Fastcalgas

Unit Per Btl

CODE	Composed of: Methane (CH_4)	Hydrogen Sulfide (H_2S)	Carbon Monoxide (CO)	Oxygen / Nitrogen (O_2/N_2)	Fastcalgas No.	Cylinder Size Ltr
85 17 46	1.45%	10 ppm	-	15%	FCG21000	58
47	1.45%	10 ppm	300 ppm	15%	FCG21005	58
48	1.45%	20 ppm	60 ppm	15%	FCG21020	58
49	2.2%	25 ppm	100 ppm	18%	FCG21045	34
50	2.2%	40 ppm	100 ppm	15%	FCG21055	34
85 17 51	2.5%	10 ppm	50 ppm	18%	FCG21010	58
52	2.5%	15 ppm	100 ppm	18%	FCG21015	58
53	2.5%	25 ppm	50 ppm	12%	FCG21030	58
54	2.5%	25 ppm	50 ppm	20.9%	FCG21035	58
55	2.5%	25 ppm	100 ppm	18%	FCG21050	58
85 17 56	2.5%	40 ppm	100 ppm	15%	FCG21060	34
57	Iso-butane ($I\text{-}C_4H_{10}$) 0.9%	25 ppm	50 ppm	12%	FCG21025	34
58	Propane (C_3H_8) 1.1%	25 ppm	100 ppm	19%	FCG21040	58

Refillable Span Gases

A wide range of larger & higher pressure calibration gas cylinders for longer use on board and cost saving. Also, custom gas mixture is available upon request.

Cylinder Specifications

Cylinder Capacity	Diameter (mm)	Length (mm)	Material	Tare Weight (kgs)	Max Working Pressure (PSI)
2.8L	111	413	Aluminium	3.57	2,015
3.4L	140	340	Steel	6.5	2,175
10L	178	570	Steel	15.5	2,015
10L	175	584	Aluminium	9.4	2,175

Unit Per Can

CODE	Description of Gas	Capacity of Cylinder
85 17 61	0.9% (50%LEL) Butane Balance Air	in 3.4 ltr can
62		in 10 ltr can
85 17 66	2.5 % (50%LEL) Methane Balance Air	in 3.4 ltr can
64		in 10 ltr can
85 17 65	Pure Nitrogen, 99.9995%	in 3.4 ltr can
66		in 10 ltr can
85 17 67	Oxygen Balance Nitrogen, 1.0%	in 3.4 ltr can
68		in 10 ltr can
85 17 69	Oxygen Balance Nitrogen, 1.5%	in 3.4 ltr can
70		in 10 ltr can
85 17 71	Oxygen Balance Nitrogen, 2%	in 3.4 ltr can
72		in 10 ltr can
85 17 73	0.7% (35% LEL) Propane Balance Air	in 3.4 ltr can
74		in 10 ltr can
85 17 75	1.1% (50% LEL) Propane Balance Air	in 3.4 ltr can
76		in 10 ltr can
85 17 77	1.1% (50% LEL) Propane, 20ppm Hydrogen Sulphide Balance Nitrogen	in 2.8 ltr can
78		in 10 ltr can

Gas Cylinder Valves

Available in various types of top valves for high pressure gas cylinders. Standard types of Ref. JIS B 8224 and B 8246 are described below.

(Male Thread) (Female Thread) For Oxygen Cylinder — For Acetylene Cylinder — For Refrigerant Cylinder

How to order: CODE

Gas cylinder valve, KIND of GAS, SIZE of INSERT THREAD

Unit Per Pc.

CODE	For	Insert Thread	Thread to Cylinder App. mm
85 01 86	Oxygen	W22 x 14 T.P.I.Male	28 x 14T.P.I.
87	"	W23 x 14 T.P.I.Female	28 x 14T.P.I.
88	Acetylene	—	39 x 12T.P.I.
89	Refrigerant	W26 x 14 T.P.I.Male	28 x 14T.P.I.

Besides above, other standards such as ANSI, BS, DIN are also available on request.

Country	Standard	Connection: Inlet	Connection: Outlet
U.S.A.	ANSI B 57.1	3/4" -14 NGT	0.903"
U.K.	B.S. 341	1" -14T.P.I.	5/8"
Germany	DIN 477	27.8 mm-14T.P.I.	W 21.8 mm

Oxygen & Acetylene Gas Cylinder Regulators

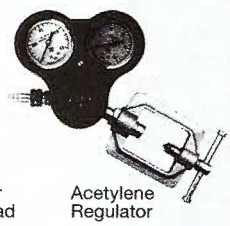
Single stage with easy to read 60 mm gauges. For general welding and cutting, these regulators feature greater flow and accuracy, more economy, simple repairs

and greater safety.

Oxygen regulators have two types of male and female inlet threads.

Oxygen Regulator with Male Thread

Oxygen Regulator with Female Thread



Acetylene Regulator

How to order: CODE

Regulator, KIND of GAS, INLET THREAD mm

Unit Per Pc.

CODE	For	Gauges (kgf/cm²) HP	Gauges (kgf/cm²) LP	Delivery Pressure kgf/cm²	Flow Capacity Nm³/h	Inlet Thread mm
85 01 91	Oxygen	250	25	10	72	22.8×14 Male
92	Oxygen	25	25	10	72	22 ×14 Female
93	Acetylene	25	1.9	0.7	9	Clamp

There are different sizes of Oxygen and Acetylene Hose connecting nipples for the various regulators, cutting and welding torches manufactured in the world, so please pay attention to this matter when ordering.

7TH 85

Flashback Arresters
for Gas Cylinder Regulators

To be installed on Oxygen and Acetylene regulators for arresting the flashback.

For Oxygen

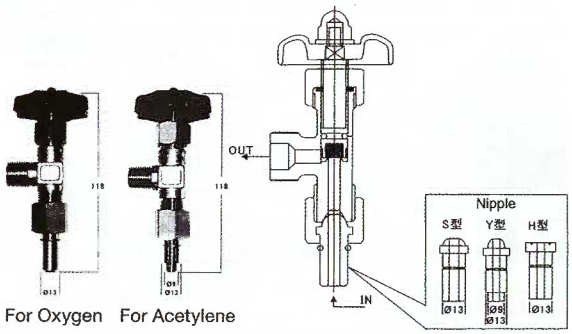
For Acetylene

Unit Per Pc.

CODE	85 03 11	85 03 12
For	Oxygen	Acetylene
Model	G-1	G-2
Flow Rate	25 m³/h	2 m³/h
Inlet Thread	M16×1.5 (Right) with nut	M16×1.5(Left) with nut
Outlet Thread	M16×1.5(Right) plug thread	M16×1.5(Left) plug thread
Overall Length	90 mm	
Weight	250 grm	

Valves for Gas Outlet Station

Valves for oxygen and acetylene gas outlet station.



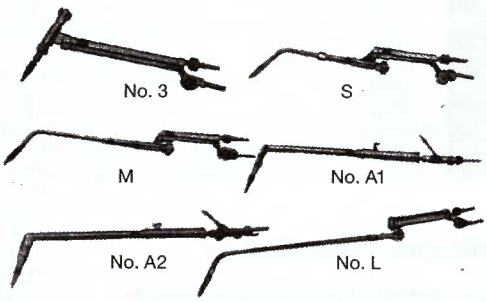
For Oxygen For Acetylene

Unit Per Pc.

CODE	Inlet Connection Type	Inlet Connection Thread	Outlet Thread Size	Direction of Plug Thread
For Oxygen				
85 05 01 02	S	M18×1.5	3/4-16 UNF M16×1.5	Right
85 05 03 04	Y	PF3/8	3/4-16 UNF M16×1.5	Right
85 05 05 06	H	M18×1.5	3/4-16 UNF M16×1.5	Right
For Acetylene				
85 05 07 08	S	M18×1.5	3/4-16 UNF M16×1.5	Left
85 05 09 10	Y	PF3/8	3/4-16 UNF M16×1.5	Left
85 05 11 12	H	M18×1.5	3/4-16 UNF M16×1.5	Left

Gas Welding Torches
with Nozzle Set

These welding torches, operate on medium or low pressured acetylene gas, are ideal for all welding and heating applications.



Unit Per Set.

CODE	Model	Welding Thickness Capacity mm	Overall Length mm	Weight grm	Nos. of Nozzle
85 02 01	3	Up to 4.0	300	510	5 pcs.
02	S	Up to 2.0	360	530	5 "
03	M	1.5 - 7.0	432	544	7 "
04	A1	0.5 - 7.0	455	790	5 "
05	A2	7 - 30	495	875	5 "
85 02 06	L	7 - 45	680	710	7 "

There are different sizes of Oxygen and Acetylene Hose connecting nipples for the various regulators, cutting and welding torches manufactured in the world, so please pay attention to this matter when ordering

Gas Welding Torch Spare Nozzles

Various types and sizes of interchangeable spare nozzles for respective models are available.

How to order: CODE

Spare nozzle for gas welding torch, NOZZLE NO., for MODEL NO.

Unit Per Pc.

CODE	Nozzle No.	For Model No.	Thickness of Weldment Capacity mm
85 02 11	25		Under 0.5
12	50		0.5 - 1.5
13	75	3	1.5 - 2.0
14	100		2.0 - 2.5
15	150		2.5 - 4.0
85 02 16	50		Under 0.5
17	70		0.5 - 1.0
18	100	S	0.5 - 1.0
19	140		1.0 - 1.5
20	200		1.5 - 2.0
85 02 21	200		1.5 - 2.0
22	225		2.0 - 2.5
23	250		2.0 - 2.5
24	315	M	2.5 - 3.5
25	400		3.5 - 4.0
26	450		4.0 - 5.0
27	500		5.0 - 7.0
85 02 28	1		0.5 - 1.0
29	2		1.0 - 2.0
30	3	A1	2.0 - 3.0
31	5		3.0 - 4.0
32	7		4.0 - 7.0
85 02 33	10		7 - 15
34	13		7 - 15
35	16	A2	10 - 20
36	20		15 - 25
37	25		20 - 30
85 02 38	1,200		7 - 15
39	1,500		10 - 20
40	2,000		15 - 25
41	2,500	L	20 - 30
42	3,000		25 - 35
43	3,500		30 - 40
44	4,000		35 - 45

Gas Cutting Torches

Standard combination torches which operate on medium or low pressured acetylene gas and are designed for economy safety and convenience.

No.1

No. 2

Unit Per Set.

CODE	Model No.	Cutting Thickness Capacity mm	Overall Length mm	Weight grm	Nos. of Nozzle
85 02 51	1	1 - 30	460	730	3 pcs
52	2	1 - 100	540	1,020	3 "

Gas Cutting Torch Spare Nozzles

3 numbers of interchangeable spare nozzles for each model are available.

How to order: CODE

Spare nozzle for gas cutting torch, for MODEL NO., NOZZLE NO.

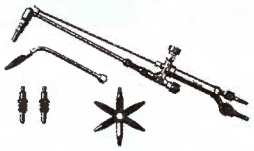
Unit Per Pc.

CODE	For Model No.	Nozzle No.	Cutting Capacity mm	CODE	For Model No.	Nozzle No.	Cutting Capacity mm
85 02 61		1	1 - 5	**85 02 64**		1	1 - 10
62	1	2	5 - 15	**65**	2	2	10 - 50
63		3	15 - 30	**66**		3	50 - 100

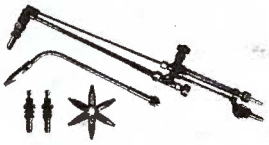
Gas Welding & Cutting Torches

With Nozzle Set

For welding and cutting purpose with a single torch.



CTW-M



CTW-A

Unit Per Set

CODE	**85 02 71**	**85 02 72**
Model	CTW-M	CTW-A
Welding / Cutting Thickness mm	W: 2 – 6 C : 1 – 30	W: 2.5 – 12 C: 1 – 100
Overall Length mm	490	530
Weight grm	770	1,080
Nos. of Nozzles (Standard accessories)	W : 200/225/250/ 315/400/450/ 500, C : 1/2/3	W : 250/315/400/ 500/630/800/ 1000, C : 1/2/3

Nozzle Cleaners

For cleaning holes of welding torch nozzles. Made of stainless steel, sizes from 0.5 mm to 2 mm, 8 pcs/set.

85 02 80	Nozzle cleaner, 8 pcs/set	Set

Welders' Gas Lighters

Pistol and friction types are available.

Pistol Type

Friction Type

85 02 85	Welders' gas lighter, pistol type	Pc.
86	" " " , friction type	"

Spare Flints for Gas Lighter

Two kinds for use, both pistol type and friction type are available.

For Pistol Type

For Friction Type

CODE	For	Packed in	Unit
85 02 88	Pistol Type	-	Pc.
89	Friction Type	10s	Pkt

Rubber Oxygen Hose
Molded & Braided Construction

For oxygen welding equipment. Lightweight, extremely flexible and practically non-kinkable. Furnished in black colour to distinguish oxygen lines from acetylene lines.

Unit Per Mtr.

CODE	Nom. Size mm	Actual Size mm I.D.	Actual Size mm O.D.	Braid	Working Pressure kgf/cm²	Mtr Per Coil
35 01 16	6	6.5	15.5	2B	15	200
17	8	7.9	16.5	2B	15	200
18	9	9.5	18.0	2B	15	200

Rubber Acetylene Hose
Molded & Braided Construction

For acetylene welding equipment. Lightweight, extremely flexible and practically non-kinkable. Furnished in red colour to be distinguished as an acetylene line.

Unit Per Mtr.

CODE	Nom. Size mm	Actual Size mm I.D.	Actual Size mm O.D.	Braid	Working Pressure kgf/cm²	Mtr Per Coil
35 01 21	6	6.5	13.5	1B	3	200
22	8	7.9	15.0	1B	3	200
23	9	9.5	16.5	1B	3	200

Rubber Twin Welding Hose
Molded & Braided Construction

One piece, two line welding hose, securely joined together to prevent tangling and increase flexibility. One line is red and the other is black to facilitate the welding operation. Usually supplied in 100 mtr coils. This hose is lightweight and easy to move about, reducing operator fatigue to a minimum.

Unit Per Mtr.

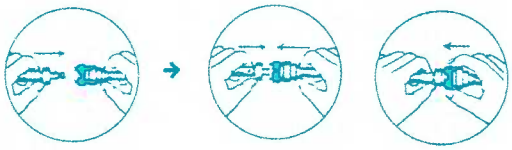
CODE	Nom. Size mm	Actual Size mm OX I.D.	Actual Size mm OX O.D.	Actual Size mm AC I.D.	Actual Size mm AC O.D.	Braid	W/P kgf/cm² OX	W/P kgf/cm² AC
35 01 26	6 x 9	6.8	13.8	9.5	16.3	1	20	5
27	8 x 8	7.9	14.9	7.9	14.7	1	20	5
28	8 x 9	7.9	14.9	9.5	16.3	1	20	5

Automatic Reverse-flow Prevention Couplings

These couplings are fitted to the outlet pipe, connecting hose, and the welding/cutting machine and outfit, removing possible risks accompanying the gas welding/cutting operation and making preparation and maintenance of the welding/cutting machines easy.

Further, each type is specially designed for oxygen or fuel gas so as to prevent mistakes.

A spring-loaded locking method is used, fitting or removal is a single action, which minimizes hose damage and makes maintenance easy.



For Hose to Hose Connections

Gas	Size	Socket, Hose End	Plug, Hose End
Oxygen	1/4" Hose End	AS-1	AP-1
Acetylene	3/8" Hose End	AS-2	AP-2

For Gauge to Hose Connections

Gas	Size	Socket, Female Thread	Plug, Hose End
Oxygen	M16x P1.5 & 1/4" Hose End	GS-1	AP-1
Acetylene	M16x P1.5 & 3/8" Hose End	GS-2	AP-2

For Welding Machine/Cutting Machine to Hose Connections

Gas	Size	Socket, Hose End	Plug, Female Thread
Oxygen	1/4" Hose End & M16x P1.5	AS-1	OP-1
Acetylene	M16x P1.5 & 3/8" Hose End	AS-2	OP-2

How to order: CODE

SOCKET or PLUG, MODEL NO.

Unit Per Pc

CODE	Model	Type	Size	Gas
85 03 01	AS-1	Socket	1/4" Hose End	OX
02	AP-1	Plug	" "	"
03	GS-1	Socket	M16 x P1.5 Female Thread	"
04	OP-1	Plug	" "	"
85 03 06	AS-2	Socket	3/8" Hose End	AC
07	AP-2	Plug	" "	"
08	GS-2	Socket	M16 x P1.5 Female Thread	"
09	OP-2	Plug	" "	"

Quick Couplers
for Welding Equipment Piping

Especially for welding equipment piping with excellent durability and corrosion resistance. All piping connections from cylinder to torch can be associated with welding equipment by one touch operations. Body is chrome plated for better corrosion resistance, and plug is hardened for better durability. Oxygen and fuel gas fittings are different sizes and sleeves are given different colours, chrome plating for oxygen and copper plating for fuel gas, to prevent accidental interconnection. No oxygen types (1/4" and 5/16") can be connected to fuel gas types (5/16" and 3/8"). However, respective types of the connection , oxygen plugs and sockets are interchangeable and fuel gas plugs and sockets are interchangeable.

Specification

Body Material	Socket Brass (Chrome-plated), Plug: Steel (Chrome-plated)
Size	1/4", 5/16", 3/8"
Working Pressure MPa (kgf/cm^2)	0.7 (7)
Pressure Resistance MPa (kgf/cm^2)	1.0 (10)
Packing Material	NBR (Nitrile Butadiene Rubber)
Working Temperature Range	-20°C - +80°C

Max. Tightening Torque

Product Code	S22PF, S22SF S33PF, S33SF	S22SM	S33SM
Torque N•m (kgf•cm)	12 (122)	9 (92)	1 (112)

Hose End Plugs and Sockets

Plug

Socket

Unit Per Pc

CODE	Part No.	Usage for	Application	Weight grm
Plugs				
85 03 61	S22PH	Oxygen	1/4", 5/16" hose	17
62	S33PH	Fuel gas	5/16", 3/8" hose	22
Sockets				
85 03 63	S22PH	Oxygen	1/4", 5/16" hose	50
64	S33PH	Fuel gas	5/16", 3/8" hose	73

Small Diameter Hose End Plugs and Sockets

Plug

Socket

Unit Per Pc

CODE	Part No.	Usage for	Application	Weight grm
Plugs				
85 03 65	S225PH	Oxygen	5mm I.D. hose	12
66	S335PH	Fuel gas	5mm I.D. hose	15
Sockets				
85 03 67	S225PH	Oxygen	5mm I.D. hose	54
68	S335PH	Fuel gas	5mm I.D. hose	65

Female Threaded End Plugs and Sockets

Plug

Socket

Unit Per Pc

CODE	Part No.	Usage for	Application	Weight grm
Plugs (For Torh Connection)				
85 03 71	S22PF	Oxygen torch	M16 x 1.5	35
72	S33PF	Fuel gas torch	M16 x 1.5 left	32
Sockets (For Cylinder Connection)				
85 03 73	S22SF	Oxygen gauge	M16 x 1.5	74
74	S33SF	Fuel gas gauge	M16 x 1.5 left	97

Flared Hose End Plugs and Sockets

Plug

Socket

Unit Per Pc.

CODE	Part No.	Usage for	Application	Weight grm
Plugs				
85 03 75	S22PN	Oxygen	5mm I.D. x 11mm hose	54
76	S33PN	Fuel gas	5mm I.D. x 11mm hose	57
Sockets				
85 03 77	S22SN	Oxygen	5mm I.D. x 11mm hose	74
78	S33SN	Fuel gas	5mm I.D. x 11mm hose	91

Male Threaded End Sockets

Unit Per Pc.

CODE	Part No.	Usage for	Application	Weight grm
		Sockets		
85 03 81	S22SM	Oxygen	Rc 1/4 (PT 1/4)	58
82	S33SM	Fuel gas	Rc 3/8 (PT 3/8)	85

Charging Adapters
for Refrigerant Gas Cylinder Valve

Valve adapter for refrigerant gas cylinder valve.

Unit Per Pc.

CODE	Connection to Cylinder	Connection to Hose	For Refrigerant Gas
85 03 15 **16**	W26-14 teeth	1/4 Flare 3/8 Flare	R-22
85 03 17	W26-14 teeth	1/4 Flare	HFC-134a, R-404A and R-407C

Refrigerant Gas Charging Hoses

Flexible rubber lines with threaded quick coupling for charging refrigerant gas.

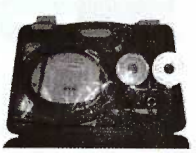
Colour coded for easy identification.

Unit Per Lgh.

CODE	Colour	Fitting Size	Length	For Gas
85 03 21 **22**	Red	1/4"	92 cm 150 cm	R-22
85 03 23 **24**		3/8"	92 cm 150 cm	
85 03 25 **26**	Yellow	1/4"	92 cm 150 cm	
85 03 27 **28**		3/8"	92 cm 150 cm	
85 03 31 **32**	Blue	1/4"	92 cm 150 cm	
85 03 33 **34**		3/8"	92 cm 150 cm	
85 03 36 **37**	Red	1/4"	92 cm 150 cm	HFC-134a R-404A R-407C
85 03 38 **39**	Yellow	1/4"	92 cm 150 cm	
40 **41**		3/8"	92 cm 150 cm	
85 03 42 **43**	Blue	1/4"	92 cm 150 cm	

Gauge Manifolds

Two way standard manifold for refrigerant gas with bourdon type gauges and hook.



Component:

For R-22	For HFC-134a, R-404A, R-407C
One each Charging hose 92 cm (Red/Yellow/Blue)	One each Charging hose 92 cm (Red/Yellow/Blue)
One each Charging hose 150 cm (Red/Yellow/Blue)	One each Charging hose 150 cm (Red/Yellow/Blue)
One of Pressure gauge -0.1 – 3.5 MPa	One of Pressure gauge -0.1 – 3.8 MPa
One of Compound gauge -0.1 – 1.5 MPa	One of Compound gauge -0.1 – 1.8 MPa

Unit Per Set

CODE	For Refrigerant gas	Connection Port
85 03 45	R-22	1/4 Flare
46	HFC-134a, R-404A, R-407C	

Gas Welding Rods

Uncoated gas welding rod of high quality. Each rod is made for a specific use and its quality and uniformity are constantly checked when manufactured.

How to order: CODE

Gas welding rod, KIND of MATERIAL, DIAM mm

Unit Per Kgs

CODE	Diam. mm	Length mm	CODE	Diam. mm	Length mm
Mild Steel					
85 04 01	1.2	1,000	**85 04 05**	3.2	1,000
02	1.6		**06**	4.0	
03	2.0		**07**	5.0	
04	2.6				
Copper and Copper Alloy (Brass)					
85 04 11	1.2	1,000	**85 04 15**	3.2	1,000
12	1.6		**16**	4.0	
13	2.0		**17**	5.0	
14	2.6				
Cast Iron					
85 04 25	4.0	1,000	**85 04 27**	6.0	1,000
26	5.0				
Silver 18%					
85 04 28	1.6	500	**85 04 30**	3.2	500
29	2.0				
Silver 30%					
85 04 34	1.6	500	**85 04 38**	3.2	500
35	2.0				
Silver 50%					
85 04 39	1.6	500	**85 04 41**	3.2	500
40	2.0				

Coated Brass Brazing Filler Metal

This is a machine coated, wire drawn brass rod, made from special elements. These coated filler rods have the advantages of low flaming, fine deposits, increased tensile strength, easy and speedy operations.

Characteristic of Deposit Metal

Tensile Strength for All Deposit	36 - 43 kgf/cm²
Elongation (7d)	24 - 32%
Impact Strength	5-6 kgf/cm²
Hardness	90 - 95 HB
Sticking Strength on Steel	30 - 40 kgf/cm²
Sticking Strength on	Equal or up to Mother Metal

Applications:

Repair of cast iron assemblies, welding of dissimilar metals (steel and iron, copper and brass, iron and copper, etc.) assembly of steel plate and steel sheets.

Unit Per Pkt.

CODE	Rod Diam. mm	Rod Length mm	Numbers of rod per Package	Weight Per Package
85 04 51	2.0	1,000	177	5 kgs
52	2.6		107	
53	3.0		80	
54	4.0		46	
55	5.0		30	

Flux Coated Silver Solder

Flux coated silver brazing type alloy for joining all ferrous and copper metals, stainless steel, nickel and its alloys, steel castings, malleable and cast iron, tungsten carbides, etc. Suitable for most close-fitting joint designs, rapid application with minimum joint preparation. It is cadmium free, has high fluidity with good capillary flow.

Specifications

Main Component	Ag (60%), Cu, Zn, Sn
Melting Temp. C	620° - 650°
Tensile Strength	60 kg/mm²
Hardness	B 95
Wire Length	450 mm
Package	500 grm/pkt

Unit Per Pkt.

CODE	Diam. mm	Length mm	Weight Per Package
85 04 61	1.6	450	500 grm
62	2.0		
63	2.4		

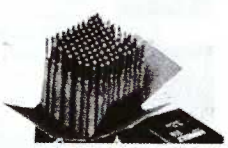
Welding Fluxes

Several kinds of fluxes are available and the standard ones are listed below. They are all used for gas welding.

Unit Per Can

CODE	Purpose	Content
85 04 81	For Cast Iron Welding	1 kgs
82	For Copper Welding	1 kgs
83	For Brass Welding	1 kgs
85 04 85	For Dissimilar Metal Soldering	1 kgs
85 04 86	For Aluminium Welding	0.1 kgs
87	For Silver Soldering	0.4 kgs

Electrodes



A wide variety of brands from different manufacturers are available. Popular brands are listed below. When ordering, please specify brand and size.

If you wish to order electrodes from a specific manufacturer, please refer to the comparison table listing major international manufacturers and products types on page 85-16 ~ 18.

How to order: CODE

Electrode, APPLICATION, BRAND, SIZE mm, WEIGHT

Nittetsu Products

Unit Per Pkt

CODE	Brand	Size mm D	Size mm L	Kgs per Packet	Features
For Mild Steel					
85 06 01	A-200	2.6	350	5.0	Ilmenite type electrode for all positions welding of mild steel. Flat and horizontal fillet welding assures extraordinary bead appearance.
02	B-1	3.2	350		
03		4.0	400		
04		4.5	450		
05		5.0	450		
06		6.0	450		
85 06 11	G-300	2.6	300	5.0	Ilmenite type electrode for all positions and has good operational characteristics and weldability. Vertical upward welding is especially easy.
12		3.2	400		
13		4.0	450		
14		4.5	450		
15		5.0	450		
16		6.0	450		
17		7.0	450		
18		8.0	450		
85 06 21	NS-03Hi	2.0	300	5.0	Lime-titania type electrode assuring high efficiency in welding complicated structure of thin and medium thick plates. It produces a small amount of fumes and is highly resistant to moisture absorption.
22		2.6	350		
23		3.2	350		
24		4.0	450		
25		5.0	450		
26		6.0	450		
85 06 31	S-03Z	2.0	300	5.0	Lime-titania type electrode for all positions, containing a large amount of iron powder in the coating. It can promote efficiency in welding general structures and light gauges.
32		2.6	350		
33		3.2	350		
34		4.0	400		
35		5.0	450		
36		6.0	450		
85 06 51	S-13Z	2.0	300	5.0	High rutile type electrode which gives beautiful bead appearance with shallow penetration. Arc is calm, spatter is minimal and slag is easy to remove. Vertical downward welding is possible with small diameter electrodes.
52		2.6	350		
53		3.2	350		
54		4.0	400		
55		5.0	400		
56		6.0	450		
85 06 61	FT-51	2.0	250	2.5	High rutile type electrode which gives beautiful bead with shallow penetration. Small diameter electrodes assure easy operation in vertical downward welding. It is especially suitable for weldings sheet steels.
62		2.6	300		
63		3.2	350	5.0	
64		4.0	400		
65		5.0	400		
66		6.0	400		
85 06 71	16	2.6	300	5.0	Low hydrogen type electrode for all positions. The deposited metal from this electrode shows higher crack resistance, elongation and ductility than the other electrodes for mild steel.
72		3.2	400		
73		4.0	450		
74		5.0	450		
75		6.0	450		
76		8.0	450		
85 06 81	16V	3.2	400	5.0	Low hydrogen type electrode for vertical downward butt and fillet welding of mild steel. The deposited metal from this electrode shows high crack-resistability as well as excellent mechanical properties.
82		4.0	450		
83		4.5	450		
84		5.0	450		
85		5.5	450		
86		6.0	450		
For High Tensile Strength Steel					
85 07 01	L-55	2.6	300	5.0	Low hydrogen type electrode designed for all positions welding of 50-55 kg/mm² high tensile strength steel. The deposited metal contains less hydrogen, and shows high crack resistance as well as excellent mechanical properties. X-ray quality and notch-toughness.
02		3.2	400		
03		4.0	450		
04		5.0	450		
05		6.0	450		
06		7.0	450		
07		8.0	450		

(to be continued)

INTERNATIONAL MARINE PURCHASING ASSOCIATION

Unit Per Pkt

CODE	Brand	Size mm D	Size mm L	Kgs per Packet	Features
For Weathering Steel					
85 07 21 22 23 24 25	CT-16Cr	2.6 3.2 4.0 5.0 6.0	300 350 400 400 450	5.0	Low hydrogen type electrode for welding 50 kg/ mm² high tensile weathering steel in all positions.
For Cast Iron					
85 07 31 32 33	C-1N	3.2 4.0 5.0	340 380 380	2.0	Graphite type electrode with pure nickel core wire for welding cast iron. Weld metal is not so hard and is easy to machine.
85 07 36 37 38	C-5N	3.2 4.0 5.0	350 350 350	2.0	Graphite type electrode for welding cast iron. Since Fe-Ni composite wire is used for the core wire, operational characteristics do not change even in high current.
For Stainless Steel					
85 07 41 42 43	309-R	2.0 2.6 3.2	250 300 350	2.5	Lime-titania type electrode which gives the deposited metal of 25%Cr-12%Ni. It has excellent crack resistibility especially in the welding of dissimilar metals such as stainless steel to mild steel.
85 07 44 45	309-R	4.0 5.0	350 350	5.0	
85 07 51	309-M-R	2.0	300	2.5	Lime-titania type electrode which gives the deposited metal of 25%Cr-12%Ni-2% Mo. It has excellent crack resistance especially in the welding of dissimilar metals such as stainless steel to mild steel.
85 07 52 53 54	309-M-R	3.2 4.0 5.0	350 350 350	5.0	
85 07 61 62	310-R	2.0 2.6	250 300	2.5	Lime-titania type electrode which gives the deposited metal of 25% Cr-20% Ni. The deposited metal has perfect austenite structure and shows better corrosion resistance and oxidation resistance than the one from 25% Cr- 12% Ni type electrode.
63 64 65	310-R	3.2 4.0 5.0	350 350 350	5.0	
85 07 71 72	316-L-R	2.0 2.6	250 300	2.5	Lime-titania type electrode which gives the deposited metal of 18% Cr-12% Ni-2% MO. It has excellent resistance to intercrystalline corrosion in the as-welded condition.
73 74 75	316-L-R	3.2 4.0 5.0	350 350 350	5.0	
For Heat Resistant Steel					
85 07 91 92 93 94 95	N-0S	2.6 3.2 4.0 5.0 6.0	300 350 400 400 400	5.0	Low hydrogen type 0.5% Mo electrode for welding C - Mo steel to be used in temperatures up to 500°C
85 08 01 02 03 04 05	N-1S	2.6 3.2 4.0 5.0 6.0	300 350 400 400 400	5.0	Low hydrogen type 1.25% Cr-0.5% Mo electrode for welding 1-1.5%Cr-0.5% Mo steel to be used in high temperatures around 550°C.
85 08 11 12 13 14 15	N-2S	2.6 3.2 4.0 5.0 6.0	300 350 400 400 400	5.0	Low hydrogen type 2.25% Cr-1% Mo electrode for welding 2.25% Cr-1% Mo steel to be used in high temperatures around 600°C
For Hardfacing					
85 08 21 22 23	H-Mcr	4.0 5.0 6.0	350	5.0	Low hydrogen type electrode for building up and hardsurfacing of steel parts subjected to high temperature abrasion and heavy impact abrasion.
85 08 26 27 28 29	H-350C	4.0 5.0 6.0 7.0	400 400 450 450	5.0	Low hydrogen type electrode for building up and hardsurfacing of steel parts subjected to light metal-to-metal abrasion.
85 08 31 32 33	H-13M	4.0 5.0 6.0	400	5.0	Low hydrogen type electrode for building up and hardsurfacing of steel parts subjected to abrasion accompanied with severe impact.
For Nickel, Nickel-Alloys and Nickel-Alloy Steels					
85 08 36 37	Yawata Weld 182AC	2.6 3.2	300 300	2.5	Excellent crack-resistance due to much amount of Mn content in the deposited metal makes the electrode suitable for welding of extremely thick plates and for hardfacing of plates for use in nuclear power plants,etc.
38 39	Yawata Weld 182AC	4.0 5.0	350 350	5.0	

Kobe Steel Products (Shinko)

Unit Per Pkt

CODE	Brand	Size mm D	Size mm L	Kgs per Packet	Features
For Mild Steel (Shielded Metal Arc Welding)					
85 13 01	Familark Z-44	2.0	300	2.0	Low fume type electrode for welding of mild steel used for vehicles, light gauge structures and buildings.
02 03 04	Familark Z-44	2.6 3.2 4.0	350 350 450	5.0	
For All-position Welding of General Structures					
85 13 05 06 07	B-10	2.6 3.2 4.0	350 350 400	5.0	Ilmenite type covered electrode for butt or fillet welding in all positions for thin or thicker plate (1.6 to 20mm).
For All-position Welding of Heavy-duty Structures					
85 13 11 12 13	B-14	2.6 3.2 4.0	350 400 450	5.0	Ilmenite type covered electrode for butt or fillet welding in all positions for thin or thicker plate(1.6 to 20mm).
85 13 15 16 17	B-17	2.6 3.2 4.0	350 350 400	5.0	Ilmenite type covered electrode. Structural steels with heavy sections up to about 25mm can be welded.
For Welding of Steel Sheets and Light Structures					
85 13 21 22 23 24	B-33	2.0 2.6 3.2 4.0	300 350 350 400	2.0 5.0	High titania type covered electrode, suitable for in flat or horizontal fillet welding.
85 13 25 26 27 28 29	RB-26	1.6 2.0 2.6 3.2 4.0	250 300 350 350 400	2.0 5.0	High titania type covered electrode, suitable for vertical downward welding with the diameters up to 5.0mm.
For Welding of Heavy-duty Structures and Heavy Plates					
85 13 31 32 33 34	LB-26	2.0 2.6 3.2 4.0	300 350 350 400	2.0 5.0	Low hydrogen type covered electrode containing iron powder. The welding in all positions can be easily done.
For Vertical Downward Welding					
85 13 35 36	LB -26V	3.2 4.0	400 450	5.0	Low hydrogen type covered electrode for use in vertical downward position for ships.
For Welding of 50kgf/mm² High Tensile Steel					
85 13 41 42 43	LB-52	2.6 3.2 4.0	350 350 400	5.0	Most widely used low hydrogen type covered electrode for all-position welding.
For Welding of General Mild Steel					
85 13 52 53 54	TB-24	2.6 3.2 4.0	350 350 400	5.0	Lime-titania type electrode, and excellent in all-position welding, particularly in vertical and overhead positions.

(to be continued)

(to be continued)

PROFESSIONALISM GIVES - QUALITY - SAVES COSTS

Unit Per Pkt

CODE	Brand	Size mm D	Size mm L	Kgs per Packet	Features
For Welding of Mild Steel					
85 13 55 56 57	TBI -24	2.6 3.2 4.0	350 350 400	5.0	Iron powder lime-titania type electrode for mild steel.
For Welding of Cast Iron					
85 13 61 62	CIA-1	3.2 4.0	300 350	2.0	Covered electrode with graphite type coating flux and pure nickel core rod.
85 13 65 66 67	CIA-2	2.6 3.2 4.0	300 300 350	2.0	Covered electrode with graphite type coating flux and 55% Ni-Fe alloy core rod.
For Stainless Steel (SUS-304)					
85 13 71 72 73 74	NC-38	2.0 2.6 3.2 4.0	250 300 350 350	2.0 5.0	Lime-titania type electrodes, especially excellent with better crack resistibility.
For Stainless Steel (SUS-309S)					
85 13 75 76 77 78	NC-39	2.0 2.6 3.2 4.0	250 300 350 350	2.0 5.0	Lime-titania type electrodes, providing good corrosion resistibility and good heat resistibility.
For Stainless Steel (SUS-310S)					
85 13 82 83 84	NC-30	2.6 3.2 4.0	250 300 350	2.0	Excellent in heat resistance, corrosion resistance and mechanical properties due to stable full-austenitic microstructure.
For Stainless Steel (SUS-316L)					
85 13 85 86 87 88	NC -36L	2.0 2.6 3.2 4.0	250 300 350 350	2.0 5.0	Lime-titania type electrodes and the intergranular corrosion resistibility is superior due to lower carbon content.
For Welding of 1.25%Cr-0.5%Mo Steel					
85 13 91 92 93	CMA -96	2.6 3.2 4.0	300 350 400	5.0	Low hydrogen type electrodes for all-position welding and the alloy elements are supplied from the core rod.
For Mild Steel and 50 kgf/mm² HT Steel (Tig Welding)					
85 14 01 02 03 04	Familiark TG -S50	1.6 2.0 2.4 3.2	1,000	5.0	For welding of mild steel, 50 kgf/mm² high tensile steel, and alminium-killed steel for low temperature use.
For Stainless Steel (Tig Welding)					
85 14 05 06 07 08	TGS -308	1.6 2.0 2.4 3.2	1,000	5.0	For welding of 18%Cr-8%Ni stainless steel (SUS-304)

Atlantic Products

Unit Per Pkt

CODE	Brand	Size mm D	Size mm L	Kgs per Packet	Features
For Mild Steel					
	CHE 422	2.5 3.2 4.0	300 350 350	5 kgs/ pkt	Titanium calcium carbon steel electrode, alternating current /direct-current, can be used to weld common carbon steel structure and low-intensity alloy steel.
	CHE 506	2.5 3.2 4.0 5.0 5.8	300 350 400 400 400	5 kgs/ pkt	Low Hydro-potassium coating electrode, with good plasticity, toughness and crack resistance, can be used to weld carbon steel and low-intensity alloy steel, marine steel (grade A, B, D, E), main structures of cars, buildings and bridges

(to be continued)

CODE	Brand	Size mm D	Size mm L	Kgs per Packet	Features
For 50 kgf/mm² High Tensile Strength Steel					
85 16 11 12 13 14	CHE 508	2.5 3.2 4.0 5.0	300 350 400 400	5 kgs/ pkt	Iron powder low hydro- potassium coating electrode, alternating current / direct-current, with good plasticity, toughness and crack resistance, can be used to weld carbon steel and low-intensity alloy steel, important structures in marine steel (grade A, B, D, E).
For Atmospheric Corrosion Resisting Steel					
85 16 15 16 17	CHE 506 NiLH	3.2 4.0 5.0	350 400 400	5 kgs/ pkt	Ultra-low Hydro-potassium coating low-intensity alloy steel electrode, alternating current / direct-current, can be used to weld important production platforms, ships and high pressure vessels in carbon steel and low alloy steel.
For Cast Iron					
85 16 21 22 23	CHC 308	2.5 3.2 4.0	290 340 340	1 kgs/ pkt	Pure nickel core welding-wire graphite coating cast iron electrode, alternating current / direct-current, can be used to weld thin cast iron units such as cylinder heads engine bearer gear cases.
85 16 25 26 27	CHC 408	2.5 3.2 4.0	290 340 340	1 kgs/ pkt	Ferro-nickel core welding-wire strong reducing property graphite coating cast iron electrode, with high strength, good plasticity and low coefficient of linear expansion, can be used weld high strength cast irons such as cylinders, engine bearers, gears.
For Stainless Steel					
85 16 31 32 33 34 35	CHS 312	2.0 2.5 3.2 4.0 5.0	300 300 350 400 400	2 kgs/ pkt	Titanium calcium stainless steel electrode, containing molybdenum, with good corrosion resistance, crack resistance, resistance to oxidation, alternating current/ direct-current, can be used to weld s.s. containers.
85 16 36 37 38 39 40	CHS 402	2.0 2.5 3.2 4.0 5.0	250 250 300 350 350	2 kgs/ pkt	Titanium calcium austenitic stainless steel electrode, has good resistance to oxidation in 900-1 100 C high temperature, alternating current / direct-current, can be used to weld resist heat stainless steel.
85 16 41 42 43 44 45	CHS 022 (022R)	2.0 2.5 3.2 4.0 5.0	300 300 350 400 400	2 kgs/ pkt	Titanium calcium ultra-low carbon stainless steel electrode, carbon content≤0.04%, with good corrosion resistance, crack resistance, heat resistance, alternating current /direct-current, can be used to weld area synthetic fibre and stainless steel.
85 16 46 47 48 49	CHH 308	2.5 3.2 4.0 5.0	300 350 400 400	5 kgs/ pkt	Iron powder Low Hydro-potassium low alloy electrode, alternating current/ direct-current, can be used to weld low alloy steel in 1% chromium and 0.5% molybdenum below 510 C.
For Hardfacing					
85 16 51 52	CHS 29.9	4.0 5.0	400 400	2 kgs/ pkt	Titanium calcium stainless steel electrode, containing 40% iron, alternating current/ direct-current, can be used to weld high carbon steel, tool steel and heterogeneity metal

(to be continued)

Unit Per Pkt

CODE	Brand	Size mm D	Size mm L	Kgs per Packet	Features
For Nickel, Nickel-alloy and Nickel-alloy Steel					
85 16 55 **56**	CHN 337	3.2 4.0	300 350	2 kgs/ pkt	Low Hydr-Ni70Cr15 heat resisting alloy electrode, containing a little manganese niobium alloy element, having good crack resistance, reversed polarity direct current, can be use to weld nickel-base alloy, heterogeneity steel.

Storage Containers for Welding Rod

A waterproof yellow coloured storage containers for welding rods of 350 mm or 450 mm with carrying strap. A diamond shape to prevent the canister from rolling off a work surface. The cap is sealed with a pressure fitted O-ring to prevent intrusion of moisture and contaminants.

Unit Per Pc.

CODE	Rod Length mm	CODE	Rod Length mm
85 16 57	350	**85 16 58**	450

Ovens for Welding Rod

A portable ovens ensure electrodes remain moisture-free in the field and meet welding code requirements. The ovens include a thermostat to adjust oven temperature in line with electrode requirements. The Type 5 is available with wheels and a pull handle or with carry handles.

Type 2

Type 5

- Storage capacity for 14" or 18" electrodes.
- Rod elevator for quick removal of electrodes.
- Adjustable thermostat provides temperature (from 38-149°C) control in the field.
- Safety Yellow colour increases field visibility.
- New 120/240V dual volt heating elements.

Standards :
EN60335-1:1994 (A1 and A2 and A11 through A16 included)
EN60335-2-45:96; I EC60335-1,A2:99 (EN60335-1,A2:00)
EN55014-1/02.97+A1/1997+A2/1999
EN61000-3-2/04.95+A104.98+A14/2000
EN61000-3-3/01.95
Protection class I - IPX 0

Unit Per Set

CODE	Type	Storage Capacity
85 16 59	2	10 kgs
60	5	25 kgs

Electrode Conversion Table

Products from a few manufacturers are listed in the next page for your reference. If there is some question as to what types are most suitable, please ask for further information or brochures from the local manufacturers when ordering.

When ordering electrodes, the following information will be required:

1. The composition on the metals to be connected.
2. The type of joints being welded.
3. The position of welding.
4. The type of welding power source available.
5. The requirements of the welded joint, strength, appearance, corrosion resistance, the way the weld assembly will be used.
6. The types and, to some extent, the sizes of electrodes.
7. CODE NO.
8. Type
9. Manufacturer's name and product type.
10. Required quantity in kgs.

CODE	Type	Wilhelmsen Ships Service (Norway)	Drew Marine (U.S.A)	Marichem-Marigases (Greece)	Shinko (Japan)	Nittetsu (Japan)	Atlantic (China)
For Mild Steel (For All Positions)							
85 09 01	Ilmenite	GPO-302N (AWS5.1 6013) EN499: E38ORC11 DNV:2 GL:2 LR:2 BV:2 ABS:2	-	MGPO (AWS E6013)	**85 13 05 - 07** B-10 (JIS Z-3211 E4319) (AWS A5.1 E6019)	**85 06 01** A-200(JIS Z-3211 E4319) (AWS A5.1 E6019)	**85 16 01- 03** CHE422
		-	-	-	**85 13 11 - 13** B-14(JIS Z-3211 E4319) (AWS A5.1 E6019)	**85 06 02 - 06** B-1(JIS Z-3211 E4319) (AWS A5.1 E6019)	-
		-	-	-	**85 13 15 - 17** B-17(JIS Z-3211 E4319)	**85 06 11 - 18** G-300(JIS Z-3211 E4319) (AWS A5.1 E6019)	-
85 09 05	High Rutile	GPR-300H (AWS E6013) (DIN E51 22RR6) (ISO E51 2 RR22) (BS E51 22RR),	AMERARC ER PLUS (AWS A5.1 E6013) (DIN E51 21 RR3) (ISO E51 2 RR32) (BS E213)	MGPR (AWS E6013) (JIS D4313) (DIN E4332R3) (BS E4332R21) MGPO (AWS E6013) (JIS D4313) (DIN E4332R(C)3) (BS E4332R11)	**85 13 21 - 24** B-33(JIS Z-3211 E4313) (AWS A5.1 E6013)	**85 06 51 - 56** S-13Z(JIS Z-3211 E4313) (AWS A5.1 E6013)	-
					85 13 25 - 29 RB-26(JIS Z-3211 E4313) (AWS A5.1 E6013)	**85 06 61 - 66** FT-51(JIS Z-3211 E4313) (AWS A5.1 E6013)	-

(to be continued)

CODE	Type	Wilhelmsen Ships Service (Norway)	Drew Marine (U.S.A)	Marichem-Marigases (Greece)	Shinko (Japan)	Nittetsu (Japan)	Atlantic (China)
85 09 11	Low Hydrogen	GPO-302N (AWS5.1 E6013) EN499: E38ORC11 DNV:2 GL:2 LR:2 BV:2 ABS:2	-	MSPECIAL (AWS E7016) (DIN E5143 B (R) 10) (EN E38 B12 H10)	**85 13 31 - 34** LB-26(JIS Z-3211 E4316) (AWS A5.1 E7016)	**85 06 71 - 76** Nittetsu-16 (JIS Z-3211 E4316U) (AWS A5.1 E7016)	**85 16 05 - 09** CHE506
For 50 kgf/ cm^2 High Tensile Strength Steel							
85 09 15	Low Hydrogen and All Positions	LH-314N (AWS E-7018) (DIN E51 43B10 120) ISO E514 B12014H) (BS E51 43B)	AMERARC LH PLUS (AWS A5.1 E7018-1) (DIN E51 43B10) (ISO E51 4B 120 26H) (BS E614HJ)	MLH (AWS E7018) (JIS D5016) (DIN E51 55B 10) (EN E42 6 B42 H10)	**85 13 41 - 43** LB-52 (JIS Z-3211 E4916) (AWS A5.1 E7016)	**85 07 01 - 07** L-55 (JIS Z-3211 E4916U) (AWS A5.1 E7016)	**85 16 11 - 14** CHE508
For Atmospheric Corrosion Resisting Steel							
85 09 21	Low Hydrogen and All Positions	-	-	-	LB-W52B (JIS Z-3214 E49J16-NCC A U H15)	**85 07 21 - 25** CT-16Cr (AWS A5.5 E7016G)	**85 16 15 - 17** CHE506NiLH
For Low Temperature Service Steel							
85 09 25	Low Hydrogen	LHL-319N (AWS E-8018-C1) EN499: E4662NiB32H5) DNV:5YH5 GL:6Y46H5 LR:5Y42H5 BV:1%Cr0.5Mo.H5 ABS:3Y400H5	AMERARC LV PLUS (AWS E-7048) (DIN E51 54 B9) (ISO E51 5B56H10) (BS E51 55B 110 16H)	MLHL (AWS E8018-C1) (DIN ESY42 87 2 Ni B H5) (EN E46 6 2Ni B 42 H5)	NB-1 (JIS Z-3211 E5516-G AP) (AWS A5.5 E8016G)	-	-
For Cast Iron							
		NICKEL-333	AMERARC NI99 (AWS A5.15:ENi-CI) (DIN Eni-BG1)	MINICKEL (AWS E Ni-CL) (JIS DFC Ni) (DIN E NiG3)	**85 13 61 - 62** CIA-1 (JIS Z-3252 EC Ni-CI) (AWS A5.15 ENi-CI)	**85 07 31 - 33** C-IN (AWS A5.15 ENi-CI)	**85 16 21 - 23** CHC308
85 09 31		NIFE-334N	AMERARC NI60 (AWS A5.15:Eni-CI) (DIN ENiFe BG-1)	MNIFE (AWS E NiFe-CI) (JIS DFC NiFe) (DIN E NiFe G3)	**85 13 65 - 67** CIA-2 (JIS Z-3252 E C Nife-CI) (AWS A5.15 ENiFe-CI)		**85 16 25 - 27** CHC408
For Stainless Steel							
85 09 35	22% Cr-12% Ni	23/14-322N (19-21% Ni-11-13%Cr) (AWS A5.4 E309Mol-17) EN1600: E23122LR12) DNV:309Mo GL:4459 LR:S/CMn BV:up	AMERARC SSMO (AWS E309 Mo-16) (DIN E22143n CR26)	MSSM 23/14V (AWS E309Mo-16) (JIS D309MoL-16) (BS E23.12.2R)	**85 13 75 - 78** NC-39 (JIS Z-3221 ES309-16) (AWS A5.4 E309-16)	**85 07 41 - 45** 309-R (JIS Z-3221 ES309-16) (AWS A5.4 E309-16)	**85 16 31 - 35** CHS312
85 09 41	25%Cr20% Ni	-	AMERARC TE (29% Cr -10% Ni) (AWS A5.4 E312-16) (DIN E29 9 MPR 36 170)	-	**85 13 82 - 84** NC-30 (JIS Z-3221 ES310-16) (AWS A5.4 E310-16)	**85 07 61 - 65** 310-R (AWS A5.4 E310-16)	**85 16 36 - 40** CHS402

(to be continued)

CODE	Type	Wilhelmsen Ships Service (Norway)	Drew Marine (U.S.A)	Marichem-Marigases (Greece)	Shinko (Japan)	Nittetsu (Japan)	Atlantic (China)
For Stainless Steel							
85 09 45	18% Cr-12% Ni- 2% Mo	18/8-321N (AWS-A5.4 E316L-17) (EN1600: E19123LR32) DNV:316L GL:4571 LR:316L BV: up	AMERARC ST (19% Cr - 12% Ni - 2.3% Mo) (AWS A5.4 E316L-16) (DIN E19 12 3n CR26) (BS 19 12 3L)	MSSM 18/8V (AWS E316L-16) (JIS D316L-16) (DIN E19123Ncr26) (E19.12.3LR)	85 13 85 - 88 NC-36L (JIS Z-3221 ES316L-16) (AWS A5.4 E316L-16)	85 07 71 - 75 316 L-R (JIS Z-3221 ES316L-16) (AWS A5.4E316L-16)	85 16 41 - 45 CHS022 (022R)
For Heat Resisting Steel (Low Hydrogen Type)							
85 09 51	1.25% Cr-05%Mo	LHT-318N	AMERARC CRMO (AWS A5.5 E8018-B2)	MLHT (AWS E8018-B2) (JIS DT2318) (DIN EcrMo1B26) (BS 1CrMoB)	85 13 91 - 93 CMA-96 (JIS Z-3223 E5516-1CM) (AWS A5.5 E8016-B2)	85 08 01 - 05 N-1S (AWS A5.5 E8016-B2)	85 16 46 - 49 CHH308
85 09 55	5%Cr-0.5% Mo				CM-5 (JIS Z-3223 E5516-5CM) (AWS A5.5 E8016-B6)	N-55 (AWS A5.5 E8016-B6)	
For Hardfacing							
85 09 61		TENSILE-328N IMAPCT-329S	AMERARC HF38 AMERARC HF60	MTENSILE (AWS E312-16) MIMPACT (AWS ECoCr-A)	HF-350 (JIS Z-3251 DF 2A-400-B)	85 08 26 - 29 H-350C	85 16 51 - 52 CHS29.9
For Nickel, Nickel-Alloy and Nickel-Alloy Steel							
85 09 65					NIC-703D (JIS Z-3224 ENi6182) (AWS A5.11 ENiCrFe-3)	85 08 36 - 39 Yawata Weld 182AC (AWS A5.11 ENiCrFe-3)	85 16 55 - 56 CHN337

7TH 85

Remark: When ordering the products which are not from Shinko, Nittetsu or Atlantic, please use the code number 85 09 --- which are specified in the left column

Gouging Electrodes

Made of carbon and have a copper coating. The gouging electrodes are available in a variety of shapes and diameters to meet the various applications.

Power source 380V, DC, compactness 1.57; max. humidity < 0.4%.

Direct Current Pointed Gouging Electrodes

Unit Per Pc

CODE	Size (mm/inch)		Ampere
85 09 66	4 x 305	5/32" x 12"	150 – 200
67	5 x 305	3/16' x 12"	200 – 250
68	6.3 x 305	1/4" x 12"	250 – 300
69	8 x 305	5/16" x 12"	350 – 400
70	10 x 305	3/8" x 12"	400 – 450
85 09 71	13 x 305	1/2" x 12"	600 – 700
72	13 x 355	1/2" x 14"	600 – 700

Direct Current Jointed Gouging Electrodes

For intensive applications jointed electrodes are available. These can be put into each other to increase the duty cycle.

Unit Per Pc

CODE	Size (mm/inch)		Ampere
85 09 73	8 x 355	5/16" x 14"	450
74	10 x 355	3/8" x 14"	500
75	11 x 355	7/16" x 14"	600
76	13 x 355	1/2" x 14"	750
77	15 x 355	5/8" x 14"	1,000
85 09 78	19 x 355	3/4" x 14"	1,300
79	10 x 430	3/8" x 17"	550
80	13 x 430	1/2" x 17"	750
81	16 x 430	5/8" x 17"	1,000
82	19 x 430	3/4" x 17"	1,300

Direct Current Flat Gouging Electrodes

85 09 83	Electrode, DC, flat gouging, 5 x 15 x 305 mm, 300-400 amp.	Pc.

Gouging Torches

The airflow can be regulated on the torch. The adjustable nozzle and the use of high quality materials ensure optimal electric safety and efficiency and maximum airflow. The mono cable can be mounted easily to the torch and the power source. Recommended air pressure is 7 bar.

Unit Per Pc.

CODE	Ampere	Max. Electrode
85 09 84	600	10 mm (3/8")
85	1,600	19 mm (3/4")

Monocables
for Gouging Torch

Gouging with the support of a monocable is a very efficient and handy way to operate. Both the power and the air are guided through one cable, which allows the gouger to work. Length: 2.35 mtr.

Unit Per Lgh.

CODE	Ampere	Cable Size
85 09 86	600	35 mm²
87	1,600	95 mm²

Gouging Torch & Monocable Sets

Complete sets allow you to start gouging immediately and saves the costs of putting the set together. Total length 2.5 mtr.

Unit Per Lgh.

CODE	Ampere	Cable Size
85 09 88	600	35 mm²
89	1,600	95 mm²

Welding Cables
Butyle Rubber Sheathed
1,000V or less-Single Conductor

Welding cable for general use. Cloth or paper wrapped wire sealed in rubber sheath. Furnished 200 mtrs per coil.

Unit Per Mtr

CODE	mm²	Strand O.D. mm	Cable O.D. mm	Cable Construction mm	Kgs Per mtr
79 41 01	22	7.0	11.8	0.45 x 20 x 7	0.31
02	38	9.1	14.5	0.45 x 34 x 7	0.50
03	60	11.7	17.5	0.45 x 20 x 19	0.75
04	100	15.2	21.8	0.45 x 34 x 19	1.23
05	150	18.7	25.9	0.45 x 34 x 27	1.71
79 41 06	200	21.2	29.0	0.45 x 34 x 37	2.3

Welding Cable Connectors

Brass bar with interior and exterior covered in watertight rubber. Specially designed for welding cable connections.

Unit Per Pr.

CODE	Capacity Amp	Cable Size mm²	Length mm.	Weight grm.
79 47 61	300	38 - 50	200	300
62	500	60 - 80	295	510
63	750	100 - 125	275	750
64	1,000	150 - 200	300	950

Electrode Holders

Closed Head

A high quality closed head electrode holder with optimal insulation and powerful grip on the electrodes. Also be used for overhead welding, and electrodes can be inserted in various manners. Standards : EN 60974-11.

Unit Per Pc.

CODE	Amp	Electrode Size mm	Connection	Cable mm²
85 10 24	300	1.6 - 6.3	1 screw M12	25-70
25	400	2.5 - 8.0	1 screw 9/16"	25-95
26	500	2.5 - 8.0	1 screw 9/16"	25-95
27	600	2.5 - 8.0	2 screws 9/16"	25-95

Open Crocodile Type Head (Grip Type)

An open crocodile type head electrode holder with many and firm electrode holding insert positions for wide range of welding applications.

Standard: EN 60974-11.

Unit Per Pc.

CODE	Amp	Electrode Size mm	Connection	Cable mm²
85 10 31	200	2.0 - 5.0	-	-
32	300	2.0 - 6.3	1 screw M12	25-70
33	400	2.5 - 8.0	2 screw 9/16"	25-95
34	500	2.5 - 8.0	2 screws 9/16"	25-95

Screw-on Closed Head

A screw-on closed head electrode holder with extreme tight grip on the electrode, wide range of applications and optimal electric safety (class A for Progress 400).

Standards: EN 60974-11.

Unit Per Pc.

CODE	Amp	Electrode Size mm	Connection	Cable mm²
85 10 28	400	1.6 - 6.3	1 screw 9/16"	25-95
29	600	1.6 - 8.0	1 screw 9/16"	25-95

Turnable Head

A high quality and simple electrode holder with a turnable head. The slim and smooth appearance allows for welding in the most confined areas. The extreme tight grip on the electrode, the wide range of applications and the optimal electric safety (class A for Victory 400).

Standards: EN 60974-11

Unit Per Pc.

CODE	Amp	Electrode Size mm	Connection	Cable mm²
85 10 30	400	1.6 - 6.3	1 screw 9/16"	25-95
36	600	1.6 - 8.0	1 screw 9/16"	25-95

Electrode Holders
integrated with Welding Cable

A closed head type electrode holder 300amp connected with welding cable. Welding cable neoprene HO-1/N2-D.

Unit Per Pc.

CODE	Plug	Cable	Length mtr
85 10 37	SK 25 - 13mm	25 mm²	5
38	SK 50 - 13mm	50 mm²	10
39	SK 70 - 13mm	70 mm²	10
40	SK M25 - 9mm	25 mm²	5

Earthing Clamps
For arc welding use
Screw-on Type

Screw-on type made of high quality raw materials and components. Excellent cable connection and high quality yellow copper result in an efficient use of power.

Standards: EN 60974-13.

85 10 45	Earth clamp, screw-on type, with rubber, 600 amp, cable 35-95 mm², jaw width 42 mm	Pc.

Spring Type (Grip Type)

The curved shape of earth clamp ensures optimal contact with the workpiece.

Standards: EN 60974-13.

Unit Per Pc.

CODE	Amp	Jaw Width mm
85 10 46	250	70
41	300	25
42	300	35
47	350	70
48	500	70
85 10 49	600	70

C-clamp Screw Type

C-clamp for extreme applications till 1,000 ampere. With allen screw connection.

Standards: EN 60974-13.

Unit Per Pc.

CODE	Amp	Jaw Width mm
85 10 43	500	70
50	800	85
44	1,000	80

Magnetic Type

Magnetic on 3 sides. Insulated cable connection by means of plastic handle. With allen key cable connection.

Standards: EN 60974-13.

Unit Per Pc.

CODE	Amp	CODE	Amp
85 10 52	200	**85 15 54**	600
53	400		

Earth Clamps
integrated with Welding Cable

A spring type earth clamp connected with welding cable. Welding cable neoprene HO-1/N2-D.

Unit Per Pc.

CODE	Clamp	Plug	Cable	Length mtr
85 10 55	Spring	SK 50 - 13mm	35 mm²	5
56	(Grip)	SKM25 - 9mm	25 mm²	5
57	Type	SK 50 - 13mm	50 mm²	5

Arc Welders

Shielded metal arc welding (Stick electrode welding) is most broadly used in shipboard maintenance and repair welding.

In welding two pieces of metal together, an electric arc is established the end of the coated electrode and the base metal in the joint.

When the electric arc is struck between the tip of the electrode and the work piece (Base metal), molten droplets from the electrode are transferred to and mixed with the molten metal in the joint. As the arc progresses along the joint the molten weld metal cools and solidities forming a strong, integral bond in the joint.

Arc welder converts shipboard power – usually 220, 380 or 440 volts, alternating currents (AC) to an output in the form of AC (Transformer) or DC (Rectifier) current.

Typical welding currents may range from 30 to 400 amperes at voltage of 22 to 32 volts.

Most electrodes used for shipboard maintenance welding operate at less than 200 amperes. So a current output of 400 amperes will suffice for most carbon arc applications.

The output AC/DC type will be more flexible and better suited to a wide range of conditions.

Please specify the following points when ordering:

1. Type of welder required;
   1) Transformer (AC)
   2) Rectifier (DC)
   3) Transformer/Rectifier (AC/DC)
2. Main supply: Voltage and Frequency
3. Maximum output capacity: Current amperes

85 10 51	Arc welder, type of welder _____ , main supply _____ , max. output capacity _____ ,	Set

Tig Welders

Tig (Tungsten Inert Gas) welding is an arc welding process that uses a non-consumable tungsten electrode to produce the arc, and used for critical weld joints, welding metals, such as aluminium, stainless steel, copper, brass, titanium, nickel, even two dissimilar metals, other than common steel, and where precise, small welds are needed. Tig welding requires a shielding gas to protect the weld area from the air (typically pure Argon gas), and utilizes a constant current welding power supply to generate an electric arc between the tungsten electrode and the workpiece, using the resultant heat to create the weld. The pulse function is used for giving a more stable arc than not pulsing. This allows for welding thinner metals and high heat conductive metals without burning through.

Unit Per Set

CODE		85 10 75	
Model		300P	
Pulse Function		With Pulse	
Input Voltage		1 phase/200 volt	
TIG Arc Activation System		High frequency	
Rated Input Voltage	TIG	28.8 kVA (12.9 kW)	
	Manual Weld	23.8 kVA (15.1 kW)	
Rated Frequency		50/60 Hz	
Duty Cycle		40%	
Maximum Open Circuit Voltage		78 volt	
Starting Voltage (DC TIG)		100 volt	
DC Output Current	TIG	5 – 300 amp	
	Manual Weld	20 – 300 amp	
AC Output Current	TIG	20 – 300 amp	
	Manual Weld	20 – 300 amp	
Rated Load Voltage	TIG	22 volt	
	Manual Weld	32 volt	
Pulse TIG Function	Pulse Time Period	-	0.03 – 1.2 sec.
	Base Time period	-	0.05 – 2.5 sec.
Dimension (W x D x H)		460 x 663 x 859 mm	
Weight		161 kgs	

Plasma Cutting Machines

The plasma cutting process, as the most cost-effective method of cutting a range of materials, is especially recommended for steel, stainless steel, aluminium or other alloys those are electrically conductive, not easily cut by conventional oxy-acetylene process. The combined effect of a high intensity arc and a hot, high velocity plasma gas results in a very clean, high speed cut including piercing, beveling and gouging.

Please specify if air compressor built-in model is required, when ordering.

Cutting Capacity of Plate Thickness

Rated Output Current	Steel / Stainless Steel	Aluminium	Copper
15 amp	13 mm	1 mm	-
35 amp	10 mm	6 mm	-
55 amp	18 mm	12 mm	-
70 amp	25 mm	20 mm	8 mm
80 amp	30 mm	28 mm	10 mm
120 amp	46 mm	46 mm	20 mm

How to order: 85 - 10 - 76

Air plasma cutting machine, Cutting capacity of plate thickness, Rated output current AMP, Power source VOLTAGE, Air Compressor built-in, or not (Set)

Pipe Clamps for Welding

For the optimal positioning of pipes for welding. Made of aluminium or steel. Lightweight and has good grip on pipes with an outside diameter up to 76 mm. For pipe-pipe and pipe-fitting welding.

Unit Per Pc.

CODE	85 10 62	85 10 63
For Pipe Diameter	25 – 64 mm 1.0 – 2.5"	26 – 76 mm 1.0 – 3"
Material	Aluminium	Steel
Weight kgs	0.6	0.75

Metal Holding Magnets

Fixed Angle

The fast & easy way to hold metal workpieces at 45° & 90°. Turn the magnet Off when setting up, turn On when you're ready to work. Fast and safe set-up! Ideal for round and square tubing, angle, and flat stock. Easy to clean. Simply turn Off and wipe.

Unit Per Pc.

CODE	85 10 64	85 10 65
Type	MSA-46HD	MSA-48HD
Description	Adjust-O™ Magnet Squares (45° & 90°)	Heavy duty large magnet, Adjust-O™ Magnet Squares (45° & 90°)
Max. Pull Force	35 kgs	80 kgs
Size mm	110 x 95 x 29	153 x 130 x 35
Weight grm	700	1,400

Mini Handy Set

The handy, take-along magnets in a convenient 6-pack. Large centre holes for easier handling. Two riveted holes for linking magnets together. Useful in light duty applications. For 30°, 45°, 60° and 90° angles.

Type: MS346AK

Size : 60 x 50 x 15 mm

85 10 66	Magnet, handy mini, 6's/pack Type : MS346AK	Pkt

Adjustable Angle

The magnet will make positioning easier, and safer to use, and hold all angles between 25°- 275°. Hold flat and round work pieces.

Max. pull force : 40 kgs

Size : 115x190x38 mm

Weight : 2.4 kgs

85 10 67	Magnet, metal holding, adjustable angle, Max. pull force 40 kgs	Pc.

Welding Screens with Frame

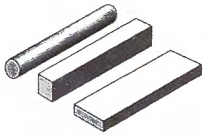
180x 80cm welding screen with frame. Available in orange or green screen colour. The frame comes with wheels.

Standards: DIN EN 1598:2002-04

Unit Per Pc.

CODE	Colour	CODE	Colour
85 10 71	Orange	**85 10 72**	Green

Welders' Chalks



A cut alabaster used for marking cutting lines and angles on welding materials. 3 different shaped chalks are available.

85 11 01	Welders' chalk, round bar 100's	Box
02	" , square bar 100's	"
03	" , rectangular bar 50's	"

Welders' Goggles

For use in gas welding. One size fits all.

Flip-up

Contour-mould

Unit Per Pr.

CODE	Type	Material	Lens Diam.	Remark
85 11 11	Flip-up	Metal	45	-
12	Contour-mould	Plastic	50	w/Side Ventilation

Safety Spectacles
Anti-scratch & Anti-fog

Available in white and IR (Infrared) colour 5. Lens made from a single piece of polycarbonate which fits almost all contours of the face. Curved model, ergonomic design with adjustable arms. Comfortable glasses with a high protection factor. Weight: 34 grams

Standard: EN166:2001 FT, EN 175

Unit Per Pr.

CODE	85 11 13	85 11 14
Lens Colour	Clear	IR shade 5

Safety Spectacles
with Interchangeable Lenses

Safety spectacles with different interchangeable lenses, supplied as a set. Set consists of: glasses frame, lenses: white/smoke/amber, clip cord, lens cloth and storage case. Lenses and frame made from reinforced polycarbonate. Lightweight and very comfortable frame with soft rubbers on the arms. Also comes with rubber nose pads that prevent the glasses from slipping off. Fits all contours of the head and face. Weight: 27 grams.

Standards: EN166:2001 FT

85 11 15	Spectacle, safety, with interchangeable lenses	Set

Welding Helmets

Helmet with headgear for general welding use. Made of fibre glass, lightweight, and heat-resistant.

85 11 16	Welding helmet with headgear	Pc.

Arc Flash Protective Visors
for Electricians

V-Gard Electrician's Visors provide reliable protection from arc flash effects: high temperature, flying debris and powerful radiation. They are certified to the highest European arc flash protection levels by the standards GS-ET-29 [class 2, 7 kA] and EN166 [8]. The impact and splash resistance is certified to EN 166 [B & 3].

Made from a patented injection molded blend of dyes and nano particles in a polycarbonate matrix. They absorb the arc energy layer by layer. This blend of dyes makes the visor look light green but offers the highest visual light transmission available in GS-ET-29 [VLT Class 0] providing maximum light transmittance and color recognition. As moldings they are optically correct, which ensure the best vision and reduced eye fatigue.

Two versions are available:
- Compatible with helmet mounted earmuffs.
- With extended ear protective shape, covering the ears.

Both feature an anti-fog coating for a clear view in challenging situations.

85 11 17	Visor, arc flash protective, compatible with helmet mounted earmuffs	Pc.
85 11 18	Visor, arc flash protective, with extended ear protective shape, covering the ears	

Name of Mfr.: MSA The Safety Company

Electrician Kits Premium
EN166 & GS-ET-29 class 2 (7 kA)

Ideal set for applications requiring arc flash protection, especially in confined spaces.

- Helmet, V-Gard 520 white with Fas-Trac III ratchet suspension, replaceable.
- Foam sweatband (EN 397 440 V AC and EN 50365, Part of visor testing GS-ET-29 Class 2).
- V-Gard frame (EN 166: 389 BT; Part of visor testing GS-ET-29 Class 2).
- Electrician visor Premium – V-Gard arc flash visor compatible with earmuffs, retractable chin guard (EN166 & GS-ET-29 Class 2, EN166 2C-1.2 1 B 8 - 2 - 0 3).

Unit Per Set

CODE	Description	Part No.
85 11 19	Premium Electrician Kit, EN166 & GS-ET-29 class 2	GV919-0029000-000

Name of Mfr.: MSA The Safety Company

Handshields

For general welding use; also for inspectors and occasional use. Made of fibre glass. Inside or outside handles are available.

Handle Inside — Handle Outside

85 11 21	Handshield, handle inside type	Pc.
22	" , handle outside type	"

Spare Lens / Plates / Glasses

Spare glass for goggle, helmet and shield of the above. Various shades and sizes are available. When ordering, please specify lens or plate No. and size.

Shade Table

Shade No.	Standard Visible Ray Filter %	Application
4, 5, 6, 7	5.18 - 0.27	For Gas Welding, Low amperage Arc Welding
8, 9	0.100 - 0.037	For Arc Welding amperage up to 100A
10, 11, 12	0.0139 - 0.0019	For Arc Welding amperage over100A up to 300A
13, 14	0.00072 - 0.00027	For Arc Welding amperage 300A up to 500A

How to order: CODE

Spare lens, TYPE of LENS, SIZE mm, COLOUR, TONE, for GAS or ARC WELDING

Unit Per Pc.

CODE	Lens Type	Size mm	Colour	Tone or Shade	For
85 11 31	Roud	45ø×2.5T	Dark Green Yellow	GY	Gas Welding
32			Green	G3	
33			Dark Green	G2	
85 11 36		50ø×2.5T	Dark Green	No. 3	
85 11 37			Clear	-	
85 11 41	Oblong Plage	105×50×3	Dark Green	No. 8	Arc Welding
42				No. 9	
43				No. 10	
44				No. 11	
45				No. 12	
85 11 46		105×50×2	Clear	-	

Welding Jackets and Trousers Flame Retardant

A welding jacket made of lava brown leather with flame retardant impregnated thread, fully stitched with strong and heat-resistant Kevlar

Jackets: With collar and large innerpocket. Fastens left over right side with snap-fasteners. Fastening is reinforced with velcro overlap fasteners.

Trousers: The respective welding trousers are supplied complete with belt.

CODE	Size	CODE	Size
Jackets			Unit Per Pc.
85 11 51	M	85 11 53	XL
52	L	54	XXL
Trousers w/belt			Unit Per Pc.
85 11 55	M	85 11 57	XL
56	L	58	XXL

Welders' Gloves

For gas and arc welding. Made of tanned heat resistant leather with gauntlet cuff. Two, three and five finger types are available.

Two Fingers — Three Fingers — Five Fingers

Unit Per Pr.

CODE	85 11 61	85 11 62	85 11 63
Type	2 Fingers	3 Fingers	5 Fingers

Welders' Protective Clothing

Made of chrome leather. Worn for protection when welding.

Sleeves — Apron — Leggings

CODE	Description	Size mm	Unit
85 11 66	Sleeves	210 x 530	Pr.
67	Apron	550 x 1,000	Pc.
68	Leggings	260 x 220	Pr.

Anti Spatter Sprays

Prevents welding spatters from sticking to the welding torch or to the workpiece. Contains no harmful or flammable detergents. Offers the perfect solution to stainless steel.
- Resistant up to 1,500°C.
- Ideal for welding torches and automatic machines.

85 11 76	Anti spatter spray, 500 ml	Can

Water-Based Weld Anti-Spatters

A water-based spatter release agent which gives exceptional results without the use of harmful solvents, silicones or mineral oils.

85 11 77	Weld anti-spatter. water based CRC Ambersil, Bioweld, 400 ml	Tin

Aluminium Backing Tapes

An aluminium backing tape with fiberglass center.

Benefits:

- Reduces setup time.
- Eliminates/minimizes need for back purging.
- Reduces post-weld grinding.
- Cuts down on post-weld clean up.
- Increases weld productivity, reduces costs.
- Heat resistant (Adhesive 260°C, Aluminium tape 593°C, Fiberglass strip 550°C).
- For application up to 500/600 Amps.

Unit Per Rol.

CODE	85 11 78	85 11 79
Width x Length	63 mm x 12.5 mtr 2.5" x 41'	102 mm x 12.5 mtr 4" x 41'
Width Weld Backing Tape	28.5 mm 1-1/8"	38 mm 1-1/2"

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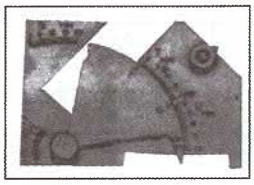
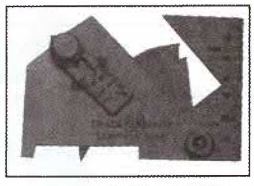
Welding Gauges

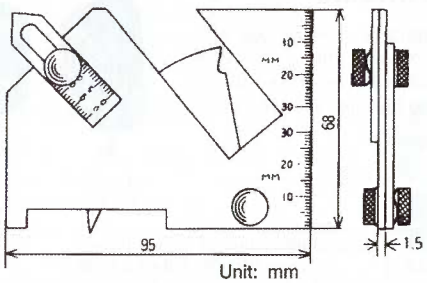
Stainless steel made. Long life use, rust and corrosion resistant. Multi purpose welding gauge for measuring the height of bead, round bar diameter, plate thickness, under cut depth, etc.



Front Side



Reverse Side



Unit: mm

85 11 80	Welding gauge, stainless steel	Pc.

Thermomelt Temperature Sticks

A fast, simple and accurate method to determine an indicated temperature by means of melting stick as soon as reached the required temperature. Available in a range from 50 °C to 700 °C. Low temperatures are used to see whether machinery has the right temperature, higher temperatures are used for welding and pre-heating etc.

Unit Per Pc.

CODE	Temp.	CODE	Temp.	CODE	Temp.	CODE	Temp.
85 11 81	50°C	**85 11 86**	175°C	**85 11 91**	300°C	**85 11 96**	525°C
82	75°C	**87**	200°C	**92**	350°C	**97**	550°C
83	100°C	**88**	225°C	**93**	400°C	**98**	600°C
84	125°C	**89**	250°C	**94**	450°C	**99**	650°C
85	150°C	**90**	275°C	**95**	500°C	**85 12 00**	700°C

IMPA online Education

Dedicated Marine Purchasing and Supply education programme

Education remains a key priority for IMPA and the association has **introduced the most comprehensive education programme in its history.** The intention is that IMPA's online course will provide procurement and supply chain management professionals with the credibility and status that other professional disciplines enjoy.

Each course has been designed to be taken over a 12 month period and entirely on-line. IMPA members receive a discount on course fees.

Created by the industry for the industry

The first of its kind and available to all - 100% online!

Enrol today

Secretariat on: +44 (0) 1206 798900 | training@impa.net

www.impa.net/education

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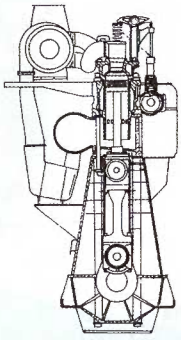
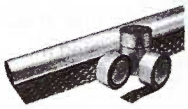
MACHINERY EQUIPMENT

Main Engine Diagrams



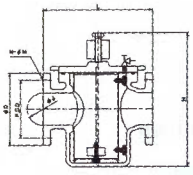
P. 87-1 ~ 2

Anti-splashing Tape for Ship's Engine Room



P. 87-2 ~ 4

Marine Can Water Filters



P. 87-4

DIN Strainers

P. 87-4 ~ 5

DIN Mud Boxes

P. 87-5 ~ 6

Air Vent Heads

P. 87-6 ~ 8

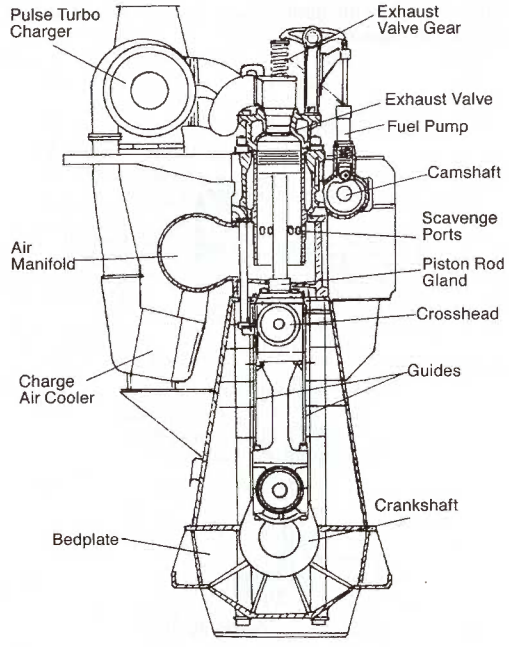
Emergency Shut-off Valves

P. 87-8 ~ 10

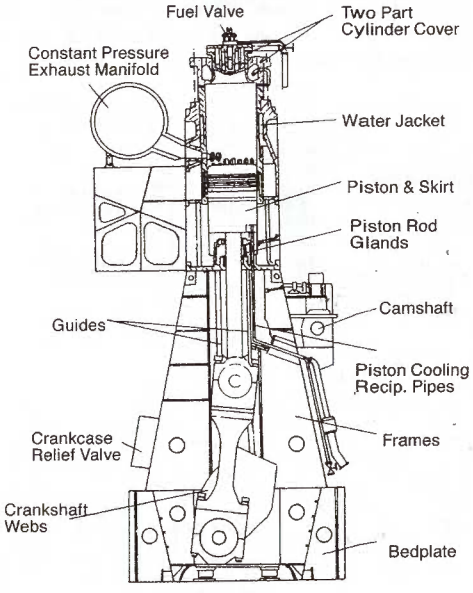
Main Engine Diagrams

There are various types of main engine with a range of cylinder sizes from various manufacturers in the world. Basically, marine diesel engines can be divided into two main types; Large, slow-running direct drive engines with limited numbers of cylinders (Two-stroke cycle), or Medium to high speed engine driving through reduction gears (Four-stroke cycle).

Below are shown basic cross sections of common two-stroke cycle engines as a reference. Two-stroke engines are commonly used as the main engine for oil tankers, bulk carriers, or container vessels which must carry a large payload. Four-stroke engines are commonly used of car carriers, Ro-Ro vessels and ferries where a low set, medium speed engine is preferable to allow space for additional car deck space or accommodations above the engine room.



MAN – B & W KEF Engine



SULZER RND Engine

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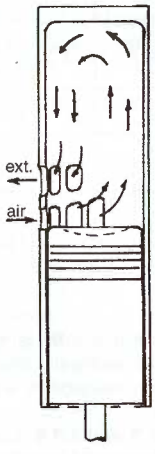
The Basic Method of Scavenging within the Cylinder

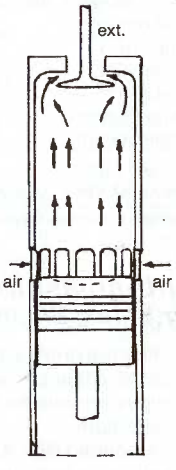
Loop Scavenge:

Air passes over the piston crown and rises to form a loop within the cylinder, expelling gas through exhaust ports cut in the same side of the liner above the scavenge ports.

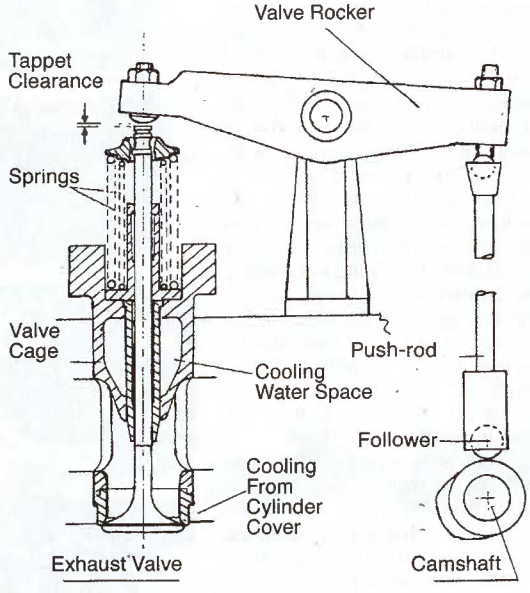


Uniflow Scavenge:

Air passes straight up through the length of the cylinder, forcing the exhaust through ports or valves at the top of the cylinder.



Exhaust Valves and Tappets

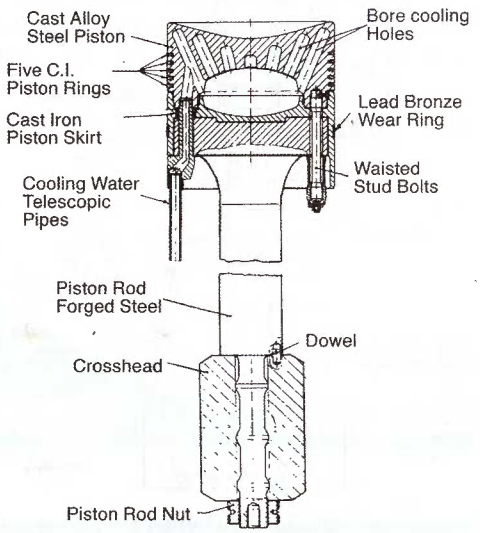


Large Two-stroke Engine Pistons

Cooling of pistons is necessary to remove excess heat from combustion and to limit thermal stressing. It also limits thermal expansion to maintain correct clearances between piston and liner and between ring grooves and rings. Cooling may be carried out by circulating either water or oil.

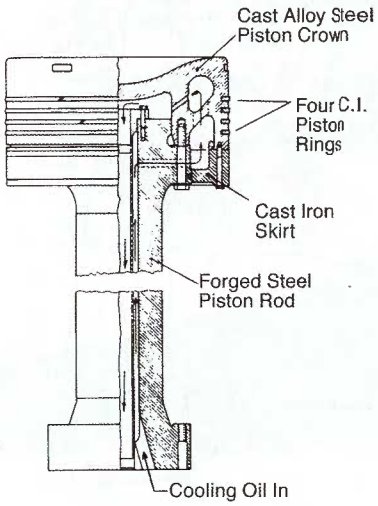
Fresh Water Cooling Piston :

Fresh water cooling has the advantage of greater thermal capacity than oil ; it may also sustain higher outlet temperatures (up to 70°C) improving thermal efficiency. Water cooling has the disadvantage that flexible connections and glands to convey it to and from the piston require maintenance and there is the possibility of crankcase contamination from gland leakage.



Oil Cooling Piston :

Oil cooling has lower thermal capacity and a lower temperature limit (56°C) to prevent carbon or lacquer forming on hot surfaces, with consequent loss in heat transfer or choking of passages.



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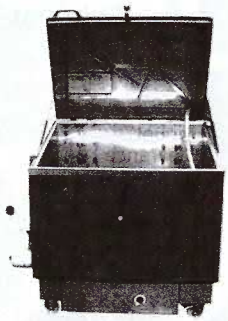
Machinery Part Cleaners

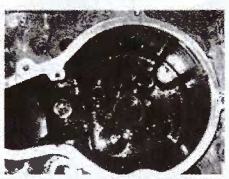
The machinery part cleaner designed for maritime use. It saves man hours because of simple operation and fast cleaning without supervision. The machines are able to accommodate and clean the most common auxiliary engine spare parts, filters, pump parts, tools, cylinder cover, etc.

Internal box is made of stainless steel plates and is well isolated in order to reduce the loss of heat and enable the machine to stay heated all day, ready of use. The energy loss at evaporation is reduced considerable as the machine is fitted with a steam reducer in the top, which opens for steam discharge when the machine is started.

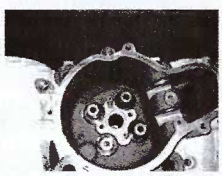
The items are placed on the fixed grating which has a carrying capacity up to 1,350 kgs or for smaller items in a special designed basket, made of stainless steel.

The cleaning liquid is heated to the required temperature controlled by the fitted thermostat.





Before



After

Unit Per Set

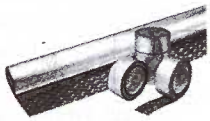
CODE	87 11 01	87 11 02	87 11 03
Model	201M	203M	204M
Liquid Demand	40 ltr	63 ltr	125 ltr
Power Source Connection*	3x440V-60Hz 3,700 Watt/ 3x380V-50 Hz*	3x440V-60Hz 6,600 Watt/ 3x380V-50Hz*	3-x-440V-60Hz 11,000 Watt/ 3x380V-50Hz*
Max Temperature	25 – 85°C		
Inside Dimensions WxDxH mm	650x600x550	900x600x800	1,240x920x800
Outside Dimensions WxDxH mm	880x700 x1,200	1,125x700 x1,430	1,500x1,060 x1,430
Max. Carrying Capacity kgs	300	550	1,350
Weight kgs	80	132	200
Name of Mfr.	Marine Technic a/s		

Remark : * please advise by order

Anti-splashing Tape for Ship's Engine Room

For preventing outbreak of a fire caused by a splash of combustible oil, such as fuel oil, lubricating oil, etc. from oil pipes connected to an engine or a generator in a ship's engine room.

Amended SOLAS Reg.4.2.5.3, 4.2.3 and 4.2.4, Chapter II-2 stipulate that oil fuel line shall be screened or otherwise



suitably protected to avoid as far as practicable oil spray or oil leakage onto the source of ignition, hot surfaces, into machinery air intakes, or other sources of ignition.

Piping, valves, pressure gauges, or any other auxiliary parts become loose due to vibration, fatigue, deterioration of material, excess tension, and tend to be damaged with a pinhole or crack.

Covering with this anti-splashing tape to protect the exhaust pipe and other high temperature equipments from being exposed to splashes of combustible oil and preventing possible occurrence of a fire.

The tape consists of aramid woven cloth superimposed with aluminium foil on both sides, and an adhesive agent is applied to one side and covered by a separator film.

The tape can withstand prominent pressure of 1.5 MPa when applied properly.

Specifications

Tensile Strength	318 N per 10mm width
Ordinary Joint Strength	7 N per 10mm width
Shear Joint Strength	196N per 20mm x 20mm
Pressure Resistance	Maximum : 3.0 MPa Approved : 1.5 MPa
Heat Resistance	Maximum : 150°C
Oil Resistance	Inactive with respect to heavy oil, light oil, etc.
Weather Resistance	When tested with a weather meter, normal after 72 hours
Approved	Class NK, ABS, BV, CCS, DNV, GL, KR, LR, RINA, UL
Name of Mfr.	Tokyo Nisshin Jabara Co.,Ltd.

* Data on the above table is actual test data, not quarantined data.

Unit Per Rls. Unit Per Sht.

Tape		Sheet	
CODE	Width x Length	CODE	Width x Length
87 18 01	35 mm x 10 mtr	**87 18 07**	250 mm x 10 mtr
02	50 mm x 10 mtr	**05**	500 mm x 10 mtr
08	75 mm x 10 mtr	**06**	1,000 mm x 10 mtr
04	100 mm x 10 mtr		
03	140 mm x 10 mtr		

M/E Scavenging Drain Analysis (SDA) Onboard Test Kits

"Fe-asy Checker 26"

A highly accurate analysis test kit on board for total iron content in the scavenging drain of diesel-powered main engines.

The colorimetric method enables crew members to take extremely accurate analysis of total iron content by specific wavelength filter for a photoelectric colorimeter and a special mix of two kinds of Reagents (A & B). The result is displayed in parts per million (PPM) value.

Optimizing scavenging drain oil requires careful monitoring of conditions inside the diesel main engine and recently, many instances of low-temperature sulfuric acid corrosion have been reported due to an increase of design pressure inside the cylinders. This analysis kit can measure not only conventional magnetic iron particles, but also the total iron content including iron ions, which lead to earlier detection of abnormalities inside the cylinder.

87 12 01	M/E Scavenging Drain Analysis (SDA) Onboard Test Kit "Fe-asy Checker 26"	Set

Accessories

Unit Per Pc.

CODE	Product	Product No.
87 12 02	ReAgent A	101
87 12 03	ReAgent B	102
87 12 04	Lure Lock Syringe	201
87 12 05	Syringe Cap	202
87 12 06	Syringe Filter	203
87 12 07	Disposable Cell	204
87 12 08	Pipet	301
87 12 16	Pipet Tip	302
87 12 09	Capillary Micro Pipet	401
87 12 10	Universal Top Plate	502
87 12 11	Syringe Holder	503
87 12 12	Cuvette Rack	701
87 12 13	Vortex Mixer	501
87 12 14	Replacement Capillary Tube	402
81 12 15	Absorption Spectrophotometer	601

Engine Starter Motors

Reliable and powerful starter motors for diesel engines and generators. Their independent, dead-ship or black-start capability is ideal as your primary or secondary method of starting fire pumps, emergency generators and compressors.

Starters are available from stock from locations around the world. There are three types: Hydraulic, Air (pneumatic), and Spring (mechanical) type.

The starter motor must be specified to match the engine type and configuration so, when ordering, please specify the maker and model of engine and, if available, the original part number of the old starter motor.

Hydraulic Type

Air (Pneumatic) Type

Spring (Mechanical) Type

How to order CODE

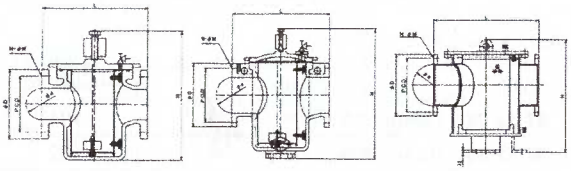
Engine Starter Motor, Hydraulic or Air or Spring Type, Engine Capacity (litres), Engine maker, model and original part number of old starter etc.

Unit Per Set

CODE	Description
87 12 51	Engine Starter Motor, Hydraulic Type
87 12 52	Engine Starter Motor, Air Type
87 12 53	Engine Starter Motor, Spring Type

Marine Can Water Filters

Made of casting steel and used for water pipelines in ship. Complete with inner strainer. Connecting flange size are conform to JIS 5K standard.



25A - 100A　　125A - 150A　　200A - 800A

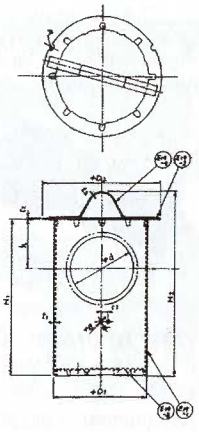
Unit Per Set

CODE	Nominal Diam. mm	Flange					Total Height mm	Weight kgs
		Face to Face mm	Diam. mm	Bolt				
				P.C.D. mm	No.	Diam. mm		
87 20 01	25	170	95	75	4	M10	178	5.80
02	40	190	115	90	4	M12	211	8.2
03	40	190	120	95	4	M12	211	8.4
04	50	200	130	105	4	M12	258	11.4
05	65	250	155	130	4	M12	314	18.5
87 20 06	80	270	180	145	4	M16	335	25.4
07	100	320	200	165	8	M16	391	35.7
08	131	400	235	200	8	M16	480	52.4
09	156	460	265	230	8	M16	573	71.6
10	200	550	320	280	8	M20	600	95
87 20 11	250	680	385	345	12	M20	725	150
12	300	760	430	390	12	M20	820	185
13	350	820	480	435	12	M22	920	245
14	400	880	540	495	16	M22	1,010	290
15	450	1,040	605	555	16	M22	1,230	440
87 20 16	500	1,130	655	605	20	M22	1,320	530
17	550	1,220	720	665	20	M24	1,380	720
18	600	1,310	770	715	20	M24	1,455	830
19	650	1,410	825	770	24	M24	1,514	1,150
20	700	1,500	875	820	24	M24	1,574	1,200
87 20 35	750	1,600	945	880	24	M30	1,630	1,390
36	800	1,700	995	930	24	M30	1,900	1,690

Filter Elements
for Marine Can Water Filter

Suitable for use with marine can water filter based on JIS F-7121 specification.

Made of stainless steel with light weight and tough structure.



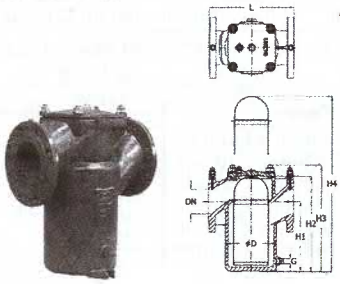
Unit Per Pc.

CODE	Model	Size mm				Weight kgs
		d	D1	D2	H1	
87 20 21	SWSII-FC-S-C-25	33	50	68	109.1	0.17
22	SWSII-FC-S-C-32	47	65	84	137	0.24
23	SWSII-FC-S-C-40	47	65	84	137	0.28
24	SWSII-FC-S-C-50	62	75	94	172	0.28
25	SWSII-FC-S-C-65	78	100	125	218	0.42
87 20 26	SWSII-FC-S-C-80	91	110	140	226	0.69
27	SWSII-FC-S-C-100	116	130	160	282	1.56
28	SWSII-FC-S-C-125	141	162	195	319	1.77
29	SWSII-FC-S-C-150	167	200	235	371	2.19
30	SWSII-SS-S-C-200	217	250	347	350	2
87 20 31	SWSII-SS-S-C-250	269	330	390	505	4
32	SWSII-SS-S-C-300	320	380	440	581	6
33	SWSII-SS-S-C-350	359	420	485	709	8
34	SWSII-SS-S-C-400	410	471	535	755	9.5
37	SWSII-SS-S-C-450	461	562	637	861	14
87 20 38	SWSII-SS-S-C-500	514	625	700	927	18
39	SWSII-SS-S-C-550	566	689	780	980	21
40	SWSII-SS-S-C-600	617	753	845	1,033	25
41	SWSII-SS-S-C-650	667	816	910	1,074	31
42	SWSII-SS-S-C-700	719	882	980	1,134	40
87 20 43	SWSII-SS-S-C-750	770	941	1,040	1,170	47
44	SWSII-SS-S-C-800	820	1,008	1,110	1,482	67

Name of Mfr. : Niikura Corporation

Strainers (DIN)
Single Basket, DIN Flanges PN10/16
Ductile Cast Iron

Simplex Basket Strainer for general use. Fitted with a fluid drain plug and suitable for use in horizontal pipe lines only. Ductile Cast Iron body with epoxy coating treatment on the surface (internal and external). Maximum differential pressure at 20°C is 1 bar.



Material specification

Component	Material	EN and/or (DIN)
Body and cover	Ductile cast iron	GJS-500-7(GGG-50)
Cover seal	NBR	
Drain plug	Stainless steel	
Material bleed screw	Stainless steel	

How to order: CODE

Strainer (DIN), single basket, Ductile cast iron, DIN flanges PN 10/16, SIZE DN

Unit Per Pc.

CODE	DN	L	D	H1	H2	H3	H4	G	Weight Kgs
87 20 52	20	171	81	156	178	220	330		6
53	25	171	81	156	178	220	330		6
54	32	189	102	164	214	250	420	3/8"	15
55	40	189	102	164	214	250	420		15
56	50	189	102	164	214	250	420		15

(to be continued)

Unit Per Pc.

CODE	DN	L	D	H1	H2	H3	H4	G	Weight Kgs
87 20 57	65	230	127	214	282	315	530		25
58	80	279	168	235	313	350	610		28
59	100	317	176	324	427	465	810	3/8"	42
60	125	379	222	324	452	510	900		55
61	150	461	262	389	540	580	1,090		75
87 20 62	200	605	322	489	694	745	1,340		140
63	250	604	402	605	815	880	1,550	3/8"	195
64	300	719	472	730	974	1,035	1,860		300

Econosto Model No.: 1096E

Cast Iron Mud Boxes (DIN)
Basket Type, Flat Flanged according to DIN PN 10

Mud boxes are installed in suction pipes aboard vessels to protect pumps against large solids. The standard perforation size of the strainer basket is 8 mm square; the cover is mounted with brass bow nuts. The cover is provided with a blind boss, suitable for mounting an air vent. These mud boxes are also used for application on shore, for example in swimming pool installations.

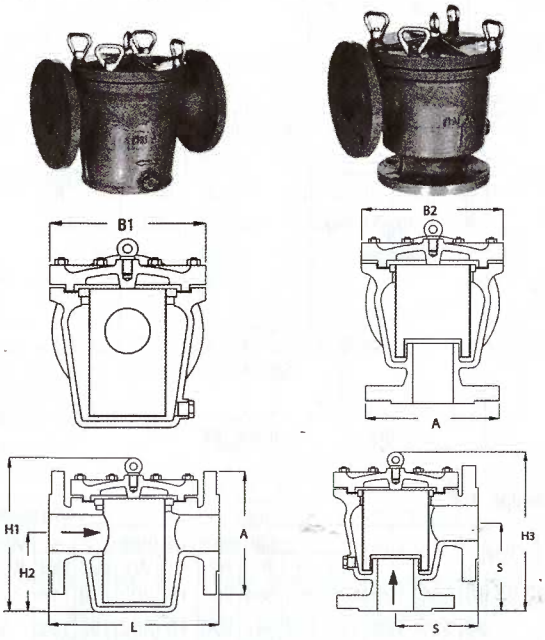
Material Specification

Component	Material	EN and/or DIN
Body and Cover	Cast Iron	GJL-250 (GG-25)
Cover Seal Ring	NBR	
Basket Strainer	Stainless Steel	X5CrNi 18-10
Bow Nut	Brass	
Drain Plug	Brass	

*Body and cover are internally and externally epoxy coated.

Pressure and Temperature Range

Pressure class: PN4
Temperature range: -10°C ~ -50°C



Straight Angle

How to order: CODE

Mud box (DIN), basket type, cast iron, flat flanged according to DIN PN 10, STRAIGHT or ANGLE, SIZE DN

Straight

Features

- Connection: Flange
- Material quality: Cast iron GG 25
- Pressure rating: PN 4
- Surface treatment: Coated
- Body material: Cast Iron
- Flange pressure rating: PN10
- Filter element material: Stainless steel
- Right-angled model: No

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L	B_1	H_1	H_2	
87 20 65	40	150	200	130	208	95	12
66	50	165	230	160	220	106	18
67	65	185	290	197	260	136	23
68	80	200	310	215	299	155	33
69	100	220	350	255	343	191	39
87 20 70	125	250	400	291	406	230	63
71	150	285	480	340	462	265	91
73	200	340	600	472	580	335	149
74	250	395	600	472	605	345	240
84	300	445	700	542	705	394	245

Econosto Model No. : 1187N

Angle

Features

- Connection: Flange
- Material quality: Cast iron GG 25
- Pressure rating: PN 4
- Surface treatment: Coated
- Body material: Cast Iron
- Flange pressure rating: PN10
- Filter element material: Stainless steel
- Right-angled model: Yes

Unit Per Pc.

CODE	DN	Size mm				Weight Kgs
		A	B_2	H_3	S	
87 20 75	40	150	160	231	125	16
76	50	165	197	250	135	20
77	65	185	215	271	150	27
78	80	200	255	319	175	34
79	100	220	291	342	195	51
87 20 80	125	250	340	407	220	71
81	150	285	410	466	270	103
83	200	340	472	550	300	134
85	250	395	542	647	390	249
86	300	445	600	799	450	254

Econosto Model No. : 1188N

Level Gauges for Oil (DIN)
Reflex Type with Push-Button, Spring to Close According to SOLAS Requirements

Especially for oil storage tanks and similar applications. The level gauges are also often used on board of ships.

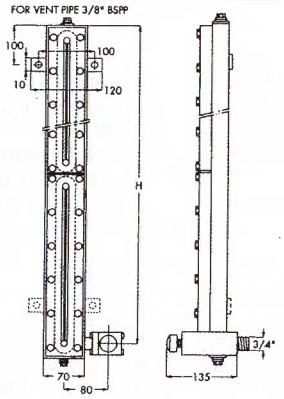
They meet the requirements of the international classification societies, such as the Lloyd's Register of Shipping, Bureau Veritas, American Bureau of Shipping, Germanischer Lloyd, Det Norske Veritas.

Available length is between 245mm and 6,000mm. Please specify required length when ordering.

Also following types are available if required.

* with the same connection on top including push-button or lever and weight.
* all of stainless steel.
* anti-clockwise to close.

Pressure/Temperature rating: 2 bar-95°C



Materials

Part	Material according to DIN	
Body	Steel	St.35
Cover Plate	Stainless Steel	X5CrNi18 10

How to order: 87 - 20 - 91

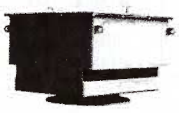
Level gauge for oil (DIN), reflex type, according to SOLAS requirements, with push-button, spring to close, LENGTH H in mm, TYPE of CLASSIFICATION SOCIETY

Air Vent Heads

Automatic closing system by disk float, and applicable to ballast tanks or oil tanks, etc. Main body is made of grey iron casting (FC-200). Connection flanges specifications are based on JIS 5 kgf/cm².

Application of IACS (International Association of Classification Societies) unified requirements P3(1991), and approved by NK, ABS, LRS, DNV and BV.

Please specify the flange size to be connected with type of pipe head when ordering.

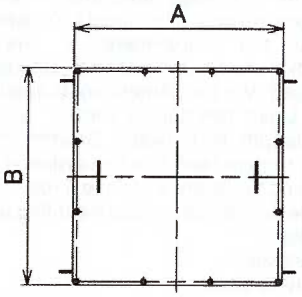


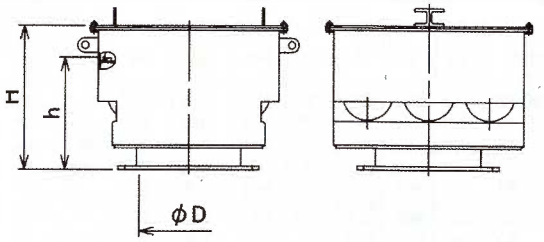
53B (300~450 mm)
53BW (300~450 mm)

53C (100~250 mm)
53CW (50~250 mm)

53P (50~250 mm)
53PW (50~250 mm)

Model: 53B





Model: 53B

Unit Per Pc.

CODE	Model	Dimensions mm					Wgt Kgs
		Φd	A	B	H	h	
87 23 23	53B II - 300	300	613	633	458	365	120
24	53B II - 350	350	669	699	492	383	146
25	53B II - 400	400	719	745	524	410	165
26	53B II - 450	450	853	903	634	481	248

Name of Mfr. : Niikura Corporation

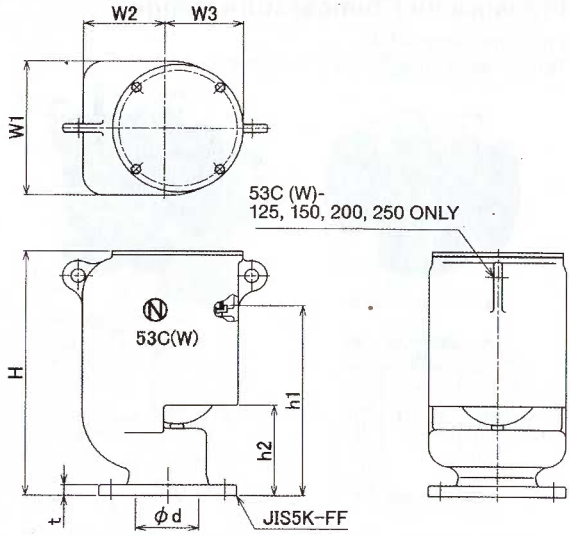
Model: 53BW (with Screen)

Unit Per Pc.

CODE	Model	Dimensions mm					Wgt Kgs
		Φd	A	B	H	h	
87 23 29	53B II W- 300	300	613	633	458	365	120
30	53B II W- 350	350	669	699	492	383	146
31	53B II W- 400	400	719	745	524	410	165
32	53B II W- 450	450	853	903	634	481	248

Name of Mfr. : Niikura Corporation

Model: 53C



Model: 53C

Unit Per Pc.

CODE	Model	Dimensions mm								Wgt Kgs
		ϕ d	H	h1	h2	t	W1	W2	W3	
87 23 35	53C-100	100	364	284	140	16	202	118	116	20
36	53C-125	125	433	342	180	16	260	192	192	35
37	53C-150	150	502	390	195	18	302	200	224	51
61	53C-200	200	641	487	264	20	350	253	233	102
62	53C-250	250	771	593	335	22	453	313	280	145

Name of Mfr. : Niikura Corporation

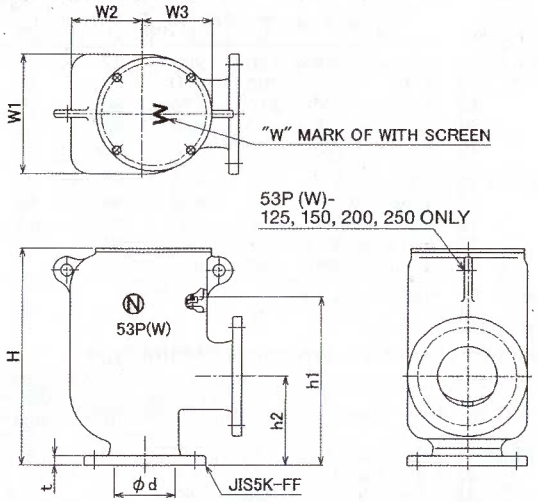
Model: 53CW (with Screen)

Unit Per Pc.

CODE	Model	Dimensions mm								Wgt
		ϕ d	H	h1	h2	t	W1	W2	W3	Kgs
87 23 38	53CW- 50	50	261	219	113	14	162	92	88	12
39	53CW- 65	65	261	219	113	14	162	85	96	12
40	53CW- 80	80	298	246	123	14	190	98	109	17
41	53CW-100	100	364	284	140	16	202	118	116	20
42	53CW-125	125	433	342	180	16	260	192	192	35
87 23 43	53CW-150	150	502	390	195	18	302	200	224	51
63	53CW-200	200	641	487	264	20	350	253	233	102
64	53CW-250	250	771	593	335	22	453	313	280	145

Name of Mfr. : Niikura Corporation

Model: 53P



Model: 53P

Unit Per Pc.

CODE	Model	Dimensions mm								Wgt
		ϕ d	H	h1	h2	t	W1	W2	W3	Kgs
87 23 45	53P- 50	50	264	221	112	14	162	92	127	14
46	53P- 65	65	264	221	122	14	162	85	132	15
47	53P- 80	80	300	248	132	14	190	98	152	20
48	53P-100	100	366	286	152	16	202	118	162	25
49	53P-125	125	435	344	197	16	260	192	202	41
87 23 50	53P-150	150	502	392	222	18	302	200	242	60
51	53P-200	200	640	487	282	20	350	253	272	108
52	53P-250	250	767	589	342	22	450	310	332	182

Name of Mfr. : Niikura Corporation

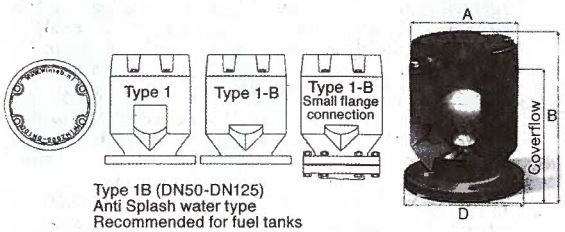
Model: 53PW (with Screen)

Unit Per Pc.

CODE	Model	Dimensions mm								Wgt
		ϕ d	H	h1	h2	t	W1	W2	W3	Kgs
87 23 53	53PW- 50	50	264	221	112	14	162	92	127	14
54	53PW- 65	65	264	221	122	14	162	85	132	15
55	53PW- 80	80	300	248	132	14	190	98	152	20
56	53PW-100	100	366	286	152	16	202	118	162	25
57	53PW-125	125	435	344	197	16	260	192	202	41
87 23 58	53PW-150	150	502	392	222	18	302	200	242	60
59	53PW-200	200	640	487	282	20	350	253	272	108
60	53PW-250	250	767	589	342	22	450	310	332	182

Name of Mfr. : Niikura Corporation

DIN PN10 type
Winteb Air Pipe Heads (Vent heads)



Type 1B (DN50-DN125)
Anti Splash water type
Recommended for fuel tanks

WIN2000 Type 1 Air Vent Head, including Screen (mesh 18) with DIN PN10 flange connection.

- Made of seawater resistant Aluminium DIN1725.
- Non corroding(If fitted according to fitting instructions).
- Maintenance free, smallest design available.
- Cost saving.
- High volume metric flow.
- Light weight = less fuel = less CO2 emission.

Available three types:
Type 1 - Standard
Type 1B - Smaller air inlet opening
Type 1B - Small flange connection

Approved by all major classification societies – ABS, BV, DNV, GL, Lloyd's, RINA, RMRS, CCS, and NK.

Please specify the type of air vent heads, flange size to be connected with the type of pipe head when ordering.

Model: WIN2000 Type 1 (with Screen)

Flow Rate & Air Speed

Model	Flow Rate at 0.25 bar (m^3/h)*	Flow Rate at 0.25 bar (m^3/h)**	Max.Inlet Air Speed (m/s)	Inlet air flow rate at max. inlet air speed (m^3/h)
W2T1-PN10-50	23	19	11	72
W2T1-PN10-65	34	33	9.5	11.5
W2T1-PN10-80	57	52	10	180
W2T1-PN10-100	102	78	8	216
W2T1-PN10-125	128	116	9.5	432
W2T1-PN10-150	204	188	10	665
W2T1-PN10-175	210	195	8.5	720
W2T1-PN10-200	340	273	10	1,080
W2T1-PN10-250	450	405	9.5	1,700
W2T1-PN10-300	775	705	15	3,780
W2T1-PN10-350	940	896	19	6,500
W2T1-PN10-400	1,250	1,095	20.5	8,100
W2T1-PN10-450	1,800	-	15.5	9,000

* values correspond with the WIN2000 type 1 without screen, flowrate is with water being pumped through the air pipe head

** values correspond with the WIN2000 type 1 with screen mesh 18, flowrate is with water being pumped through the air pipe head

Unit Per Pc.

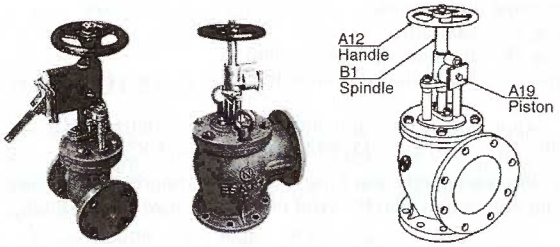
CODE	Model	Dimensions mm				Flange size			Wgt Kgs
		Φd	A	B	C	Ball Dia	O.D.	Pitch	Bolt Hole	
87 23 74	W2T1-PN10- 50	50	108	161	136	60	165	125	4x18	2.0
75	W2T1-PN10- 65	65	130	200	168	75	185	145	8x18	2.75
76	W2T1-PN10- 80	80	160	226	190	90	200	160	8x18	3.75
77	W2T1-PN10-100	100	195	226	226	105	220	180	8x18	6.0
65	W2T1-PN10-125	125	235	320	262	130	250	210	8x18	8.5
87 23 66	W2T1-PN10-150	150	275	372	312	155	285	240	8x22	12
67	W2T1-PN10-175	175	275	372	312	155	315	270	8x22	13
68	W2T1-PN10-200	200	340	470	385	200	340	295	8x22	19.5
69	W2T1-PN10-250	250	415	593	478	250	395	350	12x22	31
70	W2T1-PN10-300	300	560	741	595	325	445	400	12x22	63
87 23 71	W2T1-PN10-350	350	642	842	675	360	505	460	16x22	88
72	W2T1-PN10-400	400	725	950	760	400	565	515	12x26	114
73	W2T1-PN10-450	450	740	1,110	925	480	615	565	20x26	34

Name of Mfr. : World Wide Metric

Emergency Shut-off Valves

For marine use on tanks containing oil fuel, lub. oil and other flammable oil which are required to have valves closed from safe positions outside the space concerned.

Made of cast iron and available two types of style : Globe type and Angle type, and also available two types of operation: Pneumatic Control type and Wire Rope Pull type as shown below, for flange specification, JIS type.



Shut-off Operation;

The Pneumatic Control Type:
Only open the compressed air supply valve connected from air reservoir. Air reservoir should be kept certain pressure between 0.39 MPa and 0.89 MPa.

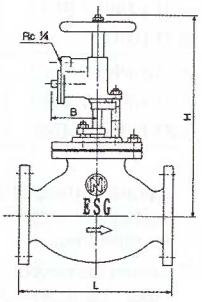
The Wire Rope Pull Type:
Only pull the lever connected with wire rope. For manual shut, these valves are able to close with handle wheel by rotating in clockwise direction.

Reset after Shut-off

1. Rotate clockwise until a head of piston is set in the grooving on spindle, and then rotate counterclockwise the handle to set valve in full open condition.
2. For small size valves (Max. 3") under the low level of liquid in tank (max. 5 mtr height), the valves can be reset with one touch by lifting the handle upward.

* Regarding Pneumatic Control Type, 1 or 2 should be applied after air supply valve is closed.

JIS Flanged End Globe Type



JIS 5K

***Shut-off Operation: Pneumatic Control Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 01	ESG- 25-PC	120	265	82	7
02	ESG- 40-PC	160	270	82	11
03	ESG- 50-PC	210	270	82	15
04	ESG- 65-PC	250	320	82	20
05	ESG- 80-PC	280	325	82	25
87 45 06	ESG-100-PC	340	410	88	35
07	ESG-125-PC	410	430	88	45
08	ESG-150-PC	480	460	88	65
09	ESG-200-PC	570	615	95	100
10	ESG-250-PC	740	655	95	135

Name of Mfr.: Niikura Corporation

*** Shut-off Operation : Wire Rope Pull Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 11	ESG- 25-WR	120	265	82	7
12	ESG- 40-WR	160	270	82	11
13	ESG- 50-WR	210	270	82	15
14	ESG- 65-WR	250	320	82	20
15	ESG- 80-WR	280	325	82	25
87 45 16	ESG-100-WR	340	410	88	35
17	ESG-125-WR	410	430	88	45
18	ESG-150-WR	480	460	88	65
19	ESG-200-WR	570	615	95	100
20	ESG-250-WR	740	655	95	135

Name of Mfr.: Niikura Corporation

JIS 10K

***Shut-off Operation: Pneumatic Control Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 41	ESG- 25-PC	130	265	82	9
42	ESG- 40-PC	170	270	82	12
43	ESG- 50-PC	220	270	82	16.5
44	ESG- 65-PC	270	320	82	22
45	ESG- 80-PC	300	325	82	27
87 45 46	ESG-100-PC	350	410	88	41
47	ESG-125-PC	420	430	88	58
48	ESG-150-PC	490	460	88	68
49	ESG-200-PC	570	615	95	110
50	ESG-250-PC	740	655	95	150

Name of Mfr.: Niikura Corporation

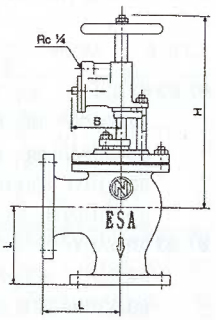
*** Shut-off Operation : Wire Rope Pull Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 51	ESG- 25-WR	130	265	85	9
52	ESG- 40-WR	170	270	85	12
53	ESG- 50-WR	220	270	85	16.5
54	ESG- 65-WR	270	320	85	22
55	ESG- 80-WR	300	325	85	27

Name of Mfr.: Niikura Corporation

JIS Flanged End Angle Type



JIS 5K

***Shut-off Operation: Pneumatic Control Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 21	ESA- 25-PC	65	245	82	7
22	ESA- 40-PC	80	240	82	10
23	ESA- 50-PC	100	240	82	14
24	ESA- 65-PC	115	280	82	18
25	ESA- 80-PC	130	280	82	22
87 45 26	ESA-100-PC	150	355	88	30
27	ESA-125-PC	170	370	88	42
28	ESA-150-PC	190	385	88	50
29	ESA-200-PC	220	535	95	85
30	ESA-250-PC	275	560	95	115

Name of Mfr.: Niikura Corporation

*** Shut-off Operation : Wire Rope Pull Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 31	ESG- 25-WR	65	245	82	7
32	ESG- 40-WR	80	240	82	10
33	ESG- 50-WR	100	240	82	14
34	ESG- 65-WR	115	280	82	18
35	ESG- 80-WR	130	280	82	22
87 45 36	ESG-100-WR	150	355	88	30
37	ESG-125-WR	170	370	88	42
38	ESG-150-WR	190	385	88	50
39	ESG-200-WR	220	535	95	85
40	ESG-250-WR	275	560	95	115

Name of Mfr.: Niikura Corporation

JIS 10K

***Shut-off Operation: Pneumatic Control Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 56	ESA- 25-PC	85	245	82	9
57	ESA- 40-PC	100	240	82	10
58	ESA- 50-PC	120	240	82	13
59	ESA- 65-PC	130	280	82	19
60	ESA- 80-PC	140	280	82	23.5
87 45 61	ESA-100-PC	160	355	88	32.5
62	ESA-125-PC	180	370	88	49

Name of Mfr.: Niikura Corporation

*** Shut-off Operation : Wire Rope Pull Type**

Unit Per Pc.

CODE	Type	Size mm			Weight kgs
		L	H	B	
87 45 63	ESA- 25-WR	85	245	85	9
64	ESA- 40-WR	100	240	85	10
65	ESA- 50-WR	120	240	85	13
66	ESA- 65-WR	130	280	85	19
67	ESA- 80-WR	140	280	85	23.5

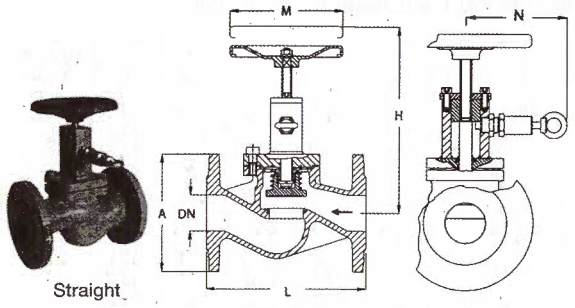
Name of Mfr.: Niikura Corporation

Quick-Closing Valves (DIN)

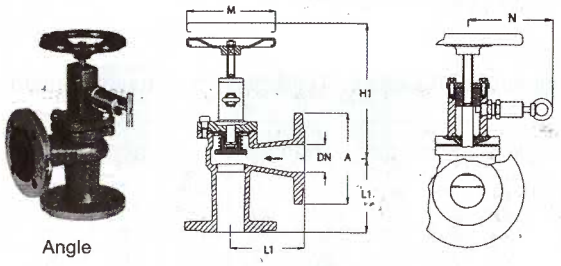
Ductile Cast Iron for Marine Service

Pressure Rating PN 16/10

A quick closing valves for mechanical, hydraulic or pneumatic transmission. A reliable safety valve, providing for a remote shut-off from an accessible location. These valves comply with the requirements of the classification societies. Valves are mainly used on board ships and are suitable for fuel, oil etc.



Straight



Angle

Pressure and Temperature Range

Size	Max. Press. At 150°C	Flange Rate
DN 15 t/m 65	4 bar	PN16
DN 80 t/m 150	2 bar	PN16
DN 200	2 bar	PN10

Material Specification

Component	Material	EN and/or DIN
Body	Ductile Cast Iron	GJS-400-18-LT (GGG-40.3)
Bonnet	Ductile Cast Iron	GJS-400-18-LT (GGG-40.3)
Disc	Stainless Steel	-(X15Cr13)
Seat	Stainless Steel	-(X15Cr13)
Stem	Stainless Steel	-(X15Cr13)
Gland Packing (O-ring)	FPM (Viton)	
Cylinder	Brass	
Spring	Spring Steel	
Retainer Block	Brass	
Handwheel	Steel	

How to order: CODE

Quick-closing valve (DIN), ductile cast iron, pressure rating PN 10, TYPE of OPERATION, STRAIGHT or ANGLE, SIZE DN

Mechanical Transmission – Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L	H	M	N	
87 46 01	15	95	130	188	125	142	5
02	20	105	150	188	125	142	6
03	25	115	160	200	125	142	6.5
04	32	140	180	200	125	142	9.5
05	40	150	200	232	150	147	12.5
87 46 06	50	165	230	234	150	147	17
07	65	185	290	277	150	157	28
08	80	200	310	293	150	157	31
09	100	220	350	350	200	162	45
10	125	250	400	383	200	162	66

Econosto Model No. : 100/247M

Mechanical Transmission – Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L_1	H_1	M	N	
87 46 11	15	95	90	180	125	142	5
12	20	105	95	180	125	142	6
13	25	115	100	185	125	142	7.5
14	32	140	105	185	125	142	9
15	40	150	115	215	150	147	12
87 46 16	50	165	125	215	150	147	16
17	65	185	145	250	150	157	27
18	80	200	155	265	150	157	33
19	100	220	175	315	200	162	46
20	125	250	200	340	200	162	66

Econosto Model No. : 100/248M

Hydraulic or Pneumatic Transmission – Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L	H	M	N	
87 46 21	15	95	130	188	125	165	5
22	20	105	150	188	125	165	6
23	25	115	160	200	125	165	6.5
24	32	140	180	200	125	165	9.5
25	40	150	200	232	150	170	12.5
87 46 26	50	165	230	234	150	170	17
27	65	185	290	277	150	180	28
28	80	200	310	293	150	180	31
29	100	220	350	350	200	185	45
30	125	250	400	383	200	185	66

Econosto Model No. : 100/247HP

Hydraulic or Pneumatic Transmission – Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	L_1	H_1	M	N	
87 46 31	15	95	90	180	125	165	5
32	20	105	95	180	125	165	6
33	25	115	100	185	125	165	7.5
34	32	140	105	185	125	165	9
35	40	150	115	215	150	170	12
87 46 36	50	165	125	215	150	170	16
37	65	185	145	250	150	180	27
38	80	200	155	265	150	180	33
39	100	220	175	315	200	185	46
40	125	250	200	340	200	185	66

Econosto Model No. : 100/248HP

Hydraulic Transmission – Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	M	L	H	N	
87 46 45	150	285	250	480	475	190	74.5
46	200	340	250	600	552	190	105

Econosto Model No. : 100/247H

Hydraulic Transmission – Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	M	L_1	H_1	N	
87 46 47	150	285	250	225	420	190	74.5
48	200	340	250	275	485	190	105

Econosto Model No. : 100/248H

Pneumatic Transmission – Straight Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	M	L	H	N	
87 46 49	150	285	250	480	475	190	74.5
50	200	340	250	600	552	190	105

Econosto Model No. : 100/247P

Pneumatic Transmission – Angle Pattern

Unit Per Pc.

CODE	DN	Size mm					Weight Kgs
		A	M	L_1	H_1	N	
87 46 51	150	285	250	225	420	190	74.5
52	200	340	250	275	485	190	105

Econosto Model No. : 100/248P

Conversion Table (kgf - N)

kgf → N		N → kgf		kgf → N		N → kgf	
1	9.8066	1	0.1020	51	500.1	51	5.2006
2	19.613	2	0.2039	52	510.0	52	5.3025
3	29.420	3	0.3059	53	519.8	53	5.4045
4	39.227	4	0.4079	54	529.6	54	5.5065
5	49.033	5	0.5099	55	539.4	55	5.6084
6	58.840	6	0.6118	56	549.2	56	5.7104
7	68.647	7	0.7138	57	559.0	57	5.8124
8	78.453	8	0.8158	58	568.8	58	5.9144
9	88.260	9	0.9177	59	578.6	59	6.0163
10	98.066	10	1.0197	60	588.4	60	6.1183
11	107.87	11	1.1217	61	598.2	61	6.2203
12	117.68	12	1.2237	62	608.0	62	6.3222
13	127.49	13	1.3256	63	617.8	63	6.4242
14	137.29	14	1.4276	64	627.6	64	6.5262
15	147.10	15	1.5296	65	637.4	65	6.6282
16	156.91	16	1.6315	66	647.2	66	6.7301
17	166.71	17	1.7335	67	657.1	67	6.8321
18	176.52	18	1.8355	68	666.9	68	6.9341
19	186.33	19	1.9375	69	676.7	69	7.0360
20	196.13	20	2.0394	70	686.5	70	7.1380
21	205.94	21	2.1414	71	696.3	71	7.2400
22	215.75	22	2.2434	72	706.1	72	7.3420
23	225.55	23	2.3453	73	715.9	73	7.4439
24	235.36	24	2.4473	74	725.7	74	7.5459
25	245.17	25	2.5493	75	735.5	75	7.6479
26	254.97	26	2.6513	76	745.3	76	7.7498
27	264.78	27	2.7532	77	755.1	77	7.8518
28	274.59	28	2.8552	78	764.9	78	7.9538
29	284.39	29	2.9572	79	774.7	79	8.0558
30	294.20	30	3.0591	80	784.5	80	8.1577
31	304.01	31	3.1611	81	794.3	81	8.2597
32	313.81	32	3.2631	82	804.2	82	8.3617
33	323.62	33	3.3651	83	814.0	83	8.4636
34	333.43	34	3.4670	84	823.8	84	8.5656
35	343.23	35	3.5690	85	833.6	85	8.6676
36	353.04	36	3.6710	86	843.4	86	8.7696
37	362.85	37	3.7729	87	853.2	87	8.8715
38	372.65	38	3.8749	88	863.0	88	8.9735
39	382.46	39	3.9769	89	872.8	89	9.0755
40	392.27	40	4.0789	90	882.6	90	9.1774
41	402.07	41	4.1808	91	892.4	91	9.2794
42	411.88	42	4.2828	92	902.2	92	9.3814
43	421.69	43	4.3848	93	912.0	93	9.4834
44	431.49	44	4.4868	94	921.8	94	9.5853
45	441.30	45	4.5887	95	931.6	95	9.6873
46	451.11	46	4.6907	96	941.4	96	9.7893
47	460.91	47	4.7927	97	951.3	97	9.8912
48	470.72	48	4.8946	98	961.1	98	9.9932
49	480.53	49	4.9966	99	970.9	99	10.095
50	490.33	50	5.0986	100	980.7	100	10.197

11

WELFARE ITEMS

Sporting Goods P. 11-1~4	Sporting Wear P. 11-4	Bathroom Scales P. 11-4	Games P. 11-4~5
Smoking Goods P. 11-5	Sunglasses P. 11-6	Cosmetics P. 11-6	Medicine/Skin Guards P. 11-6
Sanitary Items P. 11-6~7	Shoe Goods P. 11-7	Radio Cassette Players /Digital Media P. 11-7 ~ 8	Marine TV/Radio Antenna System/TV /Videos P. 11-8 ~ 10
Films P. 11-11	Christmas Accessories P. 11-12	Wear P. 11-12 ~ 13	Sandals P. 11-13

Indoor Spinning Bikes

The indoor spinning bike is designed to make you feel as if you are cycling outdoors.

It can simulate different terrains for a good cardio workout, which involves interval training with climbs and sprints. The flywheel simulates momentum.

11 01 01	Bicycle stationary, indoor use	Set

Stationary Bicycles with Ergometer

A stationary bike with an ergometer to measure the results of the workout. Designed for High-performance and heavy use. It has several challenging programs for a full workout. The seat is vertically and horizontally adjustable and the wheels make it easy to transport.

Please specify the power source voltage when ordering.

11 01 02	Bicycle stationary, with ergometer	Set

Treadmills

The treadmill provides a powerful speed and allows variation in intensity of the exercise at any speed. The challenging programs will help you meet your goal. Available in "Foldable" and "Non-Foldable" type.

Foldable Treadmill

Non-Foldable Treadmill

Foldable Treadmill is "foldable" to save space in your exercise room, whereas Non-foldable treadmill has oversized frame which provides strength, rigidity and endurance during the exercise.

Unit Per Set

CODE	Type	Voltage	CODE	Type	Voltage
11 01 03 **04**	Foldable	AC 110V AC 220V	**11 01 06** **07**	Non-Foldable	AC 110V AC 220V

Cross Trainers

The cross trainer or elliptical trainer provides an efficient training. It combines the advantages of walking, running, cross training, stair climbing and push ups in one machine, at the same time.

Cross Trainer

Elliptical Trainer

Elliptical Trainer has "Frontweel" and "Backwheel", designed for an intensive and realistic workout, so please specify "Front/Back wheel", the power source voltage when ordering.

11 01 08	Cross Trainer	Set
09	Elliptical Trainer	"

Rowing Exercisers

The rowing machine incorporates many muscle groups at once, creating a great workout.

• Magnetic rower

The magnetic rower uses a maintenance-free magnetic break system to create resistance. The magnets are incorporated into the flywheel. They adjust resistance in calibration with your pull and are set.

• Air rower

The air rower has a flywheel that creates air resistance as you pull against it and can be calibrated to increase or decrease resistance.

The air resistance also goes against the force being applied, therefore, the faster you pull, the harder the resistance. The design simulates rowing in water, with a fluent and natural motion.

Please specify "Magnetic" or "Air" resistance rower, the power source voltage when ordering.

11 01 34	Rowing exerciser, indoor use, Magnetic rower	Set
10	Rowing exerciser, indoor use, Air rower	"

Multi Gyms

The multi station is a very compact and versatile machine that offers plenty of exercises to train the most important muscle groups: the chest, arms, back and legs. The smart and efficient design makes it easy to switch between exercises and lets you accomplish a divers training, without the use of many different machines.

11 01 11	Multi Gym Station, indoor use	Set

Smith Machine Sets

The Smith machine is a training machine used for weight training.

It consists of a barbell that is fixed within steel rails allowing vertical movement. The machine can be used for a wide range of exercises however it is most commonly used to perform "Smith machine squats"

11 01 46	Smith Machine Set	Set

Chin & Dipping Multi Stands

Designed to build and tone your triceps, chest, shoulders and core to develop six pack abs. Thick comfortable back pad, arm supports and rubber hand grips reduce fatigue and discomfort allowing you keep working on your upper body and abs.

11 01 47	Chin & Dipping Multi Stand	Set

Weight Sets, etc.

There are many kinds of body building equipment available such as barbells, dumbbells, bench presses, and barbell stands.

Barbell Set

Barbell Discs

Barbell Bar

Spine Press Bench

Dumbbell Set

Gym Rack

When ordering Barbell or Dumbbell, please specify the weight composition and shaft weight.

11 01 21	Barbell bar	Pc.
25	Barbell disc, cast iron, 1.25 kgs (2's)	Pr.
33	Barbell disc, cast iron, 2.5 kgs (2's)	Pr.
36	Barbell disc, cast iron, 5 kgs (2's)	Pr.
37	Barbell disc, cast iron, 10 kgs (2's)	Pr.
38	Barbell disc, cast iron, 15 kgs (2's)	Pr.
39	Barbell disc, cast iron, 20 kgs (2's)	Pr.
22	Dumbbell set, WEIGHT----- kgs	Set
24	Spine press bench	Set
26	Gym rack	Pc.

7TH 11

Benches

Incline/Decline Bench

A bench that can incline or decline into different positions, which allows you to perform dumbbell or barbell exercises, while supporting the body.

Abdominal Bench

The abdominal bench is a workout bench that makes it easier to perform abdominal exercises. It can incline and decline for a full abdominal workout.

11 01 12	Incline/Decline Bench	Set
13	Abdominal Bench	"

Puzzle Exercise Protection Mats

The puzzle exercise mat creates a comfortable surface for workouts and exercise equipment while protecting your floors.

Dense EVA foam absorbs impact and noise during workouts and provides a soft surface for exercises like Yoga and push-ups.

Lightweight puzzle pieces connect quickly and easily, and can be disassembled just as simply for quick storage.

<Approximate Size>
60 × 60 × 1.2cm

11 01 48	Puzzle Exercise Protection Mat	Pc.

Exercise Mats

Training mat is for use in stretching, Yoga, and variety of core trainings.

11 01 14	Exercise mat	Pc.

Weight Lifting Belts

Weight lifting belt provides superior back and abdominal support during weight training.

< Approximate Size >
S : 61-81 cm
M : 74-94 cm
L : 86-106 cm

Please specify the size when ordering.

11 01 15	Weight Lifting Belt, Size ----	Pc.

Exercise Balls

Made of soft elastic filled with air, and suitable for balancing training, core body training – abdominal muscles and buck muscles, and more.

Standard Sizes available in OD:
55 cm/65 cm/75 cm/90 cm

Please specify the ball size when ordering.

11 01 16	Exercise Ball	Pc.

Medicine Balls

A medicine ball (also known as an exercise ball) is soft rubber weighted ball used for strength training

It enhances your daily exercises, and usually available for 1 – 10 kgs.

Pease specify the ball weight when ordering.

11 01 49	Medicine Ball, _____ Kgs	Pc.

Push-Up Bars

Supporting your push-up exercises, increase chest, shoulder, and triceps strength with push-up bars.

High impact plastic with non-slip end caps for increased stability, and foam handgrips for improved comfort.

11 01 17	Push-Up Bar	Prs

Exercise Wheels

Small sturdy wheel with a rod traversing the center that serves as the handles.

Assist with core-strengthening exercises, such as highest-rated abdominal exercise. Careful technique is required to avoid muscle strain or injury.

11 01 18	Exercise Wheel	Pc.

Hand Grips

Basic and quality pair of handgrips, great as a starter set to train hand grip balance. Durable chrome steel springs are for a long useful life.

Grip strength is available from 15 kgs to approx. 70 kgs. Please specify the level of strength (kgs) when ordering.

11 01 19	Hand Grip, Strength __kgs	Pc.

Foam Rollers

Designed for stretching your body, increases blood flow for an accelerated muscle recovery before and after working out. It's also perfect for developing core stabilization, lower body balance, and stamina.

Water resist and light weighted. Please specify the size when ordering.

<Approximate Size>
Short : Dia 13.5 cm x Length 32 cm
Long : Dia 15 cm x Length 98 cm

11 01 70	Foam Roller	Pc.

Skipping Rope

Durable solid rubber rope with molded handles for Jump Rope workout.

Please specify the length of rope when ordering.

11 01 27	Skipping Rope	Pc.

Ankle/Wrist Weights

Ankle weights enable you to tone your glutes and thighs, wrist weights will tone your shoulder and arms.

Easy hook-and-loop closure for use.

Please specify the weight when ordering.

11 01 28	Ankle Weight, weight __ kgs	Prs.
29	Wrist Weight, weight __ kgs	"

Boxing Stands, etc.

The boxing stands hold the boxing bags firmly on the floor whilst the boxer trains on them. They are also used to hold speed balls and enable you to have boxing exercises. A punch bag, boxing gloves are also available.

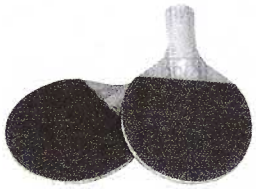
Punch bag: available in 100 cm (29 kgs), 120 cm (35 kgs), 150 cm (40 kgs), 180 cm (44 kgs).
Boxing gloves: available in 10, 12, 14, 16 once.

Punch Bag

Boxing Gloves

11 01 30	Boxing stand	Set
31	Punch bag, SIZE --- cm	Pc.
32	Boxing gloves, weight --- once	Prs.

Table Tennis Goods



Bat

Ball

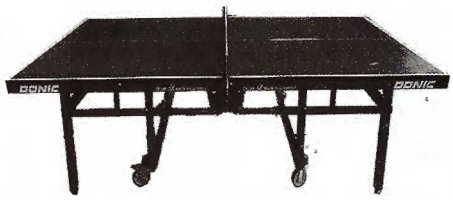


Table - Foldable

Table - Fixed

Supporters for net

Net

Please specify the "fixed" or "foldable" Table when ordering .

11 01 40	Table for table tennis	Pc.
41	Net for table tennis	Pc.
42	Supporters for table tennis net	Pr.
43	Table tennis bat, rubber face, shake hand	Pc.
44	Table tennis bat, rubber face, penholder	Pc.
45	Table tennis ball	Doz

Jogging Shoes

Made of lightweight, nylon fabric with full support synthetic rubber soles.

11 01 50	Jogging shoes	25.0 cm	Pr.
51	"	25.5 cm	"
52	"	26.0 cm	"
53	"	26.5 cm	"
54	"	27.0 cm	"
11 01 55	Jogging shoes	27.5 cm	Pr.
56	"	28.0 cm	"

Exercise Shoes

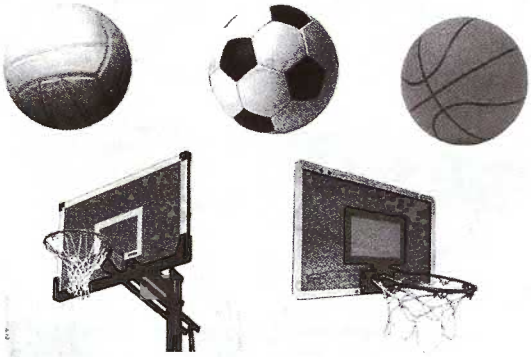
A wide variety of sneakers are available with the materials and design depending upon the sport that they are used for.

When ordering, specify what kind of sneakers you require along with any necessary details about the brand name and type.

11 01 60	Exercise shoes	25.0 cm (Kind of Sports)	Pr.
61	"	25.5 cm "	"
62	"	26.0 cm "	"
63	"	26.5 cm "	"
64	"	27.0 cm "	"
11 01 65	Exercise shoes	27.5 cm (Kind of Sports)	Pr.
66	"	28.0 cm "	"

Playing Balls

Balls are available for a variety of sports, the most popular of which are volley balls, soccer balls, and basket balls. When ordering, specify whether you require a leather or rubber made ball.



Basketball hoop, Portable type

Basketball hoop, Wall mount type

11 01 80	Volley ball, rubber	Pc.
81	" leather	"
11 01 82	Soccer ball, rubber	Pc.
83	" leather	"
11 01 84	Basket ball, rubber	Pc.
85	" leather	"
86	Basketball hoop, portable type	Set
87	" wall mount type	"

Fishing Tackles

Various equipment for fishing.

11 01 88	Fishing rod, with further details	Pc.
89	Fishing reel, with further details	"
90	Fishing line, with further details	Mtr
91	Fishing hook, with further details	Pc.
92	Fishing sinker, with further details	"
11 01 93	Fishing float, with further details	Pc.
94	Fishing lure, with further details	"

Sporting Wear

Various types of sports wear are available. The most common types are listed below. Be sure to specify size and colour when ordering.

Cotton Sweat Suits

Unit Per Pr.

CODE	Item	CODE	Item
With Hood		**Without Hood**	
11 02 01	Grey M	**11 02 06**	Grey M
02	" L	**07**	" L
03	" LL	**08**	" LL

Jogging Pants Coloured

Unit Per Pr.

CODE	Size	CODE	Size
11 02 11	M	**11 02 13**	LL
12	L		

Cotton Socks

Unit Per Pr.

CODE	Size	CODE	Size
11 02 30	White	**11 02 31**	Coloured

Swimming Trunks

Unit Per Pr.

CODE	Size	CODE	Size
11 02 40	M	**11 02 42**	LL
41	L		

Bathroom Scales

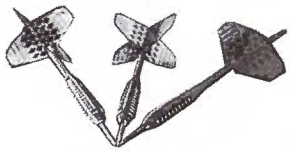
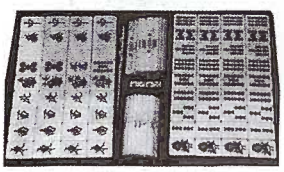
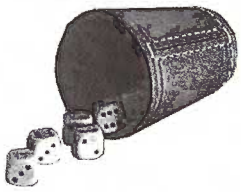
Spring balanced bathroom scales with maximum weight registration of 100 kgs or 130 kgs. Enameled steel case. Manual adjustment.

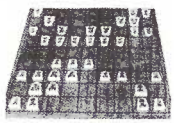
Unit Per Pc.

Analog Type		Digital Type	
CODE	Capacity kgs	CODE	Capacity kgs
11 02 70	0 - 100	**11 02 75**	0 - 100
71	0 - 130	**76**	0 - 130

Games

7TH 11



11 04 01	Card, Plastic	Set
02	Cribbage and cards	"
11 04 05	Chess & checker game	Set
06	Chess board	Pc.
07	Chessmen	Set
11 04 10	Dartboard with arrow 6's	Set
11	Darts 3's	"
11 04 15	Domino game	Set
16	Backgammon	"
17	Mahjong Set	"
20	Monopoly game	"
25	Scrabble game	"
11 04 26	Sho-gi, Japanese Chess	Set
27	"Go" game	"
11 04 28	Othello Game (Reversi)	Set
11 04 29	Rubik's Cube	Pc.
11 04 30	Dice with leather cup	Set
11 04 31	Bingo Books Assorted	Set
32	Bingo random number generator	Pc.
11 04 39	Game, Hard ware (name of game)	Pc.
11 04 40	Game soft (with name of game)	Pc.

Billiard Games

Sure to complement any game room. The wool blend on top is designed to resist wear and deliver a smooth, consistent roll.

Table set is including two billiard cues, a set of billiard balls, a brush, a triangle rack, and chalk.

Billiard Table

Cues

Billiard Balls

11 04 41	Billiard Table Set	Set
42	Cues for Billiard	Pc.
43	Balls for Billiard	Set

Table Soccer

Table Soccer game at indoor & outdoor. Play with 2-4 people. Balls are included and simple to assemble.

11 04 45	Table Soccer Game	Set

Electric Massage Chairs

The electric full body massage chair equipped with internal electronic motors and gears. With an attached controller, you can choose variety of the type, location, or intensity of massage. Reclining function is also equipped and it is automatic.

11 04 46	Electric Massage Chair, 110V	Set
11 04 47	Electric Massage Chair, 220V	"

Smoker's Sets

Smoking Pipes

Brier, Straight

Brier, Curved

Butane Gas

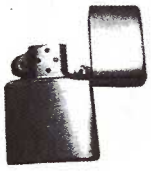
Brier, Two-way

Brier, Corn

Smoking Pipe Cleaner

Cigarette Lighters

Oneway Use

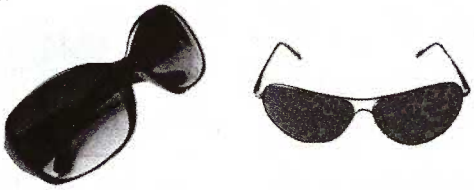

Windproof

Lighter Flint

11 05 01	Smoking pipe, brier, straight	Pc.
02	" , curved	"
03	" , two-way	"
04	" , corn	"
06	Smoking pipe cleaner 50's / Pkt	Pkt
11 05 10	Cigarette lighter, oneway use	Pc.
11	" , windproof	"
15	Butane gas for cigarette lighter 78 grm	Tin
16	Butane gas Ronson's 30 grm	"
20	Fuel for cigarette lighter 130 ml	Btl
11 05 22	Flint for cigarette lighter 5's / pkt	Pkt

Sunglasses

Various types of sunglasses are available. When ordering, please specify the material, frame shape and lens colour.



11 05 50	Sunglasses, plastic frame (With further details)	Pr.
11 05 51	Sunglasses, metal frame (With further details)	"

Cosmetics

AXE
AXE
AXE

11 09 17	Tooth paste Colgate 75 grm	Tub
20	Tooth paste Colgate 198 grm	"
22	Tooth paste100 grm	"
21	Tooth paste 200 grm	"
11 09 25	Tooth brush bristle	Pc.
26	Tooth brush nylon	"
27	Tooth brush nylon hard	"

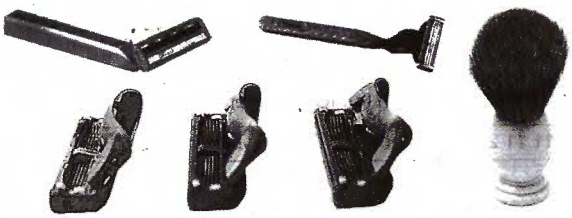
Electric Tooth Brushes

Electric powered tooth brush with oscillating, rotating and pulsating technology. Power toothbrushes reach deep between teeth and along the gum line for a thorough clean.

Available in Battery type, and rechargeable Battery type, so please specify the battery or rechargeable type (voltage 110 V or 220 V) when ordering.

11 09 28	Electric Tooth Brush	Set

Shavers, etc.



11 09 35	Shaver, hand , disposable 5's	Pkt
36	" , injector type	Pc.
40	Shaving blade, injector type	Pkt
45	Shaving brush	Pc.

Electric Shavers

Unit Per Set

CODE	Voltage	CODE	Voltage
11 09 37	AC 110V	11 09 38	AC 220V

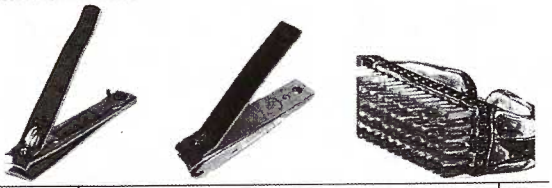
Moustache Beard Trimmers

Adjustable to 3, 6, 9, 12 and 15 mm hair cutting length.
Can operate 45 minutes continuously on batteries.
Weight: Approx.120g with batteries.

Unit Per Set

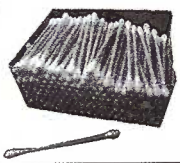
CODE	Voltage	CODE	Voltage
11 09 39	AC 110V	11 09 41	AC 220V

Nail Goods



11 09 50	Nail clipper regular	Pc.
51	Nail clipper with pared nail pocket	"
55	Nail brush, nylon	"

Cotton Buds



11 09 61	Cotton buds, 100 sticks	Pkt

Shoe Goods

11 09 70	Shoe polish liquid 75ml	Btl
71	Shoe polish solid 45grm	Tin
75	Shoe Laces	Pr.
77	Shoe polishing brush	Pc.

Radio Cassette Players

Portable or desk top type radio cassette tape recorder/ player with various kinds of audio devices like a CD or MD player by optional selection. Available various models and combination of audio devices from various manufacturers. Please specify manufacturer's name and model with power source voltage when ordering. Please ask for further information with brochure from your local supplier.

Handy

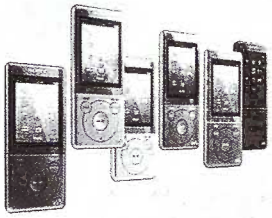
Portable

CODE	Type	Unit
11 11 11	Handy type radio cassette player	Set
12	Handy type cassette tape player	"
13	Handy type CD player	"
14	Handy type MD player	"
11 11 16	Portable radio cassette player	Set
17	Portable " with CD player	"
18	Portable " with CD/MD player	"

Digital Media Players

Portable media players which can serve as data storage devices. Storage capacity varies by model and containing musics, photos, videos, and games etc.

Please specify the type of media player, model number, storage capacity etc. when ordering.



11 11 19	Digital Media Player	Pc.

Tablet Computers (Touch Panel)

To help you achieve maximum usage across various demanding applications by "touch screen".

Designed for reading books and magazines, watching movies, playing games, and more (view larger) by various applications.

Those applications should be pre-installed or be able to download under the Internet access environment.

When ordering, please specify the maker name, model, size of storage(GB), size of display, and name of applications for pre-install.

11 11 20	Tablet Computer	Pc.

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11

Headphones / Earphones

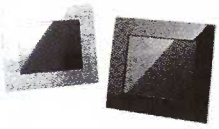
A pair of small loudspeaker which let a single user listens to an audio source privately.

Basic functions are as follows;
- Connect to Bluetooth-enabled device.
- Ergonomically designed to fit ears.
- Wireless.
- Noise Canceling technology.

More functions are available in various manufacturers. Please specify the functions or models when ordering.

11 11 24	Headphones, with further details	Set
11 11 25	Earphones, with further details	"

Digital Photo Frames



A picture frame that displays digital photos without the need of a computer or printer. You can create your digital photo gallery and have it displayed with its screen. This stylish digital frame lets you attach a memory card and start the photo slide show right away.

Please specify the flame size, kind of memory you use for. Ex) SD card, USB stick, Memory stick, etc when ordering.

Unit Per Set

CODE	Voltage	CODE	Voltage
11 11 21	AC 110 V	**11 11 22**	AC 220 V

IC Recorders
(Digital Voice Recorders)

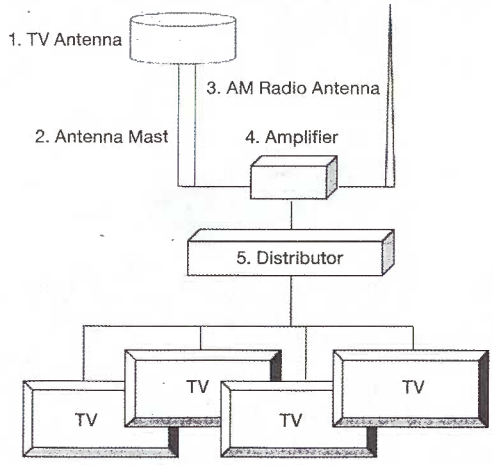
The IC recorder is recording data and storing it on the memory media, such as voice note at a meeting, an interview, music performance, any sounds and so on. And, the recording data files from IC recorder can be copied to your computer to store. Vice versa, MP3 files from your computer can be copied to the IC recorder to play them back.

Please note the computer operating system should be compatible between the IC recorder and your computer.

11 11 23	IC recorder (Digital voice recorder)	Pc.

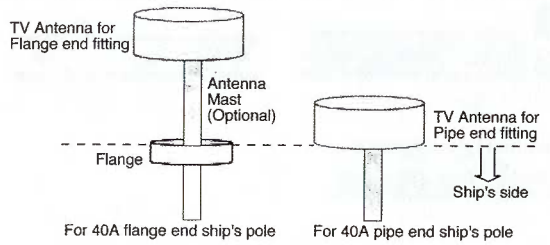
Marine TV / Radio Antenna Systems

Omni-directional marine TV and radio antenna system assembled by optional component. The system is introduced as reference purpose for ordering the marine TV antenna. If you need more practical information, please contact your local supplier to satisfy your curiosity.



1. TV Antenna

Specification	
Frequency Range (for FM and TV)	45 – 880 MHz
Frequency Range (for AM, FM and TV)	0.1 – 880 MHz
Supply Voltage	DC12V from Amp.
Average Gain	30 dB
Material	FRP redome



Unit Per Pc.

CODE	Fitting	Type of Radio Wave		
		AM	FM	TV
11 11 51	For 40A flange end ship's	-	O	O
52	pole	O	O	O
11 11 53	For 40A pipe end ship's	-	O	O
54	pole	O	O	O

Remark : Antenna mast is optional.

2. Antenna Mast

It is necessary to install the TV antenna at 40A flange end ship's pole. Made of stainless steel.

11 11 55	Mast for TV antenna joint, stainless steel	Pc.

3. AM Radio Antenna (Whip Type)

11 11 56	Antenna, AM radio, whip type, FRP, L:2.6 mtr	Pc.

4. Antenna Amplifier

Automatic gain control type with F-connector. Supply voltage is AC 110V or 220V, and average gain is 40dB.

4-band automatic gain control circuits
AM TV FM Amplifier

Frequency (MHz)	0.1-30 AM	45-108 VHF-L	170-222 VHF-H	470-880 UHF
Gain (dB)	40	40	40	40
A.G.C (dB)	40	40	40	40
Max. Out (dB)	110	105	105	105

Amplifier only

External distributor is optional order.

Unit Per Pc.

CODE	Input	Output	Suitable Antenna
11 11 71	F x 2	F x 1	111151/53 (FM/TV) and 111156 (AM)
11 11 72	F x 1	F x 1	111152 / 54 (AM/FM/TV)

Amplifier with Built-in Distributor

Unit Per Pc.

CODE	Input	Output	Suitable Antenna
11 11 73	F x 2	F x 6	111151/53 (FM/TV) and 111156 (AM)
11 11 74	F x 1	F x 6	111152 / 54 (AM/FM/TV)

5. Antenna Distributor

Frequency range: 0.1 – 1,350 MHz
Connector: F-type connector

Unit Per Pc.

CODE	Input	Output	Distribution Loss
11 11 76	1	2	IN – OUT 4 dB
77	1	4	IN – OUT 8 dB
78	1	6	IN – OUT 12 dB

Marine TV Antennas

Marine TV antenna systems are omnidirectional, receiving signals in a full 360 degree radius, and require no additional adjustment when properly installed.

Receiving wideband TV–AM–FM signals (Frequency Range 40 – 890 MHz), antenna brings in beautiful colour pictures on both VHF and UHF television and provides for FM stereo reception at sea.

All internal electronic components are environmentally protected with a corrosion resistant coating. Exterior is made of white ABS plastic, which requires no maintenance.

Supplied with a mount for installation. Please specify if you require a straight mount, for parallel mounting on deck or the roof of the wheel house, or a bracket or mast mount, for mounting on a mast or a wall.

Also specify how many television units will be used with the antenna so the dealer can determine if a signal amplifier or booster is necessary.

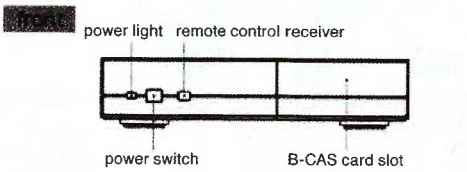
Specification

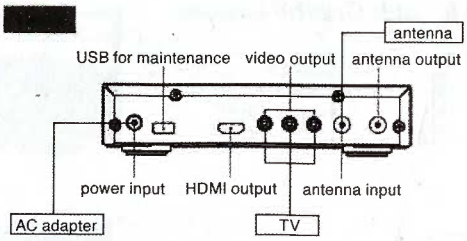
Frequency Range	40 - 890 MHz.
Average Gain	20 dB
Supply Voltage	AC 110 / 220 Volt

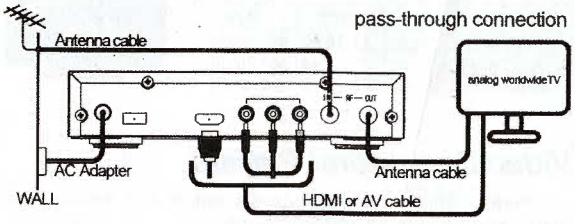
11 12 05	Marine TV antenna supply voltage AC 110/220V with assembly	Set

Smart Digital Tuners™ Worldwide

A worldwide digital terrestrial TV (DTT) receiver for ocean going ships. Designed to tune-in to all approved DTT Broadcast Standards, such as, ATSC, DVB-T/T2, ISDB-T, ISDB-Tb, and DTMB. This enables viewing of terrestrial digital broadcasts, on ships in port or navigating along a coastline, simply by connecting it for ships to an existing TV and antenna.







Connection diagram

7TH 11

Digital Terrestrial TV Broadcasting Standards by region

DVB-T/T2	Europe, Australia, Taiwan, Singapore, UAE etc.
ATSC	USA, Korea etc.
ISDB-T	Japan
ISDB-Tb	South America etc.
DTMB	China, Hong Kong etc.

* In order to receive terrestrial digital broadcasts, it is necessary to have the corresponding TV antenna.
* Only available in countries with DTT broadcast service, and even in countries where DTT broadcasting has been started, it may be impossible to view digital TV if the current location (anchor point) is distant from the broadcasting station, or if it is impossible to obtain signal strength sufficient for TV viewing at unfavorable locations such as those where noise has an effect on TV signals, so provision of service is subject to the signal conditions.

Specifications

Model	KST-1000-W
Supported DTT Standards	ATSC, DVB-T/T2, ISDB-T, ISDB-Tb, DTMB
Ports	DC Jack, HDMI output, RCA video output, Antenna input/output(RF pass-through output), USB 2.0(for maintenance)
Content formats	Video: H.264, MPEG1, MPEG2, MPEG4 Audio: MPEG audio
Output Resolution	Selectable DTV Output Resolution (720p/1,080i/1,080p) *when using HDMI Cable
Accessories	AC Adapter, AV Cable(RCA), Remote control, Foot plates, B-CAS card(for Japan)
AC adaptor	100-240V, 50/60Hz
Operating temperature	0-40°C
Operating humidity	20-80% No condensation
Dimension	190 x 42 x 115mm
Weight	510 g

11 12 06	Smart Digital Tuner Worldwide Model: KST-1000-W	Set

Name of Mfr: Kyokuyo Electric Co. Ltd.

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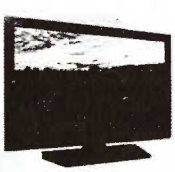
TV Sets

Please specify the size of the screen and colour system when ordering.

LCD (Liquid Crystal Display)



Unit Per Set

CODE	Size	CODE	Size
11 12 15	20" colour	**11 12 18**	37" colour
16	26" "	**19**	42" "
17	32" "	**20**	46" "

Plazma

Unit Per Set

CODE	Size	CODE	Size
11 12 28	37" colour	**11 12 43**	46" colour
29	42" colour	**44**	50" colour

Video Recorders/ Players

Please specify manufacturer's name and model with power source voltage when ordering.

Video Cassette Tape Recorder

Digital Video Disc Player

VTR & DVD Player

11 12 32	Video cassette tape recorder/player multi-system	Set
33	Digital video disc player	"
34	VTR & DVD player	"

Home Theater Systems

Soundbar & Subwoofer

The soundbar is a basically small and wide speaker which can be placed above or below the display device (TV, home theater screen and computer monitor etc.).

Multiple speakers are placed in the soundbar cabinet which helps to create s dynamic audio sounds. Subwoofer is also connected to create more dynamic bass sound.

Please specify the models when ordering.

11 12 39	Home Theater System, Soundbar & Subwoofer	Set

Portable DVD Players

Enjoy your movies anytime, anyplace.

This portable DVD player comes with a compact built-in rechargeable battery for long-lasting power.

Please specify the brand/model name, and "DVD Region Code" for use with your regional software when ordering

DVD Region Codes and Where They Are Used.

DVD Region Code	Geographic Region(s) Used
1	USA and Canada (not Mexico or Greenland)
2	Western Europe, the Middle East, South Africa, and Japan
3	Southeast Asia
4	Central and South America and Oceania
5	Africa, India, and countries of the Former Soviet Union
6	Mainland China

11 12 38	Portable DVD Player	Set

Digital Video Cameras

For recording, manipulating, and displaying moving images in digital format, and images can be presented on a LCD monitor or television. Available various models from various manufacturers, and colour systems will differ from country. Please ask for and model with colour system. Please contact with your local dealer about further details.

Unit Per Set

CODE	Description	CODE	Description
11 12 41	PAL	**11 12 42**	NTSC

Cassette Films for Digital Video Camera

Unit Per Pc.

PAL Systems		NTSC Systems	
CODE	Recording Time	CODE	Recording Time
11 13 11	60 min.	**11 13 15**	60 min.
12	80 min.	**16**	80 min.

Karaoke Singing Instruments

11 12 45	Karaoke DVD, with further details	Pc.
11 12 46	Karaoke singing microphone, plug and play system, with built in songs.	Pc.
47	Song chip for upgrading Karaoke singing microphone, WITH YOUR LANGUAGE to be specified.	"

Cassette Tapes

Audio Cassette Tape

Unit Per Pc.

CODE	Minute	CODE	Minute
Normal		**Chrome**	
11 12 50	60 Min	**11 12 55**	60 Min
51	90 Min	**56**	90 Min

Video Cassette Tape (VHS)

Unit Per Pc.

CODE	Record Time	CODE	Record Time
11 12 82	120 min.	**11 12 84**	240 min
83	180 min.		

Audio MD Disc (Mini Disc)

Unit Per Pkt.

CODE	74 min. Record Time	CODE	80 min. Record Time
11 13 01	1's/Pkt	**11 13 06**	1's/Pkt
02	3's/Pkt	**07**	3's/Pkt
03	5's/Pkt	**08**	5's/Pkt
04	10's/Pkt	**09**	10's/Pkt

Blank DVD-R and DVD-RW

An extremely large capacity digital versatile disc for storage video movies. Typically storage capacity is 4.7 GB per disc. DVD-R is for recording only, and DVD-RW is for rewritable.

Unit Per Pkt

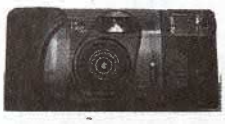
CODE	Q'ty/Pkt	CODE	Q'ty/Pkt
DVD-R (Recordable)		**DVD-RW (Rewritable)**	
47 26 91	5's	**47 26 96**	5's
92	10's	**97**	10's
93	20's	**99**	20's
94	50's	**47 27 00**	50's
98	100's		

Films

CODE	Description	Unit
11 14 01	Microchrome, ISO 100 24EX, 135-24	Pkt
02	" 36EX, 135-36	"
11 14 05	Colour, ISO 100 24EX, 135-24	Pkt
06	" 36EX, 135-36	"
11 14 20	Colour, ISO 400 24EX, 135-24	Pkt
21	" 36EX, 135-36	"

Films with Lens

Films with lens and recyclable frame. Available with flash type, also.



Unit Per Pc.

CODE	Films	CODE	Films
Without Flash		**With Flash**	
47 18 75	27 shots	**47 18 76**	27 shots
77	39 shots	**78**	39 shots

Christmas Decorations

11 18 01	Xmas tree with pot, plastic, 1.2 mtr height	Pc.
02	Xmas tree with stand, plastic, 1.5 mtr height	"
05	Decoration set for Xmas tree M	Set
06	Decoration set for Xmas tree L	"
07	Decoration set for Xmas tree deluxe	"
11	Illumination for Xmas tree AC 110V 50's	"
12	Illumination for Xmas tree AC 220V 40's	"
13	Illumination for Xmas tree AC 220V 30's	"
11 18 15	Interior decoration set for Xmas	Set
20	Poinsettia in pot fresh	Pc.
25	Artificial snow spray in tin	Tin
30	Napkin paper for Xmas 20's	Pkt
35	Paper table cloth for Xmas 120 x 180 cm	Sht
11 18 40	Balloon, rubber coloured	Pc.
43	Cracker	"
45	Candle, straight	"
46	Candle, twisted	"

Wears

Sporting Collared Shirt Coloured (Short Sleeve)

T-Shirt (Short Sleeve)

Short Pants

Open Collared Shirts Short Sleeve

Unit Per Pc.

CODE	Colour/Size	CODE	Colour/Size
11 20 01	White M	11 20 06	Khaki M
02	" L	07	" L
03	" LL	08	" LL

Sporting Collared Shirts Coloured

Unit Per Pc.

CODE	Colour/Size	CODE	Colour/Size
11 20 21	Short sleeve M	11 20 26	Long sleeve M
22	" L	27	" L
23	" LL	28	" LL

T-Shirts (Short Sleeve)

Unit Per Pc.

CODE	Colour/Size	CODE	Colour/Size
11 20 31	White M	11 20 36	Colour M
32	" L	37	" L
33	" LL	38	" LL

Short Pants

Unit Per Pr.

CODE	Colour/Size	CODE	Colour/Size
11 20 41	White M	11 20 46	Khaki M
42	" L	47	" L
43	" LL	48	" LL

Fleece Jackets and Trousers

Anti-static

Made of 100% Polyester Polar Fleece, with anti-pilling and anti-static property. Jacket: Adjustable bottom hem, and zipped side pockets with contrasting mesh lining. Weight: 280 grm. Trousers: Elasticated waistband with draw string, and elasticated hems at bottom. Two single welted side pockets. Weight: 280 grm.

Jacket

Unit Per Pc.

CODE	Size	CODE	Size
Black/Orange		Navy/Yellow	
11 20 51	S	11 20 58	S
52	M	59	M
53	L	60	L
54	XL	61	XL
55	2XL	62	2XL
11 20 56	3XL	11 20 63	3XL
57	4XL	64	4XL

Trousers

Unit Per Pr.

CODE	Size	CODE	Size
Black/Orange		Navy/Yellow	
11 20 65	S	11 20 72	S
66	M	73	M
67	L	74	L
68	XL	75	XL
69	2XL	76	2XL
11 20 70	3XL	11 20 77	3XL
71	4XL	78	4XL

Seamen's Sweaters

A military type round neck woolen sweater with patches on shoulders and elbows. Normally supplied in Navy Blue colour.

Unit Per Pc.

CODE	Neck Size	Height Cm	CODE	Neck Size	Height Cm
19 06 81	36	160	19 06 84	42	175
82	38	165	85	44	180
83	40	170	86	46	190

Underwears

Cotton Undershirts

Unit Per Pc.

CODE	Colour/Size	CODE	Colour/Size
Shortsleeve (Crew Neck)		**Sleeveless (Athletic Shirt)**	
11 21 01	White M	11 21 11	White M
02	White L	12	White L
03	White LL	13	White LL
11 21 06	Colour M	11 21 16	Colour M
07	Colour L	17	Colour L
08	Colour LL	18	Colour LL

Cotton Briefs

Unit Per Pr.

CODE	Colour/Size	CODE	Colour/Size
11 21 31	White M	11 21 36	Colour M
32	White L	37	Colour L
33	White LL	38	Colour LL

Cotton Trunks

Unit Per Pr.

CODE	Size	CODE	Size
11 21 41	Colour M	11 21 43	Colour LL
42	Colour L		

Socks Acryl/Cotton

Unit Per Pr.

CODE	Colour	CODE	Colour
11 21 51	White	11 21 52	Coloured

Sandals

Beach | Plastic | Plastic Slipper Type

Unit Per Pr.

CODE	Size	CODE	Size	CODE	Size
Beach		**Plastic**		**Plastic Slipper Type**	
11 22 01	M	11 22 06	M	11 22 11	M
02	L	07	L	12	L
03	LL	08	LL	13	LL

House Shoes (Slippers)

A soft and lightweight shoes for indoor use.

11 22 15	House shoes (Slippers)	Pr.

IMPA online Education

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Education remains a key priority for IMPA and the association has **introduced the most comprehensive education programme in its history.** The intention is that IMPA's online course will provide procurement and supply chain management professionals with the credibility and status that other professional disciplines enjoy.

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00 & 10

PROVISIONS & SLOP CHEST

Fresh Vegetables P.00 & 10-1 ~ 2	Frozen Vegetables P.00 & 10-2	Fresh Fruits/Frozen Fruits P.00 & 10-2 ~ 3
Fish (Common Fish) Fresh, Frozen P.00 & 10-3 ~ 4	Fish, Salted, Dried, Smoked P.00 & 10-4	Shell Fish/Molluscs P.00 & 10-4 ~ 5
Meat & Meat Products P.00 & 10-5	Bread/Cake/Pastry P.00 & 10-5 ~ 6	Eggs/Milk/Yogurt/Ice Cream P.00 & 10-6
Butter, Cheese P.00 & 10-6	Oil and Fat P.00 & 10-6 ~ 7	Tinned Vegetables P.00 & 10-7
Tinned Fruits P.00 & 10-7	Tinned fish P.00 & 10-7 ~ 8	Tinned Meat P.00 & 10-8
Beans and Peas, Dry P.00 & 10-8	Fruits and Nuts, Dry P.00 & 10-8 ~ 9	Jam and Marmalade P.00 & 10-9
Juice P.00 & 10-9 ~ 10	Syrup P.00 & 10-10	Coffee/Cocoa/Tea P.00 & 10-10 ~ 11
Pasta and Noodle P.00 & 10-11	Cereals P.00 & 10-11	Grains/Cake Mix P.00 & 10-11 ~ 12
Salt and Sugar P.00 & 10-12	Food Colour/Essence/Pudding/ Gelatin P.00 & 10-12	Biscuit/Cracker Snack/Wafer P.00 & 10-12 ~ 13
Sauce and Gravy/Sauce Mix P.00 & 10-13	Dressing and Vinegar P.00 & 10-13	Seasoning and Flavor/Bouillon P.00 & 10-13 ~ 14
Pickles (Olive, Caper) Western & Oriental P.00 & 10-14	Spices and Herbs P.00 & 10-14 ~ 15	Soup Powder P.00 & 10-15 ~ 16
Soy Bean Products & Oriental Speciality P.00 & 10-16	Meat: Beef/Veal P.00 & 10-16 ~ 17	Meat: Pork P.00 & 10-17
Meat: Mutton/Lamp P.00 & 10-17	Meat: Poultry P.00 & 10-17	Meat Products: Ham/Bacon/Sausage P.00 & 10-17
Tinned Meat P.00 & 10-17 ~ 18	Tinned Fish P.00 & 10-18	Fish Frozen P.00 & 10-18
Daily Products P.00 & 10-18 ~ 19	Grains & Miscellaneous P.00 & 10-19	Beer P.00 & 10-19
Japanese Beer P.00 & 10-19	Whisky P.00 & 10-19 ~ 20	Wine/Brandy/Sherry P.00 & 10-20
Spirits & Liqueur P.00 & 10-20 ~ 21	Japanese Spirits & Liqueur P.00 & 10-21	Soft Drinks P.00 & 10-21
Cigarettes & Tobaccoes P.00 & 10-21 ~ 22	Japanese Cigarettes &Tobaccoes P.00 & 10-22	

CODE	Description		Unit
Fresh Vegetables			
000101	ASPARAGUS GREEN FRESH		KGS
000103	BAMBOO SHOOT FRESH		KGS
000104	BASIL FRESH		KGS
000105	BEAN SPROUT FRESH		KGS
000106	BEAN SPROUT LARGE (SOYA) FRESH		KGS
000107	BEANS STRING FRESH		KGS
000108	BEETROOT TOPPED FRESH		KGS
000109	BROCCOLI FRESH		KGS
000110	BRUSSELS SPROUT FRESH		KGS
000111	BURDOCK (GOBO) FRESH		KGS
000114	CABBAGE CHINESE FRESH		KGS
000115	CABBAGE HARD WHITE FRESH		KGS
000116	CABBAGE RED FRESH		KGS
000117	CARROT TOPPED FRESH		KGS
000118	CAULIFLOWER TRIMMED FRESH		KGS
000119	CELERY TABLE FRESH		KGS
000120	CELERY JAPANESE (MITSUBA)	FRESH	KGS
000121	CHICORY FRESH		KGS
000122	CHIVES STEM FRESH		KGS
000123	CORN ON COB FRESH		KGS
000124	CUCUMBER FRESH		KGS
000126	DILL FRESH		BCH
000129	EGGPLANT FRESH		KGS
000130	ENDIVE FRESH		KGS
000131	ENDIVE BELGIAN FRESH		KGS
000132	FENNEL WEED FRESH		BCH
000134	GARLAND CHRYSANTHEMUM FRESH		KGS
000135	GARLIC DRY		KGS
000136	GINGER ROOT FRESH		KGS
000137	GINGER YOUNG (HAJIKAMI) FRESH		KGS
000140	LEEK FRESH		KGS
000141	LETTUCE ICEBERG FRESH		KGS
000143	LETTUCE SALAD FRESH		KGS
000144	LETTUCE SUNNY FRESH		KGS
000145	LOTUS ROOT FRESH		KGS
000146	MARJORAM FRESH		KGS
000147	MARROW JAPANESE TOGAN FRESH		KGS
000148	MINT LEAF FRESH		KGS
000149	MUSHROOM FRESH		KGS
000151	MUSHROOM FRESH STRAW	(ENOKI-TAKE)	KGS
000152	MUSHROOM FRESH DARK (SHIITAKE)		KGS
000154	OKRA LADY FINGER FRESH		KGS
000155	ONION SCALLION FRESH		KGS
000156	ONION SPRING FRESH		KGS
000157	ONION WHITE SMALL FRESH		KGS
000158	ONION YELLOW DRY		KGS
000161	PAC CHOI FRESH		KGS
000162	PARSLEY FRESH		KGS
000163	PEANUTS RAW		KGS
000164	PEAS GREEN FRESH		KGS
000165	PEPPER BELL GREEN FRESH		KGS
000166	PEPPER BELL RED FRESH		KGS
000167	PEPPER CHILLI GREEN FRESH		KGS
000168	PEPPER CHILLI RED FRESH		KGS
000169	POTATO SELECTED FRESH		KGS

CODE	Description		Unit
000170	POTATO LARGE BAKING RUSSET	FRESH	KGS
000171	POTATO SWEET FRESH		KGS
000172	PUMPKIN FRESH		KGS
000175	RADISH RED FRESH		KGS
000176	RADISH WHITE FRESH (DAIKON)		KGS
000177	ROSEMARY FRESH		KGS
000180	SAGE FRESH		KGS
000182	SPINACH FRESH		KGS
000183	SQUASH YELLOW		KGS
000185	TARRAGON (ESTRAGON) FRESH		KGS
000186	TARO (SATOIMO) FRESH		KGS
000187	TOMATO SELECTED FRESH		KGS
000188	TOMATO CHERRY RIPE FRESH		KGS
000190	TURNIP WHITE ROUND FRESH	(KABU)	KGS
000191	TURNIP YELLOW FRESH		KGS
000194	WATERCRESS FRESH		KGS
000196	YAM CHINESE (NAGAIMO) FRESH		KGS
000198	ZUCCINI (SQUASH) FRESH		KGS
Frozen Vegetables			
000301	ASPARAGUS SPEAR Q.F. 4-8KG/CTN		KGS
000305	BEANS BROAD Q.F.		KGS
000307	BEANS GREEN FRENCH CUT Q.F.	2-2.5LBSX12PKT	KGS
000308	BEANS LIMA FORDHOOK Q.F.	2-1/2LBX12S	KGS
000309	BEANS STRING WHOLE Q.F.		KGS
000311	BEANS YELLOW WAX Q.F.	2-2.5LBX12PKT	KGS
000315	BROCCOLI Q.F.		KGS
000316	BRUSSELS SPROUT Q.F.		KGS
000318	CARROT WHOLE Q.F.		KGS
000319	CARROT CHATEAU CUT Q.F.		KGS
000320	CARROT DICED Q.F.		KGS
000321	CAULIFLOWER Q.F.		KGS
000323	COLLARD GREENS Q.F. 3LBX12PKT		KGS
000324	CORN ON COB Q.F.		PCS
000326	CORN KERNEL Q.F. 1KGX10-12PKT		KGS
000330	HORSERADISH GRATED Q.F. 100GRM		PKT
000333	LOTUS ROOT Q.F.		KGS
000334	MIXED VEGETABLE Q.F.		KGS
000337	OKRA CUT Q.F. 2LBX12PKT		KGS
000338	ONION RING BREADED Q.F.	2-1/2LBX8PKT	KGS
000341	PEAS GREEN Q.F.		KGS
000342	PUMPKIN Q.F.		KGS
000345	RHUBARB Q.F.		KGS
000348	SPINACH Q.F.		KGS
000352	TARO (SATOIMO) Q.F.		KGS
000356	ZUCCHINI SLICED Q.F.	2-1/2LBX12PKT	KGS
000361	POTATO FRENCH FRY CRINKLE Q.F	1KGX10-12	KGS
Fresh Fruits / Frozen Fruits			
000501	APPLE TABLE 46'S-55'S		KGS
000502	APPLE TABLE 100'S		KGS
000503	APPLE TABLE 110'S-140'S		KGS
000507	APPLE TABLE GOLDEN DELICIOUS	32'S	KGS
000515	APRICOT FRESH		KGS
000517	AVOCADO FRESH		KGS
000519	BANANA HALF RIPE IMPORTED		KGS
000521	CHERRY FRESH		KGS
000526	GRAPE CAMPBELL FRESH		KGS

CODE	Description		Unit
000527	GRAPE DELAWARE FRESH		KGS
000528	GRAPE EMPEROR CALIFORNIA	FRESH	KGS
000530	GRAPE NEO-MUSCAT FRESH		KGS
000533	GRAPEFRUIT FRESH 36S-40S		KGS
000535	KIWIFRUIT FRESH 30'S-33'S		KGS
000538	LEMON FRESH 140-200'S		KGS
000540	LIME FRESH		KGS
000541	LYCHEE FRESH		KGS
000542	MANGO FRESH		KGS
000544	MELON SWEET CANTALOUPE FRESH		KGS
000545	MELON SWEET HONEYDEW FRESH		KGS
000546	MELON SWEET MUSK FRESH		KGS
000547	MELON SWEET PRINCE FRESH		KGS
000548	MELON WATER FRESH		KGS
000551	ORANGE MANDARIN FRESH		KGS
000554	ORANGE FRESH		KGS
000557	PEACH FRESH		KGS
000558	PAPAYA FRESH		KGS
000559	PEAR FRESH		KGS
000561	PEAR JAPANESE FRESH		KGS
000562	PERSIMMON FRESH		KGS
000563	PINEAPPLE FRESH		KGS
000564	PLUM FRESH		KGS
000565	STRAWBERRY FRESH		KGS
000581	APRICOT HALVES Q.F.		KGS
000584	BLUEBERRY Q.F.		KGS
000585	BOYSENBERRY Q.F.		KGS
000588	RASPBERRY Q.F.		KGS
000590	STRAWBERRY Q.F.		KGS
Fish (Common Fish) Fresh, Frozen			
000704	BONITO WHOLE FROZEN		KGS
000707	CODFISH HEADLESS FROZEN		KGS
000708	CODFISH FILLET FROZEN		KGS
000710	EEL WHOLE FROZEN		KGS
000713	FLOUNDER WHOLE FROZEN		KGS
000714	FLOUNDER FILLET FROZEN		KGS
000716	HADDOCK HEADLESS FROZEN		KGS
000717	HADDOCK FILLET FROZEN		KGS
000718	HAIR TAIL FROZEN		KGS
000719	HALIBUT HEADLESS FROZEN		KGS
000720	HALIBUT FILLET FROZEN		KGS
000721	HERRING FROZEN		KGS
000725	MACKEREL FROZEN		KGS
000728	MACKEREL HORSE FROZEN		KGS
000729	MACKEREL PIKE (SANMA) FROZEN		KGS
000733	MULLET WHOLE FROZEN		KGS
000738	PLAICE FILLET FROZEN		KGS
000740	POMFRET WHOLE FROZEN		KGS
000741	POND SMELT (WAKASAGI) FROZEN		KGS
000743	RAINBOW TROUT FROZEN		KGS
000744	RED FISH (GAROUPA) HEADLESS	FROZEN	KGS
000747	SALMON WHOLE FROZEN		KGS
000750	SARDINE FROZEN		KGS
000751	SEABASS WHOLE FROZEN		KGS
000752	SEABASS FILLET FROZEN		KGS
000753	SNAPPER RED SMALL FROZEN		KGS

CODE	Description		Unit
000754	SNAPPER RED LARGE FROZEN		KGS
000758	SOLE FISH FROZEN		KGS
000763	SWORD FISH FROZEN		KGS
000769	TUNA FISH FILLET FROZEN		KGS
000781	YELLOW FISH FROZEN		KGS
000782	YELLOW TAIL (BURI) FROZEN		KGS
Fish, Salted, Dried, Smoked			
000901	ABALONE DRIED		KGS
000902	ANCHOVY SALTED		KGS
000905	CODFISH DRIED		KGS
000908	CODFISH SMOKED		KGS
000910	COD ROE SALTED (MENTAIKO)		KGS
000912	COMPOY (SCALLOP) DRIED		KGS
000917	EEL SMOKED OPEN BONELESS	VACUUM PACKED	KGS
000921	HADDOCK FILLET SMOKED		KGS
000923	HERRING KIPPERED		KGS
000925	JELLYFISH SALTED (SHIOKURAGE)		KGS
000928	MACKEREL DRIED		KGS
000929	MACKEREL SALTED		KGS
000930	MACKEREL HORSE DRIED		KGS
000931	MACKEREL PIKE (SANMA) DRIED		KGS
000934	POLLACK DRIED SALTED BONELESS		KGS
000936	RAINBOW TROUT SMOKED		KGS
000938	SALMON WHOLE SMOKED		KGS
000939	SALMON RED HALFSIDE SMOKED		KGS
000940	SALMON ROE SALTED (IKURA)		KGS
000943	DRIED FISH FOR SOUP	(IRIKO/NIBOSHI)	KGS
000945	SARDINE DRIED SALTED	(MARUBOSHI)	KGS
000946	SARDINE DRIED SALTED (MEZASHI)		KGS
000948	SEA CUCUMBER (TREPANG) DRIED		KGS
000949	SHARK'S FIN DRIED		KGS
000950	SHRIMP SALTED & FERMENTED		KGS
000951	SHRIMP PEELED DRIED		KGS
000952	SQUID DRIED		KGS
000953	SQUID SALTED & FERMENTED		KGS
000954	TINY CRAPED DRIED FISH	(SHIRASUBOSHI)	KGS
000955	TROUT SALTED (SHIOMASU)		KGS
000971	AGAR-AGAR (TOKOROTEN)		PKT
000972	LAVER DRIED SHEET		PCS
000973	LAVER FLAVOURED (AJITSUKENORI)		PKT
000974	SEA TANGLE DRIED FOR SOUP	(DASHI-KOBU)	KGS
000975	SEA WEED DRIED (HOSHI WAKAME)		KGS
000976	SEA WEED SALTED (SHIO WAKAME)		KGS
000982	FISH PASTE FRIED (SATSUMAAGE)		PCS
000984	FISH PASTE STEAMED (KAMABOKO)		PCS
000985	FISH PASTE STEAMED KAMABOKO	CRAB FLAVOR	KGS
000991	BONITO DRIED FLAKE	(HANAKATSUO) 5GX5S	PKT
Shell Fish / Molluscs			
001102	BLOODY CLAM (AKAGAI) W/O SHELL	FROZEN	KGS
001105	CLAM WITH SHELL FROZEN		KGS
001109	COCKLE (TORIGAI) W/O SHELL	FROZEN	KGS
001112	MUSSEL WITH SHELL		KGS
001115	OYSTER W/O SHELL FROZEN		KGS
001117	SCALLOP FROZEN		KGS
001121	CRAB WHOLE FROZEN		KGS
001122	CRAB LEG KING FROZEN		KGS

CODE	Description		Unit
001127	LOBSTER WHOLE FROZEN		KGS
001128	LOBSTER TAIL FROZEN		KGS
001131	PRAWN WHOLE FROZEN		KGS
001136	SHRIMP HEADLESS FROZEN		KGS
001151	CALAMARY FROZEN		KGS
001152	CUTTLE-FISH FROZEN		KGS
001153	INK FISH FROZEN		KGS
001161	FROG LEG FROZEN		KGS
Meat & Meat Products			
001302	BEEF BRISKET CORNED		KGS
001323	PORK LEG CORNED FROZEN		KGS
001326	PORK SHOULDER FROZEN		KGS
001330	PORK BELLY SALTED FROZEN		KGS
001331	PORK FEET FROZEN		KGS
001335	PORK BLOOD FROZEN		KGS
001336	PORK HEART FROZEN		KGS
001337	PORK INTESTINE CLEANED FROZEN		KGS
001340	PORK TAIL FROZEN		KGS
001341	PORK TRIPE FROZEN		KGS
001352	LAMB KIDNEY FROZEN		KGS
001353	LAMB LIVER FROZEN		KGS
001354	LAMB SWEETBREAD FROZEN		KGS
001361	CHICKEN SPRING EVISCERATED	FROZEN	KGS
001363	CHICKEN GIZZARD (SUNAGIMO)	FROZEN	KGS
001368	FOWL EVISCERATED FROZEN		KGS
001388	SAUSAGE MORTADELLA FROZEN		KGS
001390	SAUSAGE PORK LINK FROZEN		KGS
001391	SAUSAGE SALAMI BOILED FROZEN		KGS
Bread / Cake / Pastry			
001502	BREAD WHITE APP. 1KG		LOV
001503	BREAD WHITE SLICED APP. 1KG		LOV
001513	BREAD RYE 420GRM (50% RYE)		LOV
001514	BREAD RYE 1KG (50% RYE)		LOV
001516	BREAD RYE STANDARD FROZEN		KGS
001517	BREAD RYE FULLCORN FROZEN		KGS
001520	BREAD BAGEL		PCS
001521	BREAD FRENCH MINI		LOV
001523	BREAD FRENCH 500GRM		LOV
001527	BREAD CROISSANT		PCS
001528	BREAD DINNER ROLL		PCS
001529	BREAD HOT DOG ROLL		PCS
001530	BREAD TABLE ROLL		PCS
001531	BREAD ENGLISH MUFFIN 4'S		PKT
001532	BREAD HAMBURGER BUN		PCS
001534	BREAD PUMPERNICKEL 1.5KG		LOV
001535	BREAD PUMPERNICKEL LONG LIFE	250GRM	PKT
001541	CAKE CHEESE 6'S FROZEN		PKT
001543	CAKE CHOCOLATE 6'S FROZEN		PKT
001544	CAKE ROLLED W/ICE CREAM 6'S	FROZEN	PKT
001545	CAKE ROLLED		PCS
001547	CAKE YOGURT W/FRUIT SAUCE	730GRM FROZEN	PCS
001552	PASTRY DANISH ASSORTED		PCS
001553	PASTRY PUFF READY ASSORTED		PCS
001554	PASTRY PUFF UNCOOKED FROZEN		KGS
001556	PIE FRUIT ASSORTED FROZEN		PCS
001557	PIE PIZZA READY TO COOK MIXED	7" FROZEN	PCS

CODE	Description		Unit
001561	HALVA GREEK 450GRM		PKT
001571	BAKLAVA LEAF FRESH		KGS
001573	SPRING ROLL SKIN 50'S		PKT
001581	CRISPBREAD WASA RY-KING 250GRM		PKT
001583	RYVITA 7-1/2 OZ		PKT
001584	FLATBREAD KORNI FLATBROD	300GRMX24S	C/T
001591	CAKE BUTTER CREAM FANCY	24CM DIA	PCS
001592	CAKE BUTTER CREAM FANCY	32CM DIA	PCS
001593	CAKE CHOCOLATE FANCY	24CM DIA	PCS
001594	CAKE CHOCOLATE FANCY	32CM DIA	PCS
001597	X'MAS PUDDING 15CM DIA		PCS
Eggs / Milk / Yogurt / Ice Cream			
001701	EGG FRESH MEDIUM		PCS
001702	EGG FRESH LARGE		PCS
001707	EGG DUCK SALTED		PCS
001708	EGG DUCK PRESERVED		PCS
001713	MILK FRESH PASTEURIZED 1 LTR		PKT
001715	MILK LONG LIFE 1 LTR		PKT
001716	MILK LOW FAT PASTEURIZED 1LTR		PKT
001721	YOGURT PLAIN	(SPECIFY VOLUME)	PKT
001724	YOGURT FRUIT ASSORTED	(SPECIFY VOLUME)	PKT
001731	CREAM SOUR	(SPECIFY VOLUME)	PKT
001735	CREAM WHIPPING 1QUART FRESH		PKT
001738	CREAM FOR COFFEE FRESH	INDIVIDUAL PACK 50'S	PKT
001739	CREAM FOR COFFEE NON-DAIRY	280GRM	JAR
001751	ICE CREAM ASSORTED 130ML		CUP
001752	ICE CREAM ASSORTED		LTR
001761	ICE CREAM MIX POWDER FAT 18%	900GRM	BAG
001762	ICE CREAM SOFT MIX LIQUID 1LTR		PKT
001763	ICE CREAM CONE		PCS
001772	SHERBET ASSORTED		LTR
001781	YEAST FRESH 500GRM		PKT
Butter, Cheese			
002001	BUTTER FRESH SALTED		KGS
002051	CHEESE BOURSIN GARLIC		KGS
002052	CHEESE BOURSIN PEPPER		KGS
002053	CHEESE BRIE		KGS
002055	CHEESE CHEDDAR		KGS
002057	CHEESE COTTAGE		KGS
002058	CHEESE CREAM		KGS
002059	CHEESE GOAT NORWEGIAN		KGS
002064	CHEESE PARMESAN GRATED		KGS
002065	CHEESE GRATED		KGS
002066	CHEESE PORT SALUT		KGS
002067	CHEESE PROCESSED		KGS
002068	CHEESE SLICED AMERICAN		KGS
Oil and Fat			
002201	OIL COOKING		KGS
002202	OIL COCONUT		KGS
002203	OIL OLIVE SPANISH		KGS
002204	OIL PEANUT		KGS
002205	OIL SALAD		KGS
002207	OIL CHILLI HOT CHINESE		KGS
002208	OIL SESAME		KGS
002221	LARD PURE		KGS
002232	GHEE VEGETABLE FAT		KGS

CODE	Description		Unit
002242	MARGARINE COOKING		KGS
002243	MARGARINE FOR PASTRY		KGS
002245	MARGARINE INDIVIDUAL 100'S		KGS
002251	SHORTENING		KGS
002252	SHORTENING LIQUID FRY MAX	(SPECIFY VOLUME)	TIN
Tinned Vegetables			
002401	ARTICHOKE HEART	(SPECIFY VOLUME)	TIN
002404	ASPARAGUS SPEAR	(SPECIFY VOLUME)	TIN
002416	BEANS BAKED WITH PORK	(SPECIFY VOLUME)	TIN
002417	BEANS GREEN CUT	(SPECIFY VOLUME)	TIN
002418	BEANS KIDNEY RED	(SPECIFY VOLUME)	TIN
002428	BEETROOT WHOLE DRAINED	(SPECIFY VOLUME)	TIN
002430	BEETROOT SLICED	(SPECIFY VOLUME)	TIN
002433	BEETROOT SLICED PICKLED BEET	(SPECIFY VOLUME)	TIN
002454	MIXED VEGETABLE	(SPECIFY VOLUME)	TIN
002456	MUSHROOM PIECE&STEM	(SPECIFY VOLUME)	TIN
002457	MUSHROOM SLICED DRAINED	(SPECIFY VOLUME)	TIN
002458	MUSHROOM WHOLE DRAINED	(SPECIFY VOLUME)	TIN
002465	PEAS CHICK (GARBANZOS)	(SPECIFY VOLUME)	TIN
002469	PIMENTO RED WHOLE DRAINED	(SPECIFY VOLUME)	TIN
002472	POTATO WHOLE SWEET (YAM)	(SPECIFY VOLUME)	TIN
002485	SWEET CORN CREAM	(SPECIFY VOLUME)	TIN
002486	TOMATO WHOLE PEELED DRAINED	(SPECIFY VOLUME)	TIN
002495	WATER CHESTNUT CHINESE	(SPECIFY VOLUME)	TIN
Tinned Fruits			
002601	APPLE DRAINED	(SPECIFY VOLUME)	TIN
002607	APRICOT HALVES DRAINED	(SPECIFY VOLUME)	TIN
002611	BLUEBERRY	(SPECIFY VOLUME)	TIN
002615	CHERRY MARASCHINO GREEN	DRAINED (SPECIFY VOLUME)	JAR
002616	CHERRY MARASCHINO RED DRAINED	(SPECIFY VOLUME)	JAR
002618	CHERRY RED DRAINED	(SPECIFY VOLUME)	TIN
002623	FIG KADOTA	(SPECIFY VOLUME)	TIN
002626	TROPICAL FRUIT COCKTAIL	IN SYRUP (SPECIFY VOLUME)	TIN
002628	GRAPE SEEDLESS IN SYRUP	(SPECIFY VOLUME)	TIN
002632	LONGAN IN SYRUP DRAINED	(SPECIFY VOLUME)	TIN
002633	LYCHEE IN SYRUP DRAINED	(SPECIFY VOLUME)	TIN
002635	MANDARIN DRAINED	(SPECIFY VOLUME)	TIN
002642	PEACH YELLOW HALVES DRAINED	(SPECIFY VOLUME)	TIN
002652	PEAR HALVES DRAINED	(SPECIFY VOLUME)	TIN
002655	PINEAPPLE GRATED	(SPECIFY VOLUME)	TIN
002657	PINEAPPLE SLICED	(SPECIFY VOLUME)	TIN
002661	PLUM WHOLE PURPLE	(SPECIFY VOLUME)	TIN
002666	MINCEMEAT	(SPECIFY VOLUME)	TIN
Tinned Fish			
002801	ABALONE BOILED DRAINED	(SPECIFY VOLUME)	TIN
002805	ANCHOVY FILLET FLAT DRAINED	(SPECIFY VOLUME)	TIN
002806	ANCHOVY FILLET ROLLED DRAINED	(SPECIFY VOLUME)	TIN
002813	CLAM BOILED	(SPECIFY VOLUME)	TIN
002817	CRAB MEAT DRAINED	(SPECIFY VOLUME)	TIN
002818	CRAB MEAT FANCY	(SPECIFY VOLUME)	TIN
002821	DACE FRIED W/SALTED BLACK	BEANS (SPECIFY VOLUME)	TIN
002823	ESCARGOT WITH SHELL IN PLASTIC	JAR (SPECIFY VOLUME)	JAR
002826	HERRING BISMARCK	(SPECIFY VOLUME)	TIN
002827	HERRING KIPPERED	(SPECIFY VOLUME)	TIN
002828	HERRING IN CREAM SAUCE	(SPECIFY VOLUME)	TIN
002829	HERRING IN TOMATO	(SPECIFY VOLUME)	TIN

CODE	Description		Unit
002830	HERRING IN WINE SAUCE	(SPECIFY VOLUME)	TIN
002835	MACKEREL BOILED	(SPECIFY VOLUME)	TIN
002836	MACKEREL IN OIL	(SPECIFY VOLUME)	TIN
002841	MUSSEL IN BRINE DANISH	(SPECIFY VOLUME)	TIN
002845	OYSTER SMOKED DRAINED	(SPECIFY VOLUME)	TIN
002847	OYSTER WHOLE BABY	(SPECIFY VOLUME)	TIN
002851	SALMON RED	(SPECIFY VOLUME)	TIN
002852	SALMON PINK FANCY	(SPECIFY VOLUME)	TIN
002853	SALMON PINK MISCELLANEOUS	(SPECIFY VOLUME)	TIN
002862	SARDINE IN OIL	(SPECIFY VOLUME)	TIN
002864	SARDINE IN TOMATO DRAINED	(SPECIFY VOLUME)	TIN
002868	SQUID SEASONED DRAINED	(SPECIFY VOLUME)	TIN
002872	SHRIMP BOILED DRAINED	(SPECIFY VOLUME)	TIN
002881	TUNA IN OIL LIGHT	(SPECIFY VOLUME)	TIN
002882	TUNA IN OIL "SPRUCE"	(SPECIFY VOLUME)	TIN
Tinned Meat			
003003	CORNED BEEF HASH	(SPECIFY VOLUME)	TIN
003015	SPAM	(SPECIFY VOLUME)	TIN
003016	SPAM WITH CHEESE CHUNK	(SPECIFY VOLUME)	TIN
003021	LIVER PASTE	(SPECIFY VOLUME)	TIN
003031	HAM BOILED&BONELESS	(SPECIFY VOLUME)	TIN
003037	SAUSAGE PORK CHINESE DRY	(SPECIFY VOLUME)	TIN
003038	SAUSAGE VIENNA	(SPECIFY VOLUME)	TIN
003052	PORK&BEANS IN TOMATO	(SPECIFY VOLUME)	TIN
003056	RAVIOLI BEEF	(SPECIFY VOLUME)	TIN
003057	RAVIOLI CHEESE	(SPECIFY VOLUME)	TIN
Beans and Peas, Dry			
003201	BEANS BROAD DRY		KGS
003202	BEANS BUTTER DRY DAIFUKU		KGS
003203	BEANS GREEN MONGO DRY		KGS
003204	BEANS HARICOT DRY		KGS
003205	BEANS KIDNEY BROWN DRY	TAISHO-KINTOKI	KGS
003206	BEANS KIDNEY LIGHT RED DRY		KGS
003209	BEANS NAVY DRY		KGS
003211	BEANS RED JAPANESE (AZUKI) DRY		KGS
003212	BEANS SOY DRY		KGS
003213	BEANS WHITE DRY KOTEBO		KGS
003215	BEANS WHITE LARGE DRY	(GREAT NORTHERN)	KGS
003225	PEAS BLACK EYE DRY		KGS
003226	PEAS CHICK (GARBANZOS) DRY		KGS
003227	PEAS GREEN WHOLE DRY		KGS
003228	PEAS GREEN SPLIT DRY		KGS
003230	PEAS YELLOW WHOLE DRY		KGS
003231	PEAS YELLOW SPLIT DRY		KGS
003233	DHALL MASSOR		KGS
003234	DHALL MOONG		KGS
003235	DHALL TOOR		KGS
003238	LENTILS RED DRY		KGS
003239	LENTILS DRY		KGS
003251	FUNGUS DRIED		KGS
003253	MUSHROOM DRIED		KGS
003254	MUSHROOM DRIED SPECIAL GRADE		KGS
003255	LILY FLOWER DRIED		KGS
003257	WHITE VEGETABLE DRIED CHINESE		KGS
Fruits and Nuts, Dry			
003401	ANGELICA		KGS

CODE	Description		Unit
003404	APRICOT DRY		KGS
003408	BANANA CHIPS DRY		KGS
003411	CHERRY CANDY CRYSTAL		KGS
003412	CHERRY CANDY DRAINED		KGS
003415	CURRANT DRY		KGS
003416	DATES		KGS
003419	FIG DRY		KGS
003425	PRUNE DRY W/O SEED		KGS
003426	PRUNE DRY		KGS
003428	RAISIN DRY		KGS
003431	SULTANA DRY		KGS
003441	PEEL CANDY LEMON		KGS
003442	PEEL CANDY ORANGE		KGS
003443	PEEL CANDY MIXED		KGS
003451	ALMOND W/O SHELL		KGS
003452	ALMOND POWDER		KGS
003453	ALMOND SLICED		KGS
003457	CASHEW NUTS W/O SHELL		KGS
003461	COCONUT SHREDDED		KGS
003465	HAZEL NUT W/O SHELL		KGS
003472	PEANUTS SALTED	(SPECIFY VOLUME)	TIN
003476	WALNUTS WITH SHELL		KGS
003477	WALNUTS W/O SHELL		KGS
003482	MIXED NUTS WITH SHELL		KGS
003486	MIXED NUTS SALTED		KGS
Jam and Marmalade			
003602	JAM APPLE	(SPECIFY VOLUME)	JAR
003605	JAM APRICOT	(SPECIFY VOLUME)	JAR
003613	JAM BLACK CURRANT	(SPECIFY VOLUME)	JAR
003615	JAM CHERRY	(SPECIFY VOLUME)	JAR
003616	JAM GOOSEBERRY	(SPECIFY VOLUME)	JAR
003617	JAM GRAPE	(SPECIFY VOLUME)	JAR
003618	JAM LINGONBERRY	(SPECIFY VOLUME)	JAR
003619	JAM ORANGE PRESERVED	(SPECIFY VOLUME)	JAR
003620	JAM ORANGE	(SPECIFY VOLUME)	JAR
003621	JAM PEACH	(SPECIFY VOLUME)	JAR
003623	JAM PINEAPPLE	(SPECIFY VOLUME)	JAR
003625	JAM PLUM	(SPECIFY VOLUME)	JAR
003628	JAM RASPBERRY	(SPECIFY VOLUME)	JAR
003631	JAM STRAWBERRY	(SPECIFY VOLUME)	JAR
003638	JAM STRAWBERRY LOW-CALORIE	(SPECIFY VOLUME)	JAR
003642	JAM MIXED FRUITS	(SPECIFY VOLUME)	JAR
003644	MARMALADE ORANGE LOW-CALORIE	(SPECIFY VOLUME)	JAR
003645	MARMALADE ORANGE	(SPECIFY VOLUME)	JAR
003651	JAM ASSORTED INDIVIDUAL PACK	(SPECIFY VOLUME)	PCS
003655	JELLY MINT	(SPECIFY VOLUME)	JAR
003656	JELLY RED CURRANT	(SPECIFY VOLUME)	JAR
003658	LEMON CURD	(SPECIFY VOLUME)	JAR
003681	PEANUT BUTTER	(SPECIFY VOLUME)	JAR
Juice			
003811	JUICE STRAIGHT GRAPEFRUIT	1380MLX12TIN	C/T
003815	JUICE STRAIGHT APPLE&PINEAPPLE	2LTR X 6BTL	C/T
003819	JUICE STRAIGHT ORANGE	1380MLX12TIN	C/T
003823	JUICE STRAIGHT APPLE	2LTR X 6BTL	C/T
003826	JUICE STRAIGHT PINEAPPLE	1380MLX12TIN	C/T
003835	JUICE STRAIGHT TOMATO	(SPECIFY VOLUME)	BTL

CODE	Description		Unit
003841	JUICE STRAIGHT VEGETABLE MIX	(SPECIFY VOLUME)	BTL
003843	JUICE VEGETABLE MIX	46 OZX12TIN	C/T
003848	JUICE PINEAPPLE-ORANGE	BLENDED 1400GRM	TIN
003858	NECTAR PEACH 250GRM		TIN
003859	NECTAR MIXED 250GRM		TIN
003863	JUICE LEMON CONCENTRATED	SWEET 2000ML	BTL
003864	JUICE LEMON CONCENRATED	UNSWEET 780ML	BTL
003865	JUICE LIME CONCENTRATED	UNSWEET 780ML	BTL
003866	JUICE ORANGE CONCENTRATED	550ML	BTL
003867	JUICE PINEAPPLE CONCENTRATED	550ML	BTL
003868	JUICE STRAWBERRY CONCENTRATED	550ML	BTL
003871	SQUASH LEMON CONCENTRATED	550ML	BTL
003872	SQUASH ORANGE CONCENTRATED	550ML	BTL
003881	JUICE POWDER 'TANG' ORANGE	750GRM X 12PKT	PKT
003883	JUICE POWDER KOOL AID CHERRY	156GRMX24	PKT
003884	JUICE POWDER KOOL AID GRAPE	156GRMX24	PKT
003885	JUICE POWDER KOOL AID LEMON	156GRMX24	PKT
003886	JUICE POWDER KOOL AID ORANGE	156GRMX24	PKT
003887	JUICE POWDER KOOL AID S-BERRY	156GRMX24	PKT
Syrup			
004001	SYRUP CHERRY 550ML		BTL
004002	SYRUP LEMON 550ML		BTL
004003	SYRUP ORANGE 550ML		BTL
004010	SYRUP CHOCOLATE 450GRM		BTL
004011	SYRUP CORN WHITE 473GRM		BTL
004012	SYRUP COCONUT 425GRM		BTL
004013	SYRUP GOLDEN 500GRM IMPORTED		BTL
004014	SYRUP MAPLE 500GRM		BTL
004015	SYRUP MOLASSES DARK 355ML		BTL
004051	HONEY PURE INDIVIDUAL PACK		PCS
004054	HONEY PURE 650GRM		JAR
Coffee / Cocoa / Tea			
004201	COFFEE BEANS FOR ICED COFFEE		KGS
004202	COFFEE BEANS REGULAR BLEND		KGS
004203	COFFEE BEANS ROASTED (ITALIAN	TYPE)	KGS
004205	COFFEE GROUND MJB		KGS
004206	COFFEE GROUND HILLS BROS		KGS
004207	COFFEE GROUND MAXWELL-HOUSE		KGS
004208	COFFEE GROUND GREEK BRAVO		KGS
004209	COFFEE GROUND GREEK TYPE		KGS
004210	COFFEE GROUND MIXED		KGS
004211	COFFEE GROUND MJB		KGS
004213	COFFEE GROUND FINE	FOR PAPER FILTER	KGS
004214	COFFEE GROUND INDIVIDUAL BAG		PCS
004221	COFFEE INSTANT INDIVIDUAL		PKT
004222	COFFEE INSTANT DECAFEINATED	INDIVIDUAL 10'S	PKT
004223	COFFEE INSTANT DECAFEINATED		KGS
004224	COFFEE INSTANT GOLD BLEND		KGS
004225	COFFEE INSTANT NESCAFE		KGS
004231	COCOA POWDER PURE		KGS
004234	COCOA INSTANT INDIVIDUAL		PCS
004235	COCOA INSTANT		KGS
004238	CHOCOLATE INSTANT NESQUICK		KGS
004242	MILO		KGS
004243	OVALTINE		KGS
004251	TEA BLACK CEYLON BULK		KGS

CODE	Description		Unit
004255	TEA BAG 25'S		BOX
004256	TEA BAG 100'S		BOX
004257	TEA BAG LIPTON 100'S		PKT
004261	TEA INSTANT ICED		KGS
004271	TEA GREEN		KGS
004275	TEA JASMIN		KGS
004278	TEA GINSENG INDIVIDUAL PACK		PCS
Pasta & Noodle			
004401	MACARONI ALPHABET BULK		KGS
004402	MACARONI CUT BULK		KGS
004403	MACARONI ELBOW BULK		KGS
004408	MACARONI FUSILLI (TWIST) BULK		KGS
004411	MACARONI LONG BULK		KGS
004415	MACARONI ORZO BULK		KGS
004417	MACARONI PENNE BULK		KGS
004419	MACARONI RIGATONI BULK		KGS
004422	MACARONI SHELL BULK		KGS
004431	SPAGHETTI LONG BULK		KGS
004442	NOODLE EGG	(SPECIFY KGS)	PKT
004445	LASAGNE SHEET	(SPECIFY KGS)	PKT
004451	NOODLE CHINESE	(SPECIFY KGS)	PKT
004452	NOODLE CHINESE EGG	(SPECIFY KGS)	PKT
004455	NOODLE BUCKWEAT NIHONSOBA	(SPECIFY KGS)	PKT
004457	NOODLE JAPANESE UDON	(SPECIFY KGS)	PKT
004461	NOODLE INSTANT	(SPECIFY KGS)	PKT
004462	NOODLE INSTANT SPECIAL BRAND	(SPECIFY KGS)	PKT
004465	NOODLE INSTANT IN CUP 20'S	(SPECIFY KGS)	PKT
004471	VERMICELLI		KGS
004475	VERMICELLI BEAN CHINESE		KGS
004482	VERMICELLI RICE CHINESE		KGS
Cereals			
004602	ALL BRAN 375GRM		PKT
004611	CORN FLAKE	(SPECIFY KGS)	PKT
004619	OAT ROLLED QUICK	(SPECIFY KGS)	TIN
004626	RICE KRISPIES 150GRM		PKT
004628	RICE PUFFED INDIVIDUAL		PKT
004638	WEETABIX 400GRM		PKT
004644	WHEAT SHREDDED 283GRM		PKT
Grains / Cake Mix			
004801	BARLEY PEARL		KGS
004803	RICE JAPANESE		KGS
004811	SAGO		KGS
004812	TAPIOKA PEARL		KGS
004813	CORN MEAL YELLOW		KGS
004821	CORN STARCH		KGS
004823	FLOUR ATTA		KGS
004825	FLOUR CORN		KGS
004828	FLOUR POTATO		KGS
004835	FLOUR RYE		KGS
004838	FLOUR SEMOLINA		KGS
004843	FLOUR WHOLE MEAL		KGS
004845	POTATO INSTANT #10		TIN
004849	BREAD CRUMB		KGS
004851	FROSTING CREAMY DELUXE	CHOCOLATE FLAVORED 16OZ	PKT
004852	FROSTING CREAMY DELUXE	VANILLA FLAVORED 16OZ	PKT
004862	CAKE MIX DEVILS FOOD	18.25 OZ	PKT
004863	CAKE MIX SPICE	18-1/2 OZ	PKT

CODE	Description		Unit
004864	CAKE MIX WHITE 18.25 OZ		PKT
004865	CAKE MIX YELLOW 18.25 OZ		PKT
004866	MIX PIE CRUST 20 OZ		PKT
004870	MARZIPAN PASTE		KGS
004881	AMMONIA POWDER		KGS
004882	BAKING POWDER		KGS
004884	BICARBONATE OF SODA		KGS
004885	CITRIC ACID 500GRM		BTL
004887	SALTPETER(CALCIUM NITRATE)	500GRM	BTL
004888	YEAST DRY		KGS
Salt and Sugar			
005001	SALT COOKING		KGS
005002	SALT ROCK		KGS
005003	SALT TABLE		KGS
005005	SALT INDIVIDUAL PACK		PCS
005006	SALT SUBSTITUTE		KGS
005051	SUGAR BROWN		KGS
005054	SUGAR CUBE		KGS
005057	SUGAR DIET		KGS
005060	SUGAR GRANULATED INDIVIDUAL	PACK	PCS
005063	SUGAR POWDER ICING		KGS
Food Color / Essence / Pudding / Gelatin			
005201	ESSENCE ALMOND		KGS
005204	ESSENCE BANANA		KGS
005207	ESSENCE BEARNAISE		KGS
005209	ESSENCE LEMON		KGS
005211	ESSENCE MAPLE		KGS
005213	ESSENCE ORANGE		KGS
005215	ESSENCE PINEAPPLE		KGS
005217	ESSENCE RASPBERRY		KGS
005219	ESSENCE RUM		KGS
005222	ESSENCE STRAWBERRY		KGS
005225	ESSENCE VANILLA		KGS
005231	FOOD COLOR YELLOW		KGS
005233	FOOD COLOR RED		KGS
005252	CUSTARD POWDER		KGS
005255	GELATIN PLATE 450GRM		PKT
005257	GELATIN POWDER 450GRM		PKT
005259	JELLY POWDER ASSORTED 85GRM		PKT
005261	PUDDING INSTANT POWDER 80GRM		PKT
005263	PUDDING INSTANT BUTTERSCOTCH	32 OZ	PKT
005265	PUDDING INSTANT CHOCOLATE	24 OZ	PKT
005267	PUDDING INSTANT VANILLA	24 OZ	PKT
Biscuit / Cracker Snack / Wafer			
005401	BISCUIT ASSORTED SWEET BULK		KGS
005402	BISCUIT ASSORTED SWEET	OVER 130GRM NET	PKT
005403	BISCUIT MARIE 200GRM		PKT
005406	COOKIE ASSORTED SWEET 200GRM		PKT
005407	COOKIE BUTTER ASSORTED 900GRM		TIN
005413	CRACKER CREAM 200GRM		PKT
005415	CRACKER PRAWN KREOPOK 1/2LB		PKT
005418	CRACKER RICE ARARE		PKT
005421	CRACKER RITZ 227GRM		PKT
005426	CRACKER SODA 453GRM		PKT
005433	FIG BAR 16 OZ		PKT
005435	GINGER SNAP 12 OZ		PKT

CODE	Description		Unit
005441	WAFER W/CREAM 30PCS		PKT
005444	WAFER VANILLA 11 OZ		PKT
Sauce and Gravy / Sauce Mix			
005601	SAUCE A-1 240GRM		BTL
005603	SAUCE ANCHOVY 170GRM		BTL
005607	SAUCE BARBECUE 454GRM		BTL
005611	SAUCE CHILLI 340GRM		JAR
005615	SAUCE CRANBERRY JELLY TYPE	454GRM	TIN
005621	SAUCE HORSERADISH "GABAN"	130GRM	JAR
005625	SAUCE HP 255GRM		BTL
005627	SAUCE LOUISIANA 6 OZ		BTL
005629	SAUCE MINT 135GRM		BTL
005631	SAUCE OYSTER 170GRM		BTL
005632	SAUCE OYSTER 450GRM		BTL
005633	SAUCE SEAFOOD COCKTAIL	12 OZ	BTL
005635	SAUCE SOYA BEAN TABLE 150ML		BTL
005636	SAUCE SOYA BEAN 1LTR		BTL
005638	SAUCE SOYA BEAN 1.8LTR		BTL
005640	SAUCE SOYA BEAN 18LTR	"KIKKOMAN"	CAN
005643	SAUCE SOYA BEAN CHINESE LIGHT	SEICHU-AN 750ML	BTL
005645	SAUCE SPAGHETTI W/OUT MEAT	32 OZ	BTL
005648	SAUCE TABASCO 2 OZ		BTL
005654	SAUCE WORCESTERSHIRE L&P 5 OZ		BTL
005655	SAUCE WORCESTERSHIRE L&P 10 OZ		BTL
005663	TOMATO KETCHUP 397GRM		BTL
005669	TOMATO PASTE		KGS
005671	TOMATO PUREE		KGS
005673	TOMATO SAUCE 450GRM		TIN
005691	GRAVY BROWNING 500GRM		BTL
Dressing and Vinegar			
005801	DRESSING BLUE CHEESE 200GRM		JAR
005802	DRESSING CATALINA 250ML		JAR
005803	DRESSING FRENCH 200GRM		BTL
005807	DRESSING GREEN GODDESS	8 OZ	JAR
005809	DRESSING ITALIAN 200GRM		JAR
005811	DRESSING RAINBOW 200GRM		JAR
005815	DRESSING RUSSIAN 8 OZ		JAR
005818	DRESSING SALAD 1GAL		JAR
005821	DRESSING THOUSAND-ISLAND	200GRM	JAR
005843	MAYONNAISE READY 1KG/TUBE		PCS
005844	MAYONNAISE READY 960ML		BTL
005852	VINEGAR		LTR
005853	VINEGAR MALT		LTR
005855	VINEGAR WHITE		LTR
005858	VINEGAR WINE		LTR
005859	VINEGAR CITRUS FRUIT (PONZU)		LTR
005860	VINEGAR W/TARAGON (ESTRAGON)		LTR
005871	WINE COOKING		LTR
005872	WINE COOKING SWEET		LTR
Seasoning and Flavor / Bouillon			
006001	SEASONING MONOSODIUM GLUTAMATE		KGS
006012	SEASONING MAGGI		KGS
006020	SEASONING SHRIMP/CRAB BOIL MIX		KGS
006033	SMOKE LIQUID		KGS
006081	BOUILLON CUBE MAGGI		KGS
006083	BOUILLON POWDER GRANULATED		KGS

CODE	Description		Unit
006084	BOUILLON POWDER BONITO	(KATSUO DASHI)	KGS
006095	MEAT EXTRACT BOVRIL		KGS
Pickles (Olive, Caper) Western & Oriental			
006201	PICKLE BRANSTON		KGS
006206	PICKLE GHERKINS SOUR	DRAINED	KGS
006207	PICKLE GHERKINS SWEET	DRAINED	KGS
006208	PICKLE GHERKINS W/DILL DRAINED	DRAINED	KGS
006214	PICKLE ONION SILVER DRAINED		KGS
006221	PICKLE MIXED SOUR GREEK		KGS
006224	PICCALILLI		KGS
006225	PICCALILLI DANISH		KGS
006228	PEPPER CHERRY		KGS
006229	PEPPER JALAPENO		KGS
006231	RELISH HAMBURGER GREEN		KGS
006232	RELISH HOT DOG		KGS
006233	RELISH SWEET		KGS
006235	ASIER DANISH		KGS
006241	OLIVE BLACK RIPE		KGS
006244	OLIVE GREEN		KGS
006245	OLIVE GREEN JUMBO		KGS
006247	OLIVE STUFFED DRAINED		KGS
006249	OLIVE STUFFED EXTRA LARGE	GREEK	KGS
006256	CHUTNEY MANGO SWEET		KGS
006258	CUCUMBER IN VINEGAR DANISH		KGS
006261	CAPER FRENCH		KGS
006267	SAUER-KRAUT		KGS
006271	CABBAGE SALTED GREEN		KGS
006273	CABBAGE SALTED CHINESE	MOI CHOI	KGS
006274	CABBAGE SALTED PRESERVED	SZECHUEN	KGS
006276	VEGETABLE PRESERVED TIANJIN	TUNG CHYE	KGS
006277	TURNIP SALTED (TAKUAN-ZUKE)		KGS
006278	GARLIC SHOOT/STEM PICKLED		KGS
006279	PICKLE LAVER		KGS
006280	VEGETABLE SALTED KOREAN		KGS
006281	PICKLE CHILLI GREEN	W/BEAN PASTE	KGS
006282	PICKLE FUKUJIN-ZUKE		KGS
006286	PICKLE NOZAWANAZUKE		KGS
006287	PICKLE PLUM SOUR (UMEBOSHI)		KGS
006288	PICKLE RAKKYO-ZUKE		KGS
006289	PICKLE NARA-ZUKE		KGS
Spices and Herbs			
006401	ALLSPICE		KGS
006403	ANISEED WHOLE		KGS
006405	BASIL WHOLE		KGS
006406	BAY LEAF		KGS
006408	CARAWAY SEED		KGS
006409	CARDAMON WHOLE		KGS
006411	CARDAMON GROUND		KGS
006413	CHILLI WHOLE DRY		KGS
006416	CHILLI POWDER		KGS
006417	CHILLI GROUND W/O SEED MEDIUM	ORIENTAL	KGS
006418	CHILLI GROUND W/O SEED FINE	ORIENTAL	KGS
006419	CHILLI GROUND W/SEED COARSE	ORIENTAL	KGS
006420	CHILLI GROUND W/SEED MEDIUM	ORIENTAL	KGS
006422	CINNAMON STICK		KGS
006423	CINNAMON POWDER		KGS

CODE	Description		Unit
006425	CLOVE WHOLE		KGS
006426	CLOVE GROUND		KGS
006428	CORIANDER SEED WHOLE		KGS
006429	CORIANDER SEED GROUND		KGS
006431	CUMMIN SEED WHOLE		KGS
006432	CUMMIN SEED GROUND		KGS
006435	CURRY POWDER "CRAB"		KGS
006437	GARLIC GROUND		KGS
006440	GARUM MASALA POWDER		KGS
006441	GINGER GROUND		KGS
006444	GUMBO FILE		KGS
006449	MARJORAM GROUND		KGS
006452	MINT LEAF		KGS
006454	MIXED 5 SPICES CHINESE		KGS
006455	MUSTARD SEED WHOLE		KGS
006456	MUSTARD POWDER		KGS
006457	MUSTARD POWDER COLMAN'S		KGS
006459	MUSTARD DIJON		KGS
006460	MUSTARD READY INDIVIDUAL 10'S		KGS
006461	MUSTARD READY		KGS
006463	MUSTARD READY "FRENCH" BRAND		KGS
006465	NUTMEG WHOLE		KGS
006466	NUTMEG GROUND		KGS
006470	OREGANO WHOLE		KGS
006471	OREGANO GROUND		KGS
006473	PAPRIKA GROUND		KGS
006474	PARSLEY FLAKE		KGS
006475	PEPPER BLACK WHOLE		KGS
006476	PEPPER BLACK GROUND		KGS
006477	PEPPER WHITE WHOLE		KGS
006478	PEPPER WHITE GROUND		KGS
006479	PEPPER CAYENNE GROUND		KGS
006481	POPPY SEED WHITE		KGS
006483	ROSEMARY WHOLE		KGS
006484	SAGE GROUND		KGS
006485	SESAME SEED WHITE		KGS
006486	STAR ANISE WHOLE		KGS
006488	TARRAGON (ESTRAGON) WHOLE DRY		KGS
006489	THYME GROUND		KGS
006491	TURMERIC GROUND		KGS
006494	HORSERADISH POWDER JAPANESE	(WASABI)	KGS
006496	CREAM OF TARTAR		KGS
006497	MEAT TENDERIZER		KGS
Soup Powder			
006603	SOUP POWDER ASPARAGUS		KGS
006606	SOUP POWDER BEANS		KGS
006608	SOUP POWDER BEEF BARLEY		KGS
006612	SOUP POWDER BEEF CONSOMME		KGS
006614	SOUP POWDER BEEF NOODLE		KGS
006615	SOUP POWDER CANADIAN PEA		KGS
006617	SOUP POWDER CHICKEN CONSOMME		KGS
006620	SOUP POWDER CHICKEN CREAM		KGS
006623	SOUP POWDER CHICKEN NOODLE		KGS
006624	SOUP POWDER CHICKEN RICE		KGS
006626	SOUP POWDER COUNTRY BARLEY		KGS
006631	SOUP POWDER GREEN PEAS		KGS

CODE	Description		Unit
006634	SOUP POWDER LEEK		KGS
006636	SOUP POWDER LENTILS		KGS
006638	SOUP POWDER MINESTRONE		KGS
006642	SOUP POWDER MUSHROOM		KGS
006645	SOUP POWDER NAPOLI		KGS
006647	SOUP POWDER ONION CONSOMME		KGS
006648	SOUP POWDER ONION		KGS
006651	SOUP POWDER OX TAIL		KGS
006656	SOUP POWDER TOMATO		KGS
006659	SOUP POWDER VEGETABLE		KGS
006662	SOUP POWDER VICHYSSOISE		KGS
006665	SOUP BASE POWDER CHINESE	SHANTAN	KGS
Soy Bean Products & Oriental Specialty			
006801	BEAN CURD FRESH	IN POLY PACKET 300GRM	PKT
006804	BEAN CURD INSTANT POWDER	HI-PROTON	KGS
006807	BEAN CURD BAKED (YAKIDOFU)		PCS
006808	BEAN CURD FRIED THIN (USUAGE)		PCS
006809	BEAN CURD FRIED THICK	(ATSUAGE)	PCS
006813	BEAN CURD PRESERVED CHINESE	TINNED	KGS
006814	BEAN CURD RED CHINESE TINNED		KGS
006821	BEANS BLACK SALTED CHINESE		KGS
006826	BEAN PASTE W/CHILLI HOT	CHINESE	KGS
006827	BEAN PASTE W/CHILLI HOT KOREAN		KGS
006831	BEAN PASTE YELLOW (CHUJIRO)	JAPANESE	KGS
006832	BEANS FERMENTED (NATTO)		PKT
006833	BEAN STICK DRIED CHINESE 1LB		PCS
006841	DEVIL'S TONGUE(ITOKONNYAKU)	FRESH PACK	PKT
006851	COOKED BEANS	(KINTOKIMAME)	KGS
006852	COOKED BEANS	(UGUISUMAME)	KGS
006853	COOKED BEANS	(YASAIMAME)	KGS
006854	COOKED CLAM (ASARI-TSUKUDANI)		KGS
006855	COOKED SEA TANGLE	(KOBU-TSUKUDANI)	KGS
006856	COOKED TINY FISH	(HAZE-TSUKUDANI)	KGS
006857	COOKED TINY FISH	(KONAGO-TSUKUDANI)	KGS
006871	WHEAT-GLUTEN BREAD (FU)		PKT
006872	RICE CAKE (MOCHI)		PKT
Meat : Beef / Veal			
007001	BEEF HINDQUARTER		KGS
007003	BEEF ROUND LEG (BUTT)		KGS
007011	BEEF BONELESS BRISKET P.E.		KGS
007013	OX BONELESS CHUCK&BLADE		KGS
007017	BEEF BONELESS RUMP	(SIRLOIN BUTT)	KGS
007019	BEEF BONELESS SILVERSIDE	(OUTSIDE)	KGS
007021	BEEF BONELESS STRIPLOIN		KGS
007023	BEEF BONELESS TENDERLOIN		KGS
007025	OX BONELESS THICKFLANK		KGS
007027	BEEF BONELESS TOPSIDE	(INSIDE)	KGS
007029	BEEF BONE-IN T-BONE STEAK		KGS
007031	BEEF MINCED		KGS
007051	BEEF KIDNEY		KGS
007052	BEEF LIVER		KGS
007053	BEEF TAIL		KGS
007054	BEEF TONGUE		KGS
007055	BEEF TRIPE SCALDED CLEANED		KGS
007071	VEAL HALFSIDE		KGS
007075	VEAL SIDE BONE-IN		KGS

CODE	Description		Unit
007077	VEAL LEG		KGS
007079	VEAL LOIN BONE-IN		KGS
Meat : Pork			
007201	PORK HALFSIDE GRADE A		KGS
007203	PORK HALFSIDE		KGS
007205	PORK KNUCKLE (SHANK)		KGS
007207	PORK LEGS BONE-IN		KGS
007209	PORK LOIN BONE-IN		KGS
007211	PORK SPARERIB		KGS
007213	PORK BELLY BONELESS		KGS
007215	PORK LIVER		KGS
Meat : Mutton / Lamb			
007401	MUTTON CARCASS EWE		KGS
007403	MUTTON CARCASS WETHER		KGS
007405	MUTTON CARCASS EWE MK UNDER		KGS
007421	LAMB CARCASS		KGS
007423	LAMB LEG BONE-IN		KGS
007425	LAMB LOIN BONE-IN		KGS
Meat : Poultry			
007601	CHICKEN FRYER EVISCERATED		KGS
007603	CHICKEN MK FRYER EVISC		KGS
007605	CHICKEN LEG		KGS
007607	CHICKEN WING		KGS
007621	DUCK EVISC GRADE A		KGS
007631	TURKEY TOM EVISC GRADE A		KGS
Meat Products : Ham / Bacon / Sausage			
007801	BACON STREAKY SLAB BONELESS		KGS
007803	BACON STREAKY SLICED	VACUUM PACK	KGS
007807	PORKLOIN SMOKED BONELESS	(CANADIAN BACK)	KGS
007809	BACON BACK SLICED		KGS
007811	LEGHAM (GAMMON) SMOKED BONELESS		KGS
007831	SAUSAGE BEEF		KGS
007833	SAUSAGE BOLOGNA		KGS
007834	SAUSAGE MALAKOFF		KGS
007837	SAUSAGE F'FURTER		KGS
007839	SAUSAGE MEAT		KGS
007843	SAUSAGE PORK		KGS
007844	SAUSAGE PORK (MEDISTER)		KGS
007845	SAUSAGE PORK COLLARED		KGS
007847	SAUSAGE SALAMI		KGS
007851	SAUSAGE SAVELOY		KGS
007855	SAUSAGE VIENNA		KGS
007859	LIVERPASTE FROZEN		KGS
Tinned Meat			
008001	CORNED BEEF TINNED		KGS
008005	PORK LUNCHEON MEAT TINNED		KGS
008009	HAM SHOULDER PICNIC TINNED		KGS
008021	SAUSAGE DINNER TINNED		KGS
008023	SAUSAGE F'FURTER W/SKIN	TINNED	KGS
008024	SAUSAGE HOTDOG TINNED		KGS
008031	BLOOD PUDDING TINNED		KGS
008033	LIVER PASTE TINNED		KGS
008035	MEAT BALL NORWEGIAN		KGS
008037	MEAT CAKE TINNED		KGS
008039	VEAL ROLL TINNED		KGS
008051	MEAT BALL TINNED		KGS

CODE	Description		Unit
008053	MOCKTURTLE IN GRAVY TINNED		KGS
Tinned Fish			
008201	COD ROE TINNED		KGS
008203	FISH BALL TINNED		KGS
008205	FISH CAKE TINNED		KGS
008207	FISH PUDDING TINNED		KGS
008209	HERRING TIDBITS TINNED		KGS
008211	MACKEREL IN TOMATO TINNED		KGS
008213	SILD SARDINE IN OIL TINNED		KGS
008215	SILD SARDINE IN TOMATO TINNED		KGS
008231	ANCHOVY FILLET TINNED		KGS
008233	CAVIAR TINNED		KGS
008235	HERRING FILLET SALTED TINNED		KGS
008237	HERRING FILLET RED SPICED	TINNED	KGS
008239	HERRING IN TOMATO TINNED		KGS
008241	MACKEREL FILLET IN TOMATO	TINNED	KGS
008243	TUNA IN TOMATO TINNED		KGS
008245	SEA SALMON TINNED		KGS
008251	COD ROE CAVIAR KAVLI KAVIAR	TINNED	KGS
Fish Frozen			
008401	COD FILLET SKIN ON SALTED		KGS
008403	LUTEFISH SKIN ON FROZEN		KGS
Daily Products			
008601	BUTTER FRESH SALTED		KGS
008603	BUTTER UNSALTED FRESH		KGS
008605	MARGARINE SALTED TABLE		KGS
008611	CHEESE AMERICAN WHITE SLICED		KGS
008612	CHEESE AMERICAN YELLOW SLICED		KGS
008614	CHEESE BLUE		KGS
008616	CHEESE CAMEMBERT		KGS
008617	CHEESE CHEDDAR RINDLESS		KGS
008619	CHEESE CREAM PHILADELPHIA	3 OZX6'S	PKT
008621	CHEESE DANBO		KGS
008622	CHEESE DANBO W/CARAWAY SEED		KGS
008623	CHEESE COTTAGE		KGS
008624	CHEESE EDAM HALF HARD		KGS
008626	CHEESE ELBO		KGS
008629	CHEESE EMMENTAR		KGS
008631	CHEESE FETA		KGS
008633	CHEESE GOUDA RINDLESS		KGS
008635	CHEESE GRATING		KGS
008637	CHEESE JARLSBERG		KGS
008639	CHEESE MARIBO		KGS
008643	CHEESE PROVOLONE		KGS
008645	CHEESE RICOTTA		KGS
008649	CHEESE SPREAD ASSORTED		KGS
008651	CHEESE BACON KAVLI BACONOST		KGS
008653	CHEESE CRAB KAVLI KRABBEOST		KGS
008655	CHEESE HAM KAVLI SKINKEOST		KGS
008657	CHEESE PLAIN KAVLI PRIMULAOST		KGS
008659	CHEESE MUSHROOM KAVLI CHAMP'N		KGS
008661	CHEESE SHRIMP KAVLI REKEOST		KGS
008671	MILK EVAPORATED 7.5% B.F.	410GRM	TIN
008672	MILK EVAPORATED 9% B.F.	14-1/2 OZ	TIN
008673	MILK CONDENSED 8% B.F.	14 OZ	TIN
008681	MILK POWDER FULL CREAN 28%BF	2KG	TIN

CODE	Description		Unit
008683	MILK POWDER		KGS
008691	CREAM WHIPPING AVOSET	1QT.	TIN
Grains & Miscellaneous			
008801	RICE WHITE LONG GRAIN		KGS
008806	WHEAT FLOUR		KGS
008811	SUGAR GRANULATED		KGS
Beer			
100103	BEER HEINEKEN 330MLX24TIN		C/T
100105	BEER KRONENBOURG 330MLX24TIN		C/T
100107	BEER RINGNES 330MLX24BTL		C/T
100110	BEER SAN MIGUEL 330MLX24TIN		C/T
100120	BEER EFES PILSENER	330ML X 24CAN	C/T
100130	BEER DARGUNER GOLD LAGER	330ML X 24CAN	C/T
100131	BEER DARGUNER WEIZEN	330ML X 24CAN	C/T
Japanese Beer			
100301	BEER SUNTORY 350MLX24TIN		C/T
100307	BEER SUNTORY DRAFT 2LTRX6KEG		C/T
100309	BEER SUNTORY DRAFT 3LTRX6KEG		C/T
100315	BEER SUNTORY 633MLX12BTL		C/T
100321	BEER SAPPORO 350MLX24TIN		C/T
100323	BEER SAPPORO DRAFT 2LTRX6KEG		C/T
100329	BEER SAPPORO 633MLX12BTL		C/T
100339	BEER ASAHI SUPER-DRY	500MLX12BTL	C/T
100340	BEER ASAHI SUPER-DRY 3LTRX6TIN		C/T
100341	BEER ASAHI SUPER-DRY	350MLX24TIN	C/T
100342	BEER ASAHI SUPER-DRY	633MLX12BTL	C/T
100343	BEER ASAHI SUPER-DRY	334MLX24BTL	C/T
100344	BEER ASAHI SUPER-DRY	500MLX24TIN	C/T
100345	BEER KIRIN LAGAR 350MLX24TIN		C/T
100346	BEER KIRIN LAGAR 334MLX24BTL		C/T
100347	BEER KIRIN ICHIBAN-SHIBORI	350MLX24TIN	C/T
100348	BEER KIRIN ICHIBAN-SHIBORI	500MLX24TIN	C/T
100349	BEER KIRIN LAGAR 633MLX12BTL		C/T
100350	BEER KIRIN LAGAR 500MLX12BTL		C/T
100351	BEER LAGER KIRIN 500MLX24TIN		C/T
Whisky			
100501	WHISKY SCOTCH BELL'S 40°	700MLX12BTL	C/T
100503	WHISKY EDINBURGH WAIN MEGREZ	700MLX12BTL 40°	C/T
100504	WHISKY SCOTCH BELL'S 20YRS	750MLX12BTL	C/T
100511	WHISKY DUFFTOWN-GLENLIVET 8YR	750MLX12BTL	C/T
100513	WHISKY SCOTCH DUNHILL	OLD MASTER 750MLX6BTL	C/T
100515	WHISKY GLENFIDDICH 750MLX12BTL		C/T
100516	WHISKY SCOTCH GLENMARK 3YRS	750MLX12S	C/T
100517	WHISKY SCOTCH GLENMARK 12YRS	750MLX6S	C/T
100518	WHISKY SCOTCH GRANT'S	750MLX12BTL	C/T
100519	WHISKY GRANT'S ROYAL 12YEARS	750MLX12S	C/T
100521	WHISKY SCOTCH HAIG 750MLX12BTL		C/T
100523	WHISKY SCOTCH J&B 700MLX12BTL		C/T
100524	WHISKY SCOTCH J&B RESERVE	750MLX12BTL	C/T
100527	WHISKY SCOTCH J.WALKER RED	750MLX12BTL	C/T
100528	WHISKY SCOTCH J.WALKER BLACK	750MLX12S	C/T
100529	WHISKY J. WALKER SWING	750MLX12BTL	C/T
100533	WHISKY SCOTCH THE ANTIQUARY	750MLX12S	C/T
100535	WHISKY SCOTCH VAT69	750MLX12BTL	C/T
100551	WHISKY IRISH JOHN JAMESON	750MLX12BTL	C/T
100552	WHISKY IRISH J.JAMESON 12YRS	750MLX12S	C/T

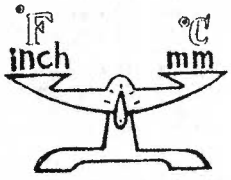
CODE	Description		Unit
100555	WHISKY IRISH TULLAMORE DEW	750MLX12BTL	C/T
100561	WHISKY BOURBON EARLY TIMES	750MLX12BTL	C/T
100563	WHISKY BOURBON I.W. HARPER	750MLX12BTL	C/T
100565	WHISKY JACK DANIEL'S BLACK	750MLX12BTL	C/T
100567	WHISKY BOURBON WILD TURKEY	750MLX12BTL	C/T
100571	WHISKY CANADIAN CLUB	750MLX12BTL	C/T
Wine / Brandy / Sherry			
100901	WINE CALIFORNIA RED	750MLX12BTL	C/T
100902	WINE CALIFORNIA INGLENOOK ROSE	750MLX12BTL	C/T
100903	WINE CALIFORNIA WHITE	750MLX12BTL	C/T
100905	WINE BORDEAUX DELOR ROUGE	750MLX12BTL	C/T
100906	WINE BORDEAUX DELOR BLANC	750MLX12BTL	C/T
100907	WINE BORDEAUX DELOR MEDOC	750MLX12BTL	C/T
100909	WINE BORDEAUX SUPERIEUR ROUGE	750MLX12BTL	C/T
100910	WINE BORDEAUX SUPERIEUR BLANC	750MLX12BTL	C/T
100913	WINE CUVEE D'ANTAN ROUGE	700MLX12BTL	C/T
100914	WINE CUVEE D'ANTAN ROSE	700MLX12BTL	C/T
100915	WINE CUVEE D'ANTAN BLANC	700MLX12BTL	C/T
100917	WINE MOSELLE GREEN GOLD	700MLX12BTL	C/T
100921	WINE ROSENHAG LIEBFRAUMILCH	700MLX12S	C/T
100923	WINE TAFEL KELLERWINE	700MLX12BTL	C/T
100932	WINE PORTUGUESE MATEUS ROSE	1000MLX6S	C/T
100941	COMTE DE LAFFITTE EXTRA	DECANTER 700ML	BTL
100943	BRANDY DE VALCOURT NAPOLEON	750MLX12S	C/T
100955	COGNAC F.O.V. 700MLX12BTL		C/T
100956	COGNAC HINE VSOP 700MLX12BTL		C/T
100957	COGNAC HINE ARC DE TRIOMPHE	700MLX12S	C/T
100958	COGNAC HINE NAPOLEON	700MLX12BTL	C/T
100961	COGNAC MARTELL 3-STAR	700MLX6BTL	C/T
100965	COGNAC REMY MARTIN VSOP	700MLX6BTL	C/T
100966	COGNAC R.MARTIN NAPOLEON	700MLX6BTL	C/T
100967	COGNAC R.MARTIN CENTAURE XO	700MLX12BTL	C/T
100968	COGNAC R.MARTIN C. EXTRA	700MLX6BTL	C/T
100969	COGNAC R.MARTIN C.CRYSTAL	700MLX6BTL	C/T
100970	COGNAC R.MARTIN C. LIMOGES	700MLX6BTL	C/T
100971	COGNAC R.MARTIN LOUIS XIII	700MLX6BTL	C/T
100991	SHERRY W.&HUMBERT DRY SACK	700MLX12BTL	C/T
100996	SHERRY HARVEYS BRISTOL CREAM	750MLX12S	C/T
Spirits & Liqueur			
101101	AKVAVIT AALBORG 700MLX12BTL		C/T
101105	DRY GIN BEEFEATER 750MLX12BTL		C/T
101107	DRY GIN GORDON'S 750MLX12BTL		C/T
101115	RUM BACARDI GOLD 750MLX12BTL		C/T
101116	RUM BACARDI SILVER 750MLX12BTL		C/T
101121	VERMOUTH CINZANO DRY	750MLX12BTL	C/T
101122	VERMOUTH CINZANO RED	750MLX12BTL	C/T
101124	VERMOUTH MARTINI DRY	1000MLX12S	C/T
101125	VERMOUTH MARTINI ROSSO	1000MLX12S	C/T
101126	VERMOUTH NOILLY PRAT DRY	1000MLX12BTL	C/T
101127	VERMOUTH NOILLY PRAT ROUGE	1000MLX12S	C/T
101131	VODKA SMIRNOFF 80PF	750MLX12BTL	C/T
101132	VODKA SMIRNOFF 100PROOF	750MLX12BTL	C/T
101151	LIQUOR CAMPARI 1000MLX12BTL		C/T
101153	LIQUOR CHERRY PETER HEERING	700MLX12BTL	C/T
101157	LIQUOR COFFEE KAHLUA	700MLX12BTL	C/T
101159	LIQUOR DRAMBUIE 750MLX12BTL		C/T

CODE	Description		Unit
101161	LIQUOR KOREAN GINSENG JU	720MLX6BTL	C/T
Japanese Spirits & Liqueur			
101351	SAKE SAWANOTSURU DELUXE	1800MLX6BTL	C/T
101352	SAKE SAWANOTSURU GENSHU	720MLX10BTL	C/T
101353	SAKE SAKAGURA 1ST 180MLX50PKT		C/T
101354	SAKE SAKAGURA 1ST 900MLX12PKT		C/T
101355	SAKE SAKAGURA 1ST 1800MLX6PKT		C/T
Soft Drinks			
101501	COCA COLA 250MLX30TIN		C/T
101502	COCA COLA 350MLX24TIN		C/T
101505	PEPSI COLA 250MLX30TIN		C/T
101506	PEPSI COLA 330MLX24TIN		C/T
101507	PEPSI COLA LIGHT(LESS SUGAR)	250MLX30S	C/T
101508	PEPSI COLA DIET (NON SUGAR)	250MLX30S	C/T
101511	GRAPEADE FANTA 250MLX30TIN		C/T
101512	GRAPEADE FANTA 350MLX24TIN		C/T
101513	GRAPEADE MIRINDA 250MLX30TIN		C/T
101517	GRAPEFRUIT SODA SUNTORY POP	250MLX30TIN	C/T
101521	LEMONADE FANTA 250MLX30TIN		C/T
101522	LEMONADE MIRINDA 250MLX30TIN		C/T
101523	LEMONADE ROYAL ISLAND	354MLX24TIN	C/T
101531	ORANGEADE FANTA 250MLX30TIN		C/T
101532	ORANGEADE FANTA 350MLX24TIN		C/T
101533	ORANGEADE MIRINDA 250MLX30TIN		C/T
101534	ORANGEADE NORA SOLO	250MLX24BTL	C/T
101535	ORANGEADE ROYAL ISLAND	354MLX24TIN	C/T
101541	SEVEN UP 250MLX30TIN		C/T
101542	SEVEN UP 330MLX24TIN		C/T
101545	SPRITE COKE 250MLX30TIN		C/T
101551	BITTER LEMON 330MLX24TIN		C/T
101552	BITTER LEMON 250MLX24BTL		C/T
101561	GINGER ALE CANADADRY	250MLX30TIN	C/T
101562	GINGER ALE CANADADRY	210MLX24BTL	C/T
101565	APPLE CIDER SPARKLING	340MLX24TIN	C/T
101566	APPLE CIDER SPARKLING	200MLX24BTL	C/T
101571	MINERAL WATER FUJI 780MLX20BTL		C/T
101573	MINERAL WATER 900MLX15BTL		C/T
101574	MINERAL WATER 1000MLX15BTL		C/T
101581	SODA WATER CANADADRY	250MLX30TIN	C/T
101582	SODA WATER 200MLX24BTL		C/T
101585	ISOTONIC DRINK POCARI SWEAT	250MLX30S	C/T
101591	TONIC WATER CANADADRY	330ML X 24TIN	C/T
101592	TONIC WATER 190MLX24BTL		C/T
101593	TONIC WATER CANADADRY	250MLX30TIN	C/T
101594	TONIC WATER CANADADRY	207MLX24BTL	C/T
101597	TONIC WATER WILKINSON	190MLX24BTL	C/T
Cigarettes & Tobaccoes			
101701	CIGARETTES CAMEL REG W/O	FILTER 200S	C/T
101702	CIGARETTES CAMEL FK 200S		C/T
101703	CIGARETTES KENT FK 200S		C/T
101704	CIGARETTES MARLBORO FK	SOFT PACK 200S	C/T
101705	CIGARETTES SALEM FK 200S		C/T
101706	CIGARETTES MARLBORO LIGHTS	MENTHOL KS BOX	C/T
101707	CIGARETTES WINSTON FK 200S		C/T
101708	CIGARETTES MARLBORO BOX	HARD PACK 200S	C/T
101711	CIGARETTES MARLBORO LIGHT	FK 200S	C/T

CODE	Description		Unit
101714	CIGARETTES MARLBORO MENTHOL	KS BOX	C/T
101721	CIGARETTES KENT SUPER LIGHTS	BOX	C/T
101723	CIGARETTES SALEM FSK 200S		C/T
101741	CIGARETTES BENSON & HEDGES SF	200S	C/T
101742	CIGARETTES ROTHMANS FK 200S		C/T
101743	CIGARETTES STATE EXPRESS 555	200S	C/T
101751	CIGARETTES DUNHILL INT'L	FILTER 200S	C/T
101752	CIGARETTES ROTHMANS INT'L	FILTER 200S	C/T
101761	TOBACCO PETTEROE'S BLANDING	NO3 200GRM	TIN
101762	TOBACCO TIEDEMANNS GUL MIX	NO2 200GRM	TIN
101779	CIGARETTES L&M BOX		C/T
101781	CIGARILLO ROI TAN TIPS 5'S		PKT
101782	CIGAR CORONAS SUMATRA 25'S		PKT
101783	CIGAR KING EDWARD PANETELA	DELUXE 5'S	PKT
101784	CIGAR OLD PORT 5'S		PKT
101791	TOBACCO ARGOSY BLACK 50GRM		PKT
101792	TOBACCO BORKUM RIFF CHERRY	CAVENDISH	PKT
101793	TOBACCO ERINMORE MIXTURE 50GRM		TIN
101794	TOBACCO SKANDINAVIK AROMATIC	50GRM	PKT
101795	TOBACCO SINCLAIRS NAVY FLAKE	50GRM	TIN
101796	TOBACCO SWEET DUBLIN BLACK	CAVENDISH	PKT
101797	TOBACCO SWEET DUBLIN IRISH	WHISKEY 50G	PKT
Japanese Cigarettes & Tobaccoes			
101902	CIGARETTES HI-LITE SOFT PACK	200S	C/T
101911	CIGARETTES CASTER SUPER MILD	BOX	C/T
101912	CIGARETTES MILD SEVEN KS 200S		C/T
101913	CIGARETTES MILD SEVEN LONG	HARD PACK 200S	C/T
101915	CIGARETTES PEACE KS 200S		C/T
101916	CIGARETTES SEVEN STARS KING	HARD PACK 200S	C/T
101921	CIGARETTES MINE KING SIZE 85MM	200S	C/T
101922	CIGARETTES CABIN 85 KS 200S		C/T
101931	CIGARETTES CABIN SUPERMILDS	KH 200S	C/T

TABLES & OTHER DATA

諸　表



CONVERSION TABLE

From Inch to Millimeter

mm = inch × 25.4

inch	0	1	2	3	4	5	6	7	8	9	10	11	12	inch
	mm	25.400	50.800	76.200	101.600	127.000	152.400	177.800	203.200	228.600	254.000	279.400	304.800	
1/64	0.397	25.797	51.197	76.597	101.997	127.397	152.797	178.197	203.597	228.997	254.397	279.797	305.197	1/64
1/32	0.794	26.194	51.594	76.994	102.394	127.794	153.194	178.594	203.994	229.394	254.794	280.194	305.594	1/32
3/64	1.191	26.591	51.991	77.391	102.791	128.191	153.591	178.991	204.391	229.791	255.191	280.591	305.991	3/64
1/16	1.588	26.988	52.388	77.788	103.188	128.588	153.988	179.388	204.788	230.188	255.588	280.988	306.388	1/16
5/64	1.984	27.384	52.784	78.185	103.585	128.985	154.385	179.785	205.185	230.585	255.985	281.385	306.785	5/64
3/32	2.381	27.781	53.181	78.581	103.981	129.382	154.782	180.182	205.582	230.982	256.382	281.782	307.182	3/32
7/64	2.778	28.178	53.578	78.978	104.378	129.778	155.178	180.578	205.979	231.379	256.779	282.179	307.579	7/64
1/8	3.175	28.575	53.975	79.375	104.775	130.175	155.575	180.975	206.375	231.775	257.176	282.576	307.976	1/8
9/64	3.572	28.972	54.372	79.772	105.172	130.572	155.972	181.372	206.772	232.172	257.572	282.972	308.372	9/64
5/32	3.969	29.369	54.769	80.169	105.569	130.969	156.369	181.769	207.169	232.569	257.969	283.369	308.769	5/32
11/64	4.366	29.766	55.166	80.566	105.966	131.366	156.766	182.166	207.566	232.966	258.366	283.766	309.166	11/64
3/16	4.763	30.163	55.563	80.963	106.363	131.763	157.163	182.563	207.963	233.363	258.763	284.163	309.563	3/16
13/64	5.159	30.559	55.959	81.360	106.760	132.160	157.560	182.960	208.360	233.760	259.160	284.560	309.960	13/64
7/32	5.556	30.956	56.356	81.756	107.156	132.557	157.957	183.357	208.757	234.157	259.557	284.957	310.357	7/32
15/64	5.953	31.353	56.753	82.153	107.553	132.953	158.353	183.753	209.154	234.554	259.954	285.354	310.754	15/64
1/4	6.350	31.750	57.150	82.550	107.950	133.350	158.750	184.150	209.550	234.950	260.351	285.751	311.151	1/4
17/64	6.747	32.147	57.547	82.947	108.347	133.747	159.147	184.547	209.947	235.347	260.747	286.147	311.547	17/64
9/32	7.144	32.544	57.944	83.344	108.744	134.144	159.544	184.944	210.344	235.744	261.144	286.544	311.944	9/32
19/64	7.541	32.941	58.341	83.741	109.141	134.541	159.941	185.341	210.741	236.141	261.541	286.941	312.341	19/64
5/16	7.938	33.338	58.738	84.138	109.538	134.938	160.338	185.738	211.138	236.538	261.938	287.338	312.738	5/16
21/64	8.334	33.734	59.134	84.535	109.935	135.335	160.735	186.135	211.535	236.935	262.335	287.735	313.135	21/64
11/32	8.731	34.131	59.531	84.931	110.331	135.732	161.132	186.532	211.932	237.332	262.732	288.132	313.532	11/32
23/64	9.128	34.528	59.928	85.328	110.728	136.128	161.528	186.928	212.329	237.729	263.129	288.529	313.929	23/64
3/8	9.525	34.925	60.325	85.725	111.125	136.525	161.925	187.325	212.725	238.125	263.526	288.926	314.326	3/8
25/64	9.922	35.322	60.722	86.122	111.522	136.922	162.322	187.722	213.122	238.522	263.922	289.322	314.722	25/64
13/32	10.319	35.719	61.119	86.519	111.919	137.319	162.719	188.119	213.519	238.919	264.319	289.719	315.119	13/32
27/64	10.716	36.116	61.516	86.916	112.316	137.716	163.116	188.516	213.916	239.316	264.716	290.116	315.516	27/64
7/16	11.113	36.513	61.913	87.313	112.713	138.113	163.513	188.913	214.313	239.713	265.113	290.513	315.913	7/16
29/64	11.509	36.909	62.309	87.710	113.110	138.510	163.910	189.310	214.710	240.110	265.510	290.910	316.310	29/64
15/32	11.906	37.306	62.706	88.106	113.506	138.907	164.307	189.707	215.107	240.507	265.907	291.307	316.707	15/32
31/64	12.303	37.703	63.103	88.503	113.903	139.303	164.703	190.103	215.504	240.904	266.304	291.704	317.104	31/64
1/2	12.700	38.100	63.500	88.900	114.300	139.700	165.100	190.500	215.900	241.300	266.701	292.101	317.501	1/2
33/64	13.097	38.497	63.897	89.297	114.697	140.097	165.497	190.897	216.297	241.697	267.097	292.497	317.898	33/64
17/32	13.494	38.894	64.294	89.694	115.094	140.494	165.894	191.294	216.694	242.094	267.494	292.894	318.294	17/32
35/64	13.891	39.291	64.691	90.091	115.491	140.891	166.291	191.691	217.091	242.491	267.891	293.291	318.691	35/64
9/16	14.288	39.688	65.088	90.488	115.888	141.288	166.688	192.088	217.488	242.888	268.288	293.688	319.088	9/16
37/64	14.684	40.084	65.485	90.885	116.285	141.685	167.085	192.485	217.885	243.285	268.685	294.085	319.485	37/64
19/32	15.081	40.481	65.881	91.281	116.681	142.082	167.482	192.882	218.282	243.682	269.082	294.482	319.882	19/32
39/64	15.478	40.878	66.278	91.678	117.078	142.478	167.878	193.279	218.679	244.079	269.479	294.879	320.279	39/64
5/8	15.875	41.275	66.675	92.075	117.475	142.875	168.275	193.675	219.075	244.475	269.876	295.276	320.676	5/8
41/64	16.272	41.672	67.072	92.472	117.872	143.272	168.672	194.072	219.472	244.872	270.272	295.672	321.073	41/64
21/32	16.669	42.069	67.469	92.869	118.269	143.669	169.069	194.469	219.869	245.269	270.669	296.069	321.469	21/32
43/64	17.066	42.466	67.866	93.266	118.666	144.066	169.466	194.866	220.266	245.666	271.066	296.466	321.866	43/64
11/16	17.463	42.863	68.263	93.663	119.063	144.463	169.863	195.263	220.663	246.063	271.463	296.863	322.263	11/16
45/64	17.859	43.259	68.660	94.060	119.460	144.860	170.260	195.660	221.060	246.460	271.860	297.260	322.660	45/64
23/32	18.256	43.656	69.056	94.456	119.856	145.257	170.657	196.057	221.457	246.857	272.257	297.657	323.057	23/32
47/64	18.653	44.053	69.453	94.853	120.253	145.653	171.053	196.454	221.854	247.254	272.654	298.054	323.454	47/64
3/4	19.050	44.450	69.850	95.250	120.650	146.050	171.450	196.850	222.250	247.650	273.051	298.451	323.851	3/4
49/64	19.447	44.847	70.247	95.647	121.047	146.447	171.847	197.247	222.647	248.047	273.447	298.847	324.248	49/64
25/32	19.844	45.244	70.644	96.044	121.444	146.844	172.244	197.644	223.044	248.444	273.844	299.244	324.644	25/32
51/64	20.241	45.641	71.041	96.441	121.841	147.241	172.641	198.041	223.441	248.841	274.241	299.641	325.041	51/64
13/16	20.638	46.038	71.438	96.838	122.238	147.638	173.038	198.438	223.838	249.238	274.638	300.038	325.438	13/16
53/64	21.034	46.434	71.835	97.235	122.635	148.035	173.435	198.835	224.235	249.635	275.035	300.435	325.835	53/64
27/32	21.431	46.831	72.231	97.631	123.031	148.432	173.832	199.232	224.632	250.032	275.432	300.832	326.232	27/32
55/64	21.828	47.228	72.628	98.028	123.428	148.828	174.228	199.629	225.029	250.429	275.829	301.229	326.629	55/64
7/8	22.225	47.625	73.025	98.425	123.825	149.225	174.625	200.025	225.425	250.825	276.226	301.626	327.026	7/8
57/64	22.622	48.022	73.422	98.822	124.222	149.622	175.022	200.422	225.822	251.222	276.622	302.022	327.423	57/64
29/32	23.019	48.419	73.819	99.219	124.619	150.019	175.419	200.819	226.219	251.619	277.019	302.419	327.819	29/32
59/64	23.416	48.816	74.216	99.616	125.016	150.416	175.816	201.216	226.616	252.016	277.416	302.816	328.216	59/64
15/16	23.813	49.213	74.613	100.013	125.413	150.813	176.213	201.613	227.013	252.413	277.813	303.213	328.613	15/16
61/64	24.209	49.609	75.010	100.410	125.810	151.210	176.610	202.010	227.410	252.810	278.210	303.610	329.010	61/64
31/32	24.606	50.006	75.406	100.806	126.206	151.607	177.007	202.407	227.807	253.207	278.607	304.007	329.407	31/32
63/64	25.003	50.403	75.803	101.203	126.603	152.003	177.403	202.804	228.204	253.604	279.004	304.404	329.804	63/64

CONVERSION TABLE

From Millimeter to Inch

inch = mm × 0.03937

mm	0	100	200	300	400	mm	0	100	200	300	400
			inch						inch		
0	0.000	3.937	7.874	11.811	15.748	50	1.969	5.906	9.843	13.780	17.717
1	0.039	3.976	7.913	11.850	15.787	51	2.008	5.945	9.882	13.819	17.756
2	0.079	4.016	7.953	11.890	15.827	52	2.047	5.984	9.921	13.858	17.795
3	0.118	4.055	7.992	11.929	15.866	53	2.087	6.024	9.961	13.898	17.835
4	0.157	4.094	8.031	11.968	15.905	54	2.126	6.063	10.000	13.937	17.874
5	0.197	4.134	8.071	12.008	15.945	55	2.165	6.102	10.039	13.976	17.913
6	0.236	4.173	8.110	12.047	15.984	56	2.205	6.142	10.079	14.016	17.953
7	0.276	4.213	8.150	12.087	16.024	57	2.244	6.181	10.118	14.055	17.992
8	0.315	4.252	8.189	12.126	16.063	58	2.283	6.220	10.157	14.094	18.031
9	0.354	4.291	8.228	12.165	16.102	59	2.323	6.260	10.197	14.134	18.071
10	0.394	4.331	8.268	12.205	16.142	60	2.362	6.299	10.236	14.173	18.110
11	0.433	4.370	8.307	12.244	16.181	61	2.402	6.339	10.276	14.213	18.150
12	0.472	4.409	8.346	12.283	16.220	62	2.441	6.378	10.315	14.252	18.189
13	0.512	4.449	8.386	12.323	16.260	63	2.480	6.417	10.354	14.291	18.228
14	0.551	4.488	8.425	12.362	16.299	64	2.520	6.457	10.394	14.331	18.268
15	0.591	4.528	8.465	12.402	16.339	65	2.559	6.496	10.433	14.370	18.307
16	0.630	4.567	8.504	12.441	16.378	66	2.598	6.535	10.472	14.409	18.346
17	0.669	4.606	8.543	12.480	16.417	67	2.638	6.575	10.512	14.449	18.386
18	0.709	4.646	8.583	12.520	16.457	68	2.677	6.614	10.551	14.488	18.425
19	0.748	4.685	8.622	12.559	16.496	69	2.717	6.654	10.591	14.528	18.465
20	0.787	4.724	8.661	12.598	16.535	70	2.756	6.693	10.630	14.567	18.504
21	0.827	4.764	8.701	12.638	16.575	71	2.795	6.732	10.669	14.606	18.543
22	0.866	4.803	8.740	12.677	16.614	72	2.835	6.772	10.709	14.646	18.583
23	0.906	4.843	8.780	12.717	16.654	73	2.874	6.811	10.748	14.685	18.622
24	0.945	4.882	8.819	12.756	16.693	74	2.913	6.850	10.787	14.724	18.661
25	0.984	4.921	8.858	12.795	16.732	75	2.953	6.890	10.827	14.764	18.701
26	1.024	4.961	8.898	12.835	16.772	76	2.992	6.929	10.866	14.803	18.740
27	1.063	5.000	8.937	12.874	16.811	77	3.031	6.968	10.905	14.842	18.779
28	1.102	5.039	8.976	12.913	16.850	78	3.071	7.008	10.945	14.882	18.819
29	1.142	5.079	9.016	12.953	16.890	79	3.110	7.047	10.984	14.921	18.858
30	1.181	5.118	9.055	12.992	16.929	80	3.150	7.087	11.024	14.961	18.898
31	1.220	5.157	9.094	13.031	16.968	81	3.189	7.126	11.063	15.000	18.937
32	1.260	5.197	9.134	13.071	17.008	82	3.228	7.165	11.102	15.039	18.976
33	1.299	5.236	9.173	13.110	17.047	83	3.268	7.205	11.142	15.079	19.016
34	1.339	5.276	9.213	13.150	17.087	84	3.307	7.244	11.181	15.118	19.055
35	1.378	5.315	9.252	13.189	17.126	85	3.346	7.283	11.220	15.157	19.094
36	1.417	5.354	9.291	13.228	17.165	86	3.386	7.323	11.260	15.197	19.134
37	1.457	5.394	9.331	13.268	17.205	87	3.425	7.362	11.299	15.236	19.173
38	1.496	5.433	9.370	13.307	17.244	88	3.465	7.402	11.339	15.276	19.213
39	1.535	5.472	9.409	13.346	17.283	89	3.504	7.441	11.378	15.315	19.252
40	1.575	5.512	9.449	13.386	17.323	90	3.543	7.480	11.417	15.354	19.291
41	1.614	5.551	9.488	13.425	17.362	91	3.583	7.520	11.457	15.394	19.331
42	1.654	5.591	9.528	13.465	17.402	92	3.622	7.559	11.496	15.433	19.370
43	1.693	5.630	9.567	13.504	17.441	93	3.661	7.598	11.535	15.472	19.409
44	1.732	5.669	9.606	13.543	17.480	94	3.701	7.638	11.575	15.512	19.449
45	1.772	5.709	9.646	13.583	17.520	95	3.740	7.677	11.614	15.551	19.488
46	1.811	5.748	9.685	13.622	17.559	96	3.780	7.717	11.654	15.591	19.528
47	1.850	5.787	9.724	13.661	17.598	97	3.819	7.756	11.693	15.630	19.567
48	1.890	5.827	9.764	13.701	17.638	98	3.858	7.795	11.732	15.669	19.606
49	1.929	5.866	9.803	13.740	17.677	99	3.898	7.835	11.772	15.709	19.646

Conversion Table of Length

centi-meter	meter	inch	foot	yard	mile	kilo-meter	knot
1	0. 01000	0. 39371	0. 03281	0. 01094	1	1. 60931	0. 86842
100. 000	1	39. 3707	3. 28081	1. 09363	0. 62138	1	0. 53962
2. 53995	0. 02540	1	0. 08333	0. 02778	1. 15151	1. 85315	1
30. 4794	0. 30479	12. 0000	1	0. 33333	–	–	–
91. 4383	0. 91438	36. 0000	3. 00000	1	–	–	–

LENGTH

Symbol	When you Know	Multiply By	To Find	Symbol
in.	inches	2.54	centimeters	cm
ft.	feet	30	centimeters	cm
yd.	yards	0.9	meters	m
mi.	miles	0.04	kilometers	km
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi

DISTANCE

Nautical Miles	Kilometers	Kilómeters	Nautical Miles
1	1.8532	1	.5396
2	3.7064	2	1.0792
3	5.5596	3	1.6188
4	7.4128	4	2.1584
5	9.2660	5	2.6980
6	11.1190	6	3.2375
7	12.9720	7	3.7771
8	14.8250	8	4.3167
9	16.7880	9	4.8563
10	18.5320	10	5.3959
20	37.064	20	10.792
30	55.596	30	16.188
40	74.128	40	21.584
50	92.660	50	26.980
60	111.190	60	32.375
70	129.720	70	37.771
80	148.250	80	43.167
90	167.880	90	48.563
100	185.320	100	53.959
110	203.850	110	59.355

Conversion Table of Square Measure

m^2	in^2	ft^2	yd^2	acre	$mile^2$	hectare	km^2
1	1550. 05	10. 7637	1. 19603	1	0.00156	0. 40467	0. 00405
0. $0_3$645	1	0. 00694	0. $0_3$772	640. 000	1	258. 989	2. 58989
0. 09290	144. 000	1	0. 11111	2. 47114	0. 00386	1	0. 01000
0. 83609	1296. 00	9. 00000	1	247. 114	0. 38612	100. 000	1

* 0.$0_3$645 means 0.000645

AREA

Symbol	When You Know	Multiply By	To Find	Symbol
in^2	square inches	6.5	sq.centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	sq.kilometers	km^2
	acres	0.4	hectares	ha
cm^2	sq.centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	sq.kilometers	0.4	square miles	mi^2
ha	hectares ($10.000m^2$)	2.5	acres	

Conversion Table of

Cubic Measure

Liquid

m^3	in^3	ft^3	yd^3	English gallon	American gallon	in^3	liter
1	61023.4	35.3137	1.30801	1	1.20100	277.393	4.54596
0.0₄164	1	0.0₃579	0.0₄214	0.83270	1	231.000	3.78543
0.02831	1728.00	1	0.03704	0.00361	0.00433	1	0.01639
0.76450	46656.0	27.0000	1	0.22022	0.26419	61.0128	1

* 0.0₄164 means 0.0000164

VOLUME

Symbol	When You Know	Multiply By	To Find	Symbol
tsp.	teaspoons	5	milliliters	ml
tbsp.	tablespoons	15	milliliters	ml
fl. oz.	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt.	pints	0.47	liters	l
qt.	quarts	0.95	liters	l
gal.	gallons(U.S.)	3.8	liters	l
gal.	gallons(Imp)	4.5	liters	l
ft^3	cubic feet	.028	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
ml	milliliters	0.03	fluid ounces	fl. oz.
l	liters	2.1	pints	pt.
l	liters	1.06	quarts	qt.
l	liters	0.26	gallons(U.S.)	gal(U.S.)
l	liters	0.22	gallons(Imp)	gal(Imp)
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3

Conversion Table of Density

g/cm^3	lb/in^3	lb/ft^3	English t/yd^3	English lb/gall	American lb/gall
1	0.03613	62.43	0.7525	10.02	8.345
27.68	1	1728	20.83	277.4	231
0.01602	0.0₃5787	1	0.01205	0.1605	0.1337
1.329	0.04801	82.96	1	13.32	11.09
0.0998	0.003605	6.229	0.07508	1	1.201
0.1198	0.004329	7.481	0.09017	0.8327	1

* 0.0₃5787 means 0.0005787

Conversion Table of Mass

kg	t	lb	ton	sh tn
1	0.001	2.204 62	0.000 984 2	0.001 102 3
1 000	1	2 204.62	0.984 2	1.102 3
0.453 59	0.000 453 59	1	0.000 446 4	0.000 5
1 016.05	1.016 05	2 240	1	1.12
907.185	0.907 185	2 000	0.892 86	1

t:kilo ton(1,000kgs)
ton:long ton(2,240lbs)
sh tn:short ton(2,000lbs)

MASS(WGT.)

Symbol	When You Know	Multiply By	To Find	Symbol
oz.	ounces	28	grams	g
lb.	pounds	0.45	kilograms	kg
	short tons (2000 lbs.)	0.9	tonnes	t
	long tons (2240 lbs.)	1.01	tonnes	t
g	grams	0.035	ounce	oz.
kg	kilograms	2.2	pounds	lb
t	tonnes (1000kg)	1.1	short tons	
t	tonnes (1000kg)	0.98	long tons	

Conversion Table of Pressure

bar	kg/cm²	lb/in²	S.B.P.	Mercurial Column		Water Column	
				m	in	m	ft
1	1. 0197	14. 5	0. 9869	0. 7501	29. 53	10. 197	33. 48
0. 9807	1	14. 22	0. 9678	0. 7356	28. 96	10. 000	32. 81
0. 06895	0. 07031	1	0. 06805	0. 05171	2. 036	0. 7031	2. 307
1. 0133	1. 0332	14. 7	1	0. 76	29. 92	10. 33	33. 90
1. 3332	1. 3595	19. 34	1. 3158	1	39. 37	13. 60	44. 60
0. 03386	0. 03453	0. 4912	0. 03342	0. 0254	1	0. 3454	1. 133
0. 09806	0. 1	1. 422	0. 09678	0. 07355	2. 896	1	3.281
0. 02989	0. 03048	0. 4335	0. 02950	0. 02242	0. 8827	0. 3048	1

S.B.P. = Standard Barometric Pressure.

Conversion Table of Speed

m/s	km/h	kn	ft/s	mile/h
1	3.6	1.944	3.281	2.237
0.277 8	1	0.540 0	0.911 3	0.621 4
0.514 4	1.852	1	1.688	1.151
0.304 8	1.097	0.592 5	1	0.681 8
0.447 0	1.609	0.869 0	1.467	1

Note:Kn=Knot, Metric Knot=1,852m/h

Fahrenheit and Centigrade Temperature Scales

F.	C.	F.	C.	F.	C.	F.	C.	F.	C.
−40	−40.	70	21.1	185	85.	950	510.	2100	1149.
−35	−37.2	75	23.9	190	87.8	1000	537.8	2150	1176.5
−30	−34.4	80	26.7	195	90.6	1050	565.5	2200	1204.
−25	−31.7	85	29.4	200	93.3	1100	593.	2250	1232.
−20	−28.9	90	32.2	205	96.1	1150	621.	2300	1260.
−15	−26.1	95	35.	210	98.9	1200	648.5	2350	1287.5
−10	−23.3	100	37.8	215	100.	1250	676.5	2400	1315.5
− 5	−20.6	105	40.6	220	101.7	1300	704.	2450	1343.
0	−17.8	110	43.3	225	107.2	1350	732.	2500	1371.
+ 5	−15	115	46.1	250	121.2	1400	760.	2550	1399.
10	−12.2	120	48.9	300	148.9	1450	788.	2600	1426.5
15	− 9.4	125	51.7	350	176.7	1500	816.	2650	1455.
20	− 6.7	130	54.4	400	204.4	1550	844.	2700	1483.
25	− 3.9	135	57.2	450	232.2	1600	872.	2750	1510.
30	− 1.1	140	60.	500	260.	1650	899.	2800	1537.5
32	0	145	62.8	550	287.8	1700	926.	2850	1565.
35	+ 1.7	150	65.6	600	315.6	1750	954.	2900	1593.
40	4.4	155	68.3	650	343.3	1800	982.	2950	1621.
45	7.2	160	71.1	700	371.1	1850	1010.	3000	1648.5
50	10.	165	73.9	750	398.9	1900	1038.	3050	1676.
55	12.8	170	76.7	800	426.7	1950	1065.5	3100	1705.
60	15.6	175	79.4	850	454.4	2000	1093.	3150	1732.
65	18.3	180	82.2	900	482.2	2050	1121.	3200	1760.

To convert Fahrenheit into Centigrade:

$$F = 32 + \frac{9}{5}C$$

Subtract 32 from Fahrenheit and divide remainder by 9 and multiply by 5.

Example: 212 Fahr.

$$\frac{32}{180} \qquad 180 \div 9 = 20. \quad 20 \times 5 = 100.$$

Ans. 212Fahr. = 100Cent.

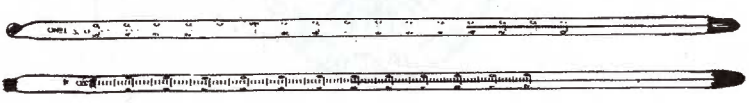
Centigrade to Fahrenheit:

$$C = \frac{5}{9}(F - 32)$$

Divide by 5, multiply by 9 and add 32.

Example: 260Cent. ÷ 5 = 52. $52 \times 9 = 468 + 32 = 500$Fahr.

Ans. 260Cent. = 500Fahr.



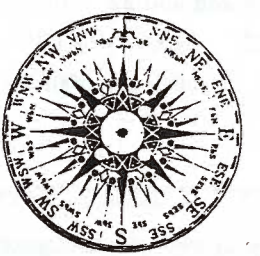
Comparison Table
for
Prevailing Unit and S.I. Unit

Quantity	Prevailing Unit	S.I. Unit	Remark
Force	kgf	N (Newton)	1kgf=9.80665N ($1N=1kg\cdot m/s^2$)
Moment, Torque	kgf·m	N·m	1kgf·m=9.80665N·m
Pressure	kgf/cm^2 mmHg mmH_2O	MPa kPa kPa	$1kgf/cm^2=0.0980665MPa$ 1mmHg=0.133322kPa $1mmH_2O=0.00980665kPa$
Stress	kgf/mm^2	N/mm^2	$1kgf/mm^2=9.80665N/mm^2$
The modulus of elasticity	kgf/cm^2	N/cm^2	$1kgf/cm^2=9.80665N/cm^2$
Viscosity	P	Pa·s	$1P=0.1N\cdot s/m^2=0.1Pa\cdot s$
Kinematic Viscosity	St	m^2/s	$1St=0.0001m^2/s$
Power	PS	kW	1PS=0.7355kW
Temperature	deg	°C	Also S.I. use K(Kelvin)
Revolution	r.p.m	s^{-1}	Also S.I. use min^{-1}
Frequency	c/s	Hz	————

Conversion Table of Viscosity

Pa·s	cP	P	$kgf\cdot s/m^2$	$lbf\cdot s/in^2$
1	1 000	10	0.101 973	1.449×10^{-4}
0.001	1	0.01	0.000 101 97	1.449×10^{-7}
0.1	100	1	0.010 197 3	1.449×10^{-5}
9.806 65	9 806.65	98.066 5	1	0.001 422
6.9×10^3	6.9×10^6	6.9×10^4	7.03×10^2	1

Note: $1P=1dyn\cdot s/cm^2=1g/cm\cdot s$, $1Pa\cdot s=1N\cdot s/m^2$, 1cP=1mPa·s,
$1lbf\cdot s/in^2=1Reyn=6.9\times10^6cP$



Reference Table
for
Mass, Weight and Pressure

Unit Indication

Unit / Section	Metric Unit (Gravity System)	Metric Unit (MKS System)	S. I. Unit
Mass	Kg (Kg/g. m/s²)	Kg	Kg
Weight (Force)	Kgf (Kilogram Force)	N (Newton)	N (Newton)
Pressure (Stress)	Kgf/cm² (Kilogram Force Per sq.Centimeter)	N/m² (Newton Per Square Meter)	Pa (Pascal) or Bar

Pressure Conversion Table

1MN/m²	1MPa	1 Mega Newton Per Sq. Mtr equal to 1 Mega Pascal
1Kgf/cm²	0.0980665Mpa≒0.1MPa	1 Kgf Per Sq. Centimeter approx 1/10 of Mega Pascal
1MPa	10.197162Kgf/cm²≒10Kgf/cm²	1 Mega Pascal approx 10 times of 1 Kgf Per Sq. Centimeter
1Bar	1.0197Kgf/cm²≒1Kgf/cm²	1 Bar approx equal to 1 Kgf Per Sq. Centimeter

Remark:The standard weight of the object is multiplication of "Mass of the Object (m)"by "Standard Acceleration of Gravity(9.80665m/s²=gn)", that is symbolized mgn.

In case m is 1 kgs.
Standard weight is

$$1Kgf = 1Kg \times g \cdot m/s^2 = 1Kg \times 9.80665(m/s^2)$$
$$= 9.80665N$$

Conversion Table of Force

N	dyn	kgf	lbf	pdl
1	1×10^5	0.101 972	0.224 8	7.233
1×10^{-5}	1	$1.019\,72\times10^{-6}$	2.248×10^{-6}	7.233×10^{-5}
9.806 65	$9.806\,65\times10^5$	1	2.205	70.93
4.448 22	$4.448\,22\times10^5$	0.453 6	1	32.17
0.138 255	$1.382\,55\times10^4$	0.014 10	0.031 08	1

Note:$1dyn=10^{-5}N$, $1pdl(Poundal)=1ft\cdot lb/s^2$

Conversion Table of Pressure

(1)

Pa	bar	kgf/cm²	atm	mH_2O	mHg	lbf/in²
1	1×10^{-5}	$1.019\,7\times10^{-5}$	$0.986\,9\times10^{-5}$	$1.019\,7\times10^{-4}$	7.501×10^{-6}	1.450×10^{-4}
1×10^{5}	1	1.019 7	0.986 9	10.197	0.750 1	14.50
$0.980\,665\times10^{5}$	0.980 665	1	0.967 8	10.000	0.735 6	14.22

(2)

Pa	bar	kgf/cm²	atm	mH_2O	mHg	lbf/in²
$1.013\,25\times10^{5}$	1.013 25	1.033 2	1	10.33	0.760	14.70
$9.806\,65\times10^{3}$	0.098 06	0.100 00	0.096 78	1	0.073 55	14.222
$1.333\,2\times10^{5}$	1.333 2	1.359 5	1.315 8	13.60	1	19.34
6.895×10^{3}	0.068 95	0.070 31	0.068 05	0.703 1	0.051 71	1

$1Pa=1N/m^2$, $1bar=10^5Pa$, $1lbf/in^2=1psi$

Stress

Pa	N/mm^2	kgf/mm²	kgf/cm²	lbf/ft²
1	1×10^{-6}	$1.019\,7\times10^{-7}$	$1.019\,7\times10^{-5}$	0.020 89
1×10^{6}	1	0.101 972	10.197 2	2.089×10^{4}
$0.080\,665\times10^{7}$	9.806 65	1	1×10^{2}	2.048×10^{5}
$0.980\,665\times10^{5}$	0.098 066 5	1×10^{-2}	1	2 048
47.86	4.786×10^{-5}	4.882×10^{-6}	0.000 488 2	1

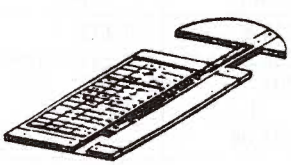
Note: $1N/mm^2=1MPa$

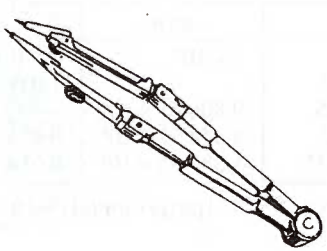
Conversion Table of Force

From kgf to Newton

(Rate: 1kgf = 9.806 65N)

kgf	0	1	2	3	4	5	6	7	8	9
	N									
—	—	9. 806 6	19. 613	29. 420	39. 227	49. 033	58. 840	68. 647	78. 453	88. 260
10	98. 066	107. 87	117. 68	127. 49	137. 29	147. 10	156. 91	166. 71	176. 52	186. 33
20	196. 13	205. 94	215. 75	225. 55	235. 36	245. 17	254. 97	264. 78	274. 59	284. 39
30	294. 20	304. 01	313. 81	323. 62	333. 43	343. 23	353. 04	362. 85	372. 65	382. 46
40	392. 27	402. 07	411. 88	421. 69	431. 49	441. 30	451. 11	460. 91	470. 72	480. 53
50	490. 33	500. 14	509. 95	519. 75	529. 56	539. 37	549. 17	558. 98	568. 79	578. 59
60	588. 40	598. 21	608. 01	617. 82	627. 63	637. 43	647. 24	657. 05	666. 85	676. 66
70	686. 47	696. 27	706. 08	715. 89	725. 69	735. 50	745. 31	755. 11	764. 92	774. 73
80	784. 53	794. 34	804. 15	813. 95	823. 76	833. 57	843. 37	853. 18	862. 99	872. 79
90	882. 60	892. 41	902. 21	912. 02	921. 83	931. 63	941. 44	951. 25	961. 05	970. 86
100	980. 66	990. 47	1 000. 3	1 010. 1	1 019. 9	1 029. 7	1 039. 5	1 049. 3	1 059. 1	1 068. 9





From Newton to kgf

(Rate:1kgf=9.806 65N)

N	00	10	20	30	40	50	60	70	80	90
	kgf									
—	—	1.019 7	2.039 4	3.059 1	4.078 9	5.098 6	6.118 3	7.138 0	8.157 7	9.177 4
100	10.197	11.217	12.237	13.256	14.276	15.296	16.315	17.335	18.355	19.375
200	20.394	21.414	22.434	23.453	24.473	25.493	26.513	27.532	28.552	29.572
300	30.591	31.611	32.631	33.651	34.670	35.690	36.710	37.729	38.749	39.769
400	40.789	41.808	42.828	43.848	44.868	45.887	46.907	47.927	48.946	49.966
500	50.986	52.006	53.025	54.045	55.065	56.084	57.104	58.124	59.144	60.163
600	61.183	62.203	63.222	64.242	65.262	66.282	67.301	68.321	69.341	70.360
700	71.380	72.400	73.420	74.439	75.459	76.479	77.498	78.518	79.538	80.558
800	81.577	82.597	83.617	84.636	85.656	86.676	87.696	88.715	89.735	90.755
900	91.774	92.794	93.814	94.834	95.853	96.873	97.893	98.912	99.932	100.95
1 000	101.97	102.99	104.01	105.03	106.05	107.07	108.09	109.11	110.13	111.15

Conversion Table of Pressure

From kgf/cm² to Mega Pascal

(Rate:1kgf/cm²=0.098 066 5MPa)

kgf/cm²	0	1	2	3	4	5	6	7	8	9
	MPa									
—	—	0.098 1	0.196 1	0.294 2	0.392 3	0.490 3	0.588 4	0.686 5	0.784 5	0.882 6
10	0.980 7	1.078 7	1.176 8	1.274 9	1.372 9	1.471 0	1.569 1	1.667 1	1.765 2	1.863 3
20	1.961 3	2.059 4	2.157 5	2.255 5	2.353 6	2.451 7	2.549 7	2.647 8	2.745 9	2.843 9
30	2.942 0	3.040 1	3.138 1	3.236 2	3.334 3	3.432 3	3.530 4	3.628 5	3.726 5	3.824 6
40	3.922 7	4.020 7	4.118 8	4.216 9	4.314 9	4.413 0	4.511 1	4.609 1	4.707 2	4.805 3
50	4.903 3	5.001 4	5.099 5	5.197 5	5.295 6	5.393 7	5.491 7	5.589 8	5.687 9	5.785 9
60	5.884 0	5.982 1	6.080 1	6.178 2	6.276 3	6.374 3	6.472 4	6.570 5	6.668 5	6.766 6
70	6.864 7	6.962 7	7.060 8	7.158 9	7.256 9	7.355 0	7.453 1	7.551 1	7.649 2	7.747 3
80	7.845 3	7.943 4	8.041 5	8.139 5	8.237 6	8.335 7	8.433 7	8.531 8	8.629 9	8.727 9
90	8.826 0	8.924 1	9.022 1	9.120 2	9.218 3	9.316 3	9.414 4	9.512 5	9.610 5	9.708 6
100	9.806 6	9.904 7	10.003	10.101	10.199	10.297	10.395	10.493	10.591	10.689

From Mega Pascal to kgf/cm² ··

(Rate:1kgf/cm²=0.098 066 5MPa)

MPa	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
	kgf/cm²									
—	—	1.019 7	2.039 4	3.059 1	4.078 9	5.098 6	6.118 3	7.138 0	8.157 7	9.177 4
1	10.197	11.217	12.237	13.256	14.276	15.296	16.315	17.335	18.355	19.375
2	20.394	21.414	22.434	23.453	24.473	25.493	26.513	27.532	28.552	29.572
3	30.591	31.611	32.631	33.651	34.670	35.690	36.710	37.729	38.749	39.769
4	40.789	41.808	42.828	43.848	44.868	45.887	46.907	47.927	48.946	49.966
5	50.986	52.006	53.025	54.045	55.065	56.084	57.104	58.124	59.144	60.163
6	61.183	62.203	63.222	64.242	65.262	66.282	67.301	68.321	69.341	70.360
7	71.380	72.400	73.420	74.439	75.459	76.479	77.498	78.518	79.538	80.558
8	81.577	82.597	83.617	84.636	85.656	86.676	87.696	88.715	89.735	90.755
9	91.774	92.794	93.814	94.834	95.853	96.873	97.893	98.912	99.932	100.95
10	101.97	102.99	104.01	105.03	106.05	107.07	108.09	109.11	110.13	111.15

Abrasive Wheel
RPM Table
By Outside Diam. and SMPM

SMPM / O.D. mm	m/min 1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,600	4,800	m/min 5,000	SMPM / O.D. Inch
25	20,382	22,921	25,478	27,897	30,573	32,321	35,669	38,217	40,764	43,312	45,860	48,408	50,956	53,504	56,052	58,600	61,148	63,695	1"
50	10,181	11,465	12,739	13,949	15,287	16,161	17,834	19,108	20,382	21,656	22,930	24,204	25,478	26,752	28,026	29,300	30,574	31,848	2"
75	6,794	7,643	8,493	9,299	10,191	10,774	12,739	13,649	14,559	15,469	16,379	16,136	16,986	17,836	18,685	19,534	20,384	21,233	3"
100	5,096	5,733	6,369	6,975	7,643	8,080	8,917	9,554	10,191	10,828	11,464	12,102	12,738	13,375	14,012	14,649	15,286	15,923	4"
125	4,076	4,856	5,096	5,580	6,115	6,464	7,134	7,643	8,153	8,662	9,172	9,682	10,192	10,702	11,212	11,721	12,231	12,740	5"
150	3,397	3,822	4,246	4,650	5,096	5,387	5,945	6,369	6,794	7,219	7,643	8,068	8,492	8,917	9,342	9,766	10,191	10,615	6"
180	2,831	3,406	3,539	3,875	4,246	4,489	4,954	5,308	5,662	6,016	6,369	6,723	7,078	7,432	7,786	8,140	8,494	8,848	7"
205	2,486	2,796	3,107	3,402	3,728	3,942	4,350	4,661	4,971	5,282	5,593	5,905	6,214	6,525	6,836	7,147	7,457	7,768	8"
255	1,998	2,248	2,497	2,738	2,997	3,169	3,497	3,747	3,997	4,246	4,496	4,758	4,994	5,244	5,494	5,744	5,993	6,243	10"
305	1,671	1,879	2,088	2,316	2,506	2,679	2,924	3,133	3,341	3,550	3,759	3,968	4,176	4,385	4,594	4,803	5,012	5,220	12"
355	1,435	1,614	1,794	1,965	2,153	2,276	2,512	2,691	2,871	3,050	3,230	3,408	3,588	3,768	3,947	4,127	4,306	4,485	14"
405	1,259	1,415	1,573	1,722	1,887	1,995	2,202	2,359	2,516	2,674	2,831	2,988	3,146	3,304	3,461	3,618	3,776	3,933	16"
455	1,108	1,246	1,385	1,516	1,662	1,757	1,939	2,077	2,215	2,354	2,492	2,631	2,770	2,909	3,047	3,186	3,324	3,463	18"
510	992	1,124	1,249	1,368	1,499	1,584	1,748	1,873	1,998	2,123	2,248	2,393	2,498	2,623	2,748	2,873	2,998	3,123	20"
560	910	1,023	1,137	1,245	1,365	1,443	1,592	1,706	1,820	1,934	2,047	2,161	2,274	2,388	2,502	2,616	2,729	2,843	22"
610	835	940	1,049	1,143	1,253	1,325	1,462	1,566	1,671	1,777	1,880	1,984	2,098	2,203	2,308	2,413	2,518	2,623	24"
650	784	882	980	1,073	1,176	1,243	1,372	1,470	1,568	1,666	1,764	1,862	1,860	1,953	2,046	2,139	2,232	2,325	26"
710	718	807	897	982	1,077	1,138	1,256	1,346	1,435	1,525	1,615	1,704	1,794	1,884	1,974	2,064	2,153	2,243	28"
760	670	754	838	918	1,006	1,063	1,173	1,257	1,341	1,425	1,509	1,592	1,676	1,760	1,844	1,928	2,012	2,095	30"
810	629	708	786	861	944	998	1,101	1,180	1,258	1,337	1,415	1,494	1,572	1,651	1,730	1,808	1,887	1,965	32"
860	593	667	741	811	889	940	1,037	1,111	1,185	1,259	1,333	1,407	1,482	1,557	1,631	1,704	1,779	1,853	34"
910	558	630	700	766	840	888	980	1,050	1,120	1,190	1,260	1,329	1,400	1,470	1,540	1,610	1,680	1,750	36"
965	528	594	660	723	792	837	924	990	1,056	1,122	1,188	1,254	1,320	1,386	1,452	1,518	1,584	1,650	38"
1,015	502	565	628	687	762	796	879	941	1,004	1,067	1,130	1,192	1,256	1,319	1,382	1,445	1,508	1,570	40"
O.D. mm / SMPM	f/min 5,250	5,900	6,550	7,200	7,870	8,525	9,180	9,840	10,500	11,170	11,800	12,500	13,120	13,780	14,430	15,100	15,740	f/min 16,400	O.D. Inch / SMPM

SMPM Denotes Surface Meter Per Minutes

Wire Gauge Comparison Table

1 in = 25.4 ㎜

No.	(1) British Imperial Standard Wire Gauge S.W.G.		(2) United States Steel Wire Gauge U.S.S.W.G. or A.S.W.G.		(3) Birmingham Gauge B.G.		(4) Paris Gauge J de P		(5) Birmingham (or Stubs Iron) Wire Gauge B.W.G.	
	in.	㎜	in.	㎜	in.	㎜	in.	㎜	in.	㎜
5 / 0	0.432	10.972	0.430	10.92	0.5883	14.94	0.0122 (5P)	—	0.500	12.70
4 / 0	0.400	10.160	0.394	10.01	0.5416	13.76	0.0133 (4P)	—	0.454	11.53
3 / 0	0.372	9.450	0.362	9.19	0.500	12.70	0.0150 (3P)	—	0.425	10.80
2 / 0	0.348	8.839	0.331	8.41	0.4452	11.31	0.0165 (2P)	0.400	0.380	9.65
1 / 0	0.324	8.229	0.306	7.77	0.3964	10.07	0.0196 (1P)	0.500	0.340	8.64
1	0.300	7.620	0.283	7.19	0.3532	8.971	0.0236	0.600	0.300	7.62
2	0.276	7.000	0.262	6.65	0.3147	7.993	0.0275	0.700	0.284	7.21
3	0.252	6.401	0.244	6.20	0.2804	7.122	0.0314	0.800	0.259	6.58
4	0.232	5.893	0.225	5.72	0.250	6.350	0.0354	0.900	0.238	6.05
5	0.212	5.384	0.207	5.26	0.2225	5.652	0.0393	1.000	0.220	5.59
6	0.192	4.876	0.192	4.88	0.1981	5.032	0.0433	1.100	0.203	5.16
7	0.176	4.470	0.177	4.50	0.1764	4.481	0.0472	1.200	0.180	4.57
8	0.160	4.064	0.162	4.11	0.1570	3.988	0.0512	1.300	0.165	4.19
9	0.144	3.657	0.148	3.76	0.1398	3.551	0.0551	1.400	0.148	3.76
10	0.128	3.250	0.135	3.43	0.1250	3.175	0.0590	1.500	0.134	3.40
11	0.116	2.946	0.120	3.05	0.1113	2.827	0.0630	1.600	0.120	3.05
12	0.104	2.641	0.106	2.69	0.0991	2.517	0.0708	1.800	0.109	2.77
13	0.092	2.336	0.092	2.34	0.0882	2.240	0.0787	2.000	0.095	2.41
14	0.080	2.032	0.080	2.03	0.0785	1.994	0.0866	2.200	0.083	2.11
15	0.072	1.828	0.072	1.83	0.0699	1.775	0.0944	2.400	0.072	1.83
16	0.064	1.625	0.062	1.57	0.0625	1.588	0.1062	2.700	0.065	1.65
17	0.056	1.421	0.054	1.37	0.0556	1.412	0.1181	3.000	0.058	1.47
18	0.048	1.218	0.048	1.22	0.0495	1.257	0.1338	3.400	0.049	1.24
19	0.040	1.016	0.041	1.04	0.0440	1.118	0.1535	3.900	0.042	1.07
20	0.036	0.9140	0.035	0.89	0.0392	0.9957	0.1732	4.400	0.035	0.89
21	0.032	0.8124	0.0317	0.805	0.0349	0.8865	0.1929	4.900	0.032	0.81
22	0.028	0.7109	0.0286	0.726	0.03125	0.7938	0.2126	5.400	0.028	0.71
23	0.024	0.6096	0.0258	0.655	0.02782	0.7066	0.2322	5.900	0.025	0.64
24	0.022	0.5585	0.023	0.584	0.02476	0.6289	0.2520	6.400	0.022	0.56
25	0.020	0.5078	0.0204	0.518	0.02204	0.5598	0.2756	7.000	0.020	0.51
26	0.018	0.4570	0.0181	0.460	0.01961	0.4981	0.2992	7.600	0.018	0.46
27	0.0164	0.4166	0.0173	0.439	0.01745	0.4432	0.3228	8.200	0.016	0.41
28	0.0148	0.3759	0.0162	0.411	0.015625	0.3969	0.3464	8.800	0.014	0.36
29	0.0136	0.3454	0.0150	0.381	0.0139	0.3531	0.3700	9.400	0.013	0.33
30	0.0124	0.3150	0.0140	0.356	0.0123	0.3124	0.3937	10.000	0.012	0.30
31	0.0116	0.2946	0.0132	0.335	0.0110	0.2794	—	—	0.010	0.25
32	0.0108	0.2743	0.0128	0.325	0.0098	0.2489	—	—	0.009	0.23
33	0.0100	0.2539	0.0118	0.300	0.0087	0.2210	—	—	0.008	0.20
34	0.0092	0.2337	0.0104	0.264	0.0077	0.1956	—	—	0.007	0.18
35	0.0084	0.2134	0.0095	0.241	0.0069	0.1753	—	—	0.005	0.13
36	0.0076	0.1930	0.0090	0.229	0.0061	0.1549	—	—	0.004	0.10
37	0.0068	0.1727	0.0085	0.216	0.0054	0.1372	—	—	—	—
38	0.0060	0.1523	0.0080	0.203	0.0048	0.1219	—	—	—	—
39	0.0052	0.1320	0.0075	0.191	0.0043	0.1092	—	—	—	—
40	0.0048	0.1219	0.0070	0.178	0.00386	0.09804	—	—	—	—
41	0.0044	0.1118	0.0066	0.168	0.00343	0.08712	—	—	—	—
42	0.004	0.1015	0.0062	0.157	0.00306	0.07772	—	—	—	—
43	0.0036	0.0914	0.0060	0.152	0.00272	0.06909	—	—	—	—
44	0.0032	0.0813	0.0058	0.147	0.00242	0.06147	—	—	—	—
45	0.0028	0.0713	0.0055	0.140	0.00215	0.05461	—	—	—	—

Weight Table of Various Metal Plate

Unit kg/m²

Thick (mm)	Steel	Copper	Brass	Zinc	Lead	Alum.	Tin
1	7.85	8.89	8.50	7.14	11.34	2.71	7.42
2	15.70	17.78	17.00	14.28	22.68	5.42	14.84
3	23.55	26.67	25.50	21.42	34.02	8.13	22.26
4	31.40	35.56	34.00	28.56	45.36	10.84	29.68
5	39.25	44.45	42.50	35.70	56.70	13.55	37.10
6	47.10	53.34	51.00	42.84	68.04	15.26	44.52
7	54.95	62.23	59.50	49.98	79.38	19.97	51.94
8	62.80	71.12	68.00	57.12	90.72	21.68	59.36
9	70.65	80.01	76.00	64.26	102.06	24.39	66.78
10	78.50	88.90	85.00	71.40	113.40	27.10	74.20
11	86.35	97.79	93.50	78.54	124.74	29.81	81.62
12	94.20	106.68	102.00	85.68	136.08	32.52	89.04
13	102.05	115.57	110.50	92.82	147.42	35.23	96.46
14	109.90	124.46	119.00	99.96	158.76	37.94	103.88
15	117.75	133.35	127.50	107.10	170.10	40.65	111.30
16	125.60	142.24	136.00	114.24	181.44	43.36	118.72
17	133.45	151.13	144.50	121.38	192.78	46.07	126.14
18	141.30	160.02	153.00	128.52	204.12	48.78	133.56
19	149.15	168.91	161.50	135.66	215.46	51.49	140.98
20	157.00	177.80	170.00	142.80	226.80	54.20	148.40
21	164.85	186.69	178.50	149.94	238.14	56.91	155.82
22	172.70	195.58	187.00	157.08	249.48	59.62	163.24
23	180.55	204.47	195.50	164.22	260.82	62.33	170.66
24	188.40	213.36	204.00	171.36	271.76	65.04	178.08
25	196.25	222.25	212.50	178.50	283.50	67.75	185.50
26	204.10	231.14	221.00	185.64	294.84	70.46	192.92
27	211.95	240.03	229.50	192.78	306.18	73.17	200.34
28	219.80	248.92	238.00	199.92	317.52	75.88	207.76
29	227.65	257.81	246.50	207.06	328.86	78.59	215.18
30	235.50	266.70	255.00	214.20	340.20	81.30	222.60
31	243.35	275.59	263.50	221.34	351.54	84.01	230.02
32	251.20	284.48	272.00	228.48	362.88	86.72	237.44
33	259.05	293.37	280.50	235.62	374.22	89.43	244.86
34	266.90	302.26	289.00	242.76	385.56	92.14	252.28
35	274.75	311.15	297.50	249.90	396.90	94.85	259.70
36	282.60	320.04	306.00	257.04	408.24	97.56	267.12
37	290.45	328.93	314.50	264.18	419.58	100.27	274.54
38	298.30	337.82	323.00	271.32	430.92	102.98	281.96
39	306.15	346.71	331.50	278.46	442.26	105.69	289.38
40	314.00	355.60	340.00	285.60	453.60	108.40	296.80
41	321.85	364.49	348.50	292.74	464.94	111.11	304.22
42	329.70	373.38	357.00	299.88	476.28	113.82	311.64
43	337.55	382.27	365.50	307.02	487.62	116.53	319.06
44	345.40	391.16	374.00	314.16	498.96	119.24	326.48
45	353.25	400.05	382.50	321.30	510.30	121.95	333.90
46	361.10	408.94	391.00	328.44	521.64	124.66	341.32
47	368.95	417.83	399.50	335.58	532.98	127.37	348.74
48	376.80	426.72	408.00	342.72	544.32	130.08	356.16
49	384.65	435.61	416.50	349.86	555.66	132.79	363.58
50	392.50	444.50	425.00	357.00	567.00	135.50	371.00

Comparison Table for Steel Pipes and Tubes of JIS and Foreign Standards

Classification										
Symbol / Use for		JIS (1979)	World Standards Designation							
			NK KR (RST)	ASTM ASME (SA)	ABS (1977)	LRS (1976)	LRS (1978)	NV (1976)	BV (1977)	GL (1973)
Pressure Pipe	Pressure	–	–	A53 G.A	ABS 2	LRS-IIP320N	LRS320P	NVR1-1P	BV P320N	GL G.1-1
		STPG38	KST138			LRS-IIP340N	LRS360P	NVR1-2P	BV P360N	
		STPG42	KST142	A53 G.B	ABS 3	LRS-IIP410N	LRS410P	NVR1-3P	BV P410N	GL G.2-1
		–	–	–	–	–	–		–	
	High Pressure	–	KST235	–	ABS 2 or 4	LRS-IIP340N	LRS320P	–	–	GL G.1-1
		STS38	KST238	–			LRS360P	NVR1-2P	BV P360N	
		STS42	KST242	–	ABS 3 or 5	LRS-IIP410N	LRS410P	NVR1-3P	BV P410N	GL G.2-1
		–	–	–		–	–		–	
	High Temperature	–	–	A106 G.A	ABS 4	LRS-IIP340N	LRS320P	–	–	GL G.1-1 or G.1*
		STPT38	KST338				LRS360P	NVR1-2P	BV P360N	
		STPT42	KST342	A106 G.B	ABS 5	LRS-IIP410N	LRS410P	NVR1-3P	BV P410N	GL G.2-1 or G.2*
		–	–	–	–	–	–		–	
		–	–	–	–	–	Class I・II・III	Test class A・C・D	–	* only Category I-II-III
			High Pressure Pipes need the working pressure							
Boiler Heat-Exchanger, Superheater	Boiler Heat E.	STB33	KSTB33	A179	–	LRS-IIB320N	LRS320B	NVR1-2B	BV B320N	GL G.1 Category I・II・III
		STB35	KSTB35	A192	ABS H	LRS-IIB340N	LRS360B		BV B360N	
		STB42	KSTB42	A210A-1	ABS J	LRS-IIB410N	LRS410B	NVR1-3B	BV B410N	GL G.2 Category I・II・III
		–	(RSTH)	–	–	–	–		–	
	Header or Main Pipe	–	–	A106 G.A	ABS 4	LRS-IIP320N	LRS320P	NVR1-2P	–	GL G.1-1 or G.1
		STPT38	KST338			LRS-IIP340N	LRS360P		BV P360N	
		STPT42	KST342	A106 G.B	ABS 5	LRS-IIP410N	LRS410P	NVR1-3P	BV P410N	GL G.2-1 or G.2
		–		–	–	–			–	
		–		–	–	–		Test class A・C・D	–	Category I・II・III
Low Temperature	Pipe	STPL39	KLPA (–40) KLPB (–50)	A333 G.1	ABS 1L	–	LRS360LT (–40)	NVR1-2P Test class B	–	GL G.1-1
		–	–	A333 G.6	–	–	LRS410LT (–50)	NVR1-3P Test class B	–	GL G.2-1
		–	–	–	–	–				
	Tube	STBL39	KLPA (–40) KLPB (–50)	A334 G.1	ABS 1L	–	LRS360LT (–40)	NVR1-2B Test class B	–	–
		–	–	A334 G.6	–	–	LRS410LT (–50)	NVR1-3B Test class B	–	–
		–	–	–	–	–			–	–

* Classes and Category of Pipes condition of LRS (Lloyd's Register of Shipping), NV (Det Norske Veritas) and GL (Germanischer Lloyd)

LRS (Maximum pressure and temperature condition for class)						
Class	I		II		III	
Piping system	Pressure	Temperature	Pressure	Temperature	Pressure	Temperature
Steam	When all condition exceeds Class II.		kg/cm² 16.3	°C 300	kg/cm² 7.1	°C 170
Fuel oil			16.3	150	7.1	60
Other media			40.8	300	16.3	200

Classification	NV Test Class			GL Category		
Class	A	C	D	I	II	III
Working Pressure	80bar and over	32～80bar	32bar and under	32 kg/cm² and under	32～80kg/cm²	80kg/cm² and over
Temperature	450°C and over	400～450°C	400°C and under	400°C and under	400～450°C	450°C and over

* Test class B: Low Temperature

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- accepted on February 22, 2008

The American Society of Mechanical Engineers, U.S.A.
Flanges, Pipes and Valves

The Department of Transport, MSOS(a) U.K.
The Medical Shipping and Fishing Vessels (Medical Stores) regulations 1995 SI No. 1802 (as amended by 1996 SI No.2821)

DIN (Deutsches Institut fur Normung e.V.), Germany
Flanges and Valves

Econosto Nederland B.V., The Netherlands
DIN and ASNI Valves

Federal Supply Service Bureau, U.S.A.
Wire Rope

International Maritime Organization
Appendix 14 "List of Medicines and Equipment" of the Medical First Aid Guide which corresponds to pages 160 to 162 of the IMDG Code supplement (2006 edition).

Japan Marine Standards Association, Japan
JIS F Standard Valves

Japanese Standard Association, Japan
JIS Standard Valves

MAN B&W Diesel A/S, Denmark
Main Engine Diagrams

Maritime Progress Limited, U.K.
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Main Engines

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List of Recommended Medicines and Equipment by International Medical Guide for Ships – Second Edition

日本工業出版株式会社 Japan
Illustration of Valves